MarkWest Liberty Midstream & Resources, L.L.C.

Harmon Creek Gas Plant

Smith Township, Washington County

Air Quality

Natural Minor State Only Operating Permit (SOOP) Application

Natural Gas Processing Plant

Current Approval No #: 63-01011

Table of Contents

Section 1
Regulatory Review

Regulatory Review

Federal New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) require new, modified, or reconstructed sources to control emissions to the level that is achievable by the best system for emission reduction as specified in the provisions of the applicable rule. The following section provides applicability determinations for each of the NSPS and NESHAP regulations to which the Harmon Creek facility is potentially subject.

40 Code of Federal Regulations (CFR) Part 60 Subpart Dc – Standards of Performance for Small (10 to 100 MMBtu/hr) Industrial, Commercial, Institutional Steam Generating Units for Which Construction, Reconstruction, or Modification Commenced After June 9, 1989.
Process heaters (031, 037, 033, 034, 036) are rated at maximum design heat release greater than 10 MMBtu/hr and will be constructed after June 9, 1989. However, process heaters are excluded from the definition of a steam generating unit. Therefore, no emission processes associated with the project will have requirements under NSPS Subpart Dc [40 CFR 60.41c].

40 CFR Part 60 Subpart OOOOa - Standards of Performance for Crude Oil and Natural Gas Facilities:
NSPS Subpart OOOOa applies to facilities constructed, modified, or reconstructed after September 18, 2015. The Harmon Creek 1 plant was constructed after September 18, 2015 and is therefore subject to the requirements of NSPS OOOOa. The following sections outline the applicability of the various components outlined under NSPS Subpart OOOOa:

> **Reciprocating Compressors –** The seven (7) electric compressors associated with Harmon Creek 1 will require the replacement of rod packing every 26,000 hours or every 36 months of operation for each subject compressor.

40 CFR Part 60 Subpart OOOOb - Standards of Performance for Crude Oil and Natural Gas Facilities:
NSPS Subpart OOOOb establishes emission standards and compliance schedules for the control of GHG and VOC emissions from affected facilities that were constructed, modified, or reconstructed after December 6, 2022. The Harmon Creek 2 plant was constructed after December 6, 2022 and is therefore subject to the requirements of NSPS OOOOb. The following sections outline the applicability of the various sources outlined under NSPS Subpart OOOOb:

> **Centrifugal Compressors** – The standards under this subpart apply to a single centrifugal compressor. The two (2) centrifugal compressors associated with Harmon Creek 2 are subject to the standards of this subpart.
>
> **Reciprocating Compressors** – The standards under this subpart apply to a single reciprocating compressor. The three (3) electric compressors associated with Harmon Creek 2 are subject to the rod packing compliance standards under this subpart.
>
> **Process Controllers** – The standards under this subpart apply to a collection of natural gas-driven process controllers. There are no natural gas-driven process controllers associated with the existing Harmon Creek facility thus, these standards do not apply.
>
> **Storage Vessels** – A tank battery, defined as one or more storage vessels manifolded together for liquid transfer, with the potential to emit 6 tpy or more of VOC or 20 tpy or more of methane is a storage vessel affected facility under this subpart. Tank batteries with potential emissions below the thresholds aforementioned are not subject to this subpart provided the owner/operator maintains

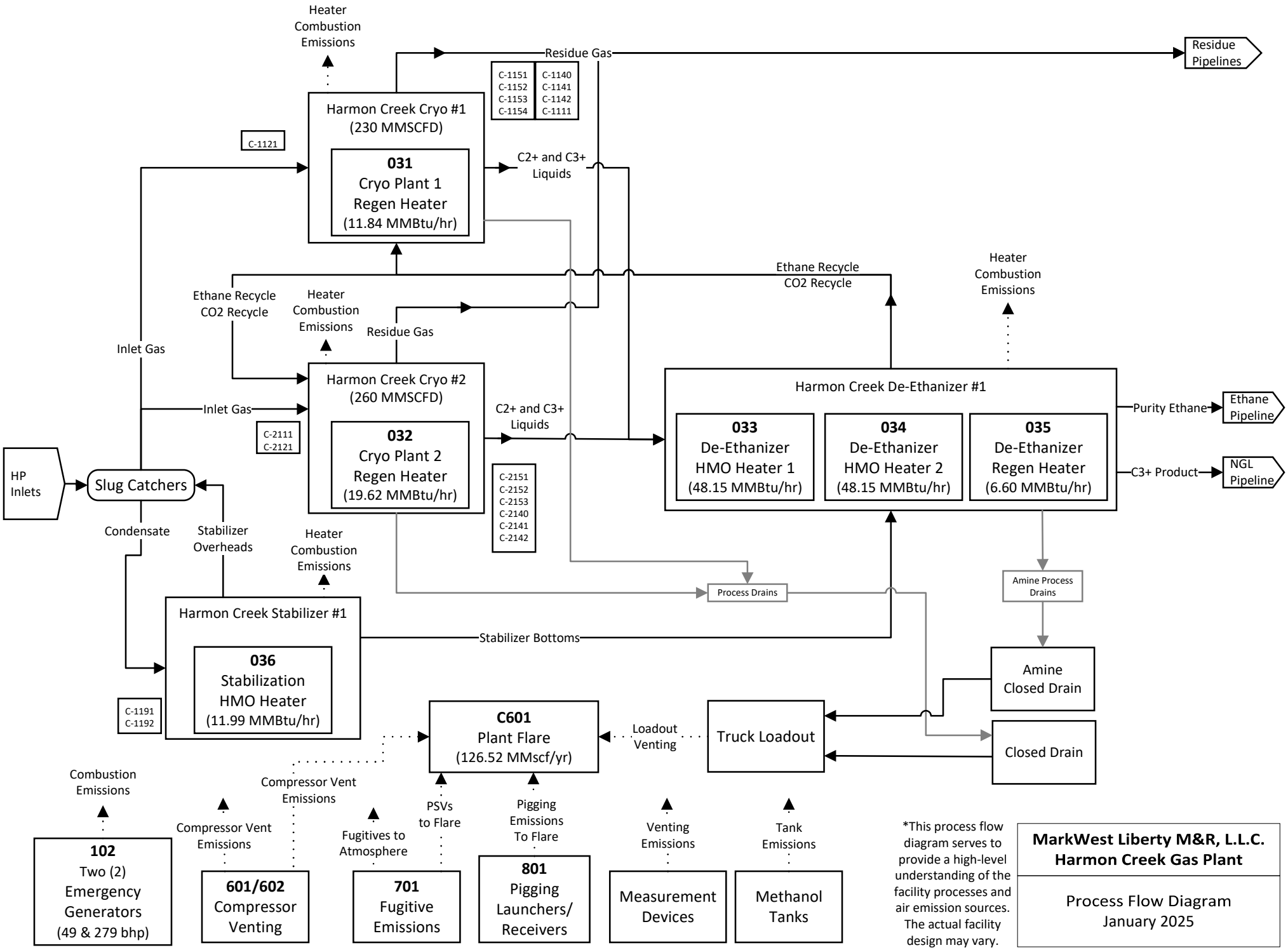
records of potential emissions for the life of the storage vessel. There closed drain tank throughput increased with the Harmon Creek 2 project and thus, is subject to the standards of this subpart.

Process Unit Equipment – A process unit equipment affected facility is the group of all equipment within a process unit at an onshore natural gas processing plant. The project was constructed after December 6, 2022 and therefore, is subject to the standards of this subpart. The entire Harmon Creek facility will comply with the NSPS OOOOb process unit equipment standards.

Sweetening Unit – A sweetening unit under this subpart is defined as a process device that removes hydrogen sulfide and/or carbon dioxide from the sour natural gas stream. There are no sweetening units associated with the project and thus, these standards do not apply.

Pneumatic Pumps – The standards under this subpart apply to a collection of natural gas-driven pumps. There are no natural gas-driven pneumatic pumps associated with the Harmon Creek facility and thus, these standards do not apply.

Section 2
Process Description and
Process Flow Diagram


Heater Combustion Emissions
Residue Gas
Residue Pipelines
C-1151
C-1152
C-1153
C-1154
C-1140
C-1141
C-1142
C-1111
Harmon Creek Cryo #1
(230 MMSCFD)
C-1121
031
Cryo Plant 1
Regen Heater
(11.84 MMBtu/hr)
C2+ and C3+
Liquids
Ethane Recycle
CO2 Recycle
Heater Combustion Emissions
Residue Gas
Ethane Recycle
CO2 Recycle
Heater Combustion Emissions
Inlet Gas
Harmon Creek Cryo #2
(260 MMSCFD)
Inlet Gas
C-2111
C-2121
032
Cryo Plant 2
Regen Heater
(19.62 MMBtu/hr)
C2+ and C3+
Liquids
C-2151
C-2152
C-2153
C-2140
C-2141
C-2142
Harmon Creek De-Ethanizer #1
033
De-Ethanizer
HMO Heater 1
(48.15 MMBtu/hr)
034
De-Ethanizer
HMO Heater 2
(48.15 MMBtu/hr)
035
De-Ethanizer
Regen Heater
(6.60 MMBtu/hr)
Purity Ethane
Ethane Pipeline
C3+ Product
NGL Pipeline
HP Inlets
Slug Catchers
Condensate
Stabilizer Overheads
Heater Combustion Emissions
Process Drains
Amine Process Drains
Harmon Creek Stabilizer #1
Stabilizer Bottoms
036
Stabilization
HMO Heater
(11.99 MMBtu/hr)
C-1191
C-1192
Amine
Closed Drain
Closed Drain
C601
Plant Flare
(126.52 MMscf/yr)
Loadout
Venting
Truck Loadout
Combustion Emissions
Compressor Vent Emissions
Compressor Vent Emissions
Fugitives to Atmosphere
PSVs to Flare
Pigging Emissions To Flare
Venting Emissions
Tank Emissions
102
Two (2)
Emergency
Generators
(49 & 279 bhp)
601/602
Compressor
Venting
701
Fugitive
Emissions
801
Pigging
Launchers/
Receivers
Measurement
Devices
Methanol
Tanks
*This process flow diagram serves to provide a high-level understanding of the facility processes and air emission sources. The actual facility design may vary.
MarkWest Liberty M&R, L.L.C.
Harmon Creek Gas Plant
Process Flow Diagram
January 2025

Section 3
Municipal Notifications

MarkWest Liberty Midstream and Resources, L.L.C.
1515 Arapahoe Street
Tower 1, Suite 1600
Denver, CO 80202-2137
(800) 730-8388
(303) 925-9200
(303) 825-0902 Fax

January 3, 2025

Tracking Number: 1Z2E23250198718968

Township Supervisors
Smith Township
1848 Smith Township State Road
Slovan, PA. 15078

Re: MarkWest Liberty Midstream and Resources, L.L.C.
Harmon Creek Gas Plant
State-Only Operating Permit Application

Dear Supervisors:

This letter is being sent to notify the Township Supervisors that MarkWest Liberty Midstream and Resources, L.L.C (MPLX) has applied to the Pennsylvania Department of Environmental Protection (PADEP) for an Air Quality State-Only Operating Permit to incorporate equipment authorized under Plan Approval 63-01011 at the Harmon Creek Gas Plant, located at 123 Point Pleasant Rd in Smith Township, Washington County, Pennsylvania.

MarkWest seeks to authorize the continued operation of the following equipment at the facility:

- One (1) cryo plant 1 regenerative heater rated at a maximum heat input of 11.84 MMBtu/hr;
- One (1) cryo plant 2 regenerative heater rated at a maximum heat input of 19.62 MMBtu/hr;
- One (1) stabilization HMO heater rated at a maximum heat input of 11.99 MMBtu/hr;
- One (1) de-ethanizer regenerative heater rated at a maximum heat input of 6.60 MMBtu/hr;
- Two (2) de-ethanizer HMO heaters each rated at a maximum heat input of 48.15 MMBtu/hr;
- Two (2) diesel-fired emergency generators rated at 49 and 279 bhp;
- Two (2) 500-gallon methanol storage tank;
- Electric-driven reciprocating compressors and associated blowdown and rod packing venting;
- Electric-driven centrifugal compressors and associated blowdown and dry seal venting;
- One (1) air-assist process flare with a permit limit of 126.52 MMscf/yr, controlling emissions from pigging equipment, blowdowns/venting, closed drain tanks, and truck loadout operations; and
- Associated measurement devices and fugitive components.

This notice is being provided in accordance with the requirements of 25 Pa. Code § 127.413 for municipal notification.

There is a 30-day comment period which begins upon receipt of this notice by the county. Anyone wishing to view this application may do so by making arrangements with:

Air Quality Program
PADEP - Southwest Regional Office
400 Waterfront Drive
Pittsburgh, PA. 15222
(412) 442-4000

If you have any questions about this application, please contact Nathan Wheldon at (970) 631-6127 or via email at nmwheldon@marathonpetroleum.com.

Sincerely,

Alexandra M. Juarez
Advanced Environmental Engineer

cc: MarkWest file

MarkWest Liberty Midstream and Resources, L.L.C.
1515 Arapahoe Street
Tower 1, Suite 1600
Denver, CO 80202-2137
(800) 730-8388
(303) 925-9200
(303) 825-0902 Fax

January 3, 2025

Tracking Number: 1Z2E23250192423055

Washington County Commissioners
Courthouse Square
95 West Beau Street
Suite 605
Washington, PA 15301

Re: MarkWest Liberty Midstream and Resources, L.L.C.
Harmon Creek Gas Plant
State-Only Operating Permit Application

Dear Commissioners:

This letter is being sent to notify the County Commissioners that MarkWest Liberty Midstream and Resources, L.L.C (MPLX) has applied to the Pennsylvania Department of Environmental Protection (PADEP) for an Air Quality State-Only Operating Permit to incorporate equipment authorized under Plan Approval 63-01011 at the Harmon Creek Gas Plant, located at 123 Point Pleasant Rd in Smith Township, Washington County, Pennsylvania.

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Sincerely,

Alexandra M. Juarez
Advanced Environmental Engineer

cc: MarkWest file

Section 4
General Information Form (GIF)

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
CENTER FOR ENVIRONMENTAL EXCELLENCE

GENERAL INFORMATION FORM – AUTHORIZATION APPLICATION

Before completing this General Information Form (GIF), read the step-by-step instructions provided in this application package. This form is used by the Department of Environmental Protection (DEP) to inform our programs regarding what other DEP permits or authorizations may be needed for the proposed project or activity. This version of the General Information Form (GIF) must be completed and returned with any program-specific application being submitted to the DEP.

Related ID#s (If Known)				DEP USE ONLY
Client ID#		**APS ID#**		Date Received & General Notes
Site ID#	823541	**Auth ID#**		
Facility ID#	819388			

CLIENT INFORMATION

DEP Client ID#	Client Type/Code	Dun & Bradstreet ID#
	OWOP	

Legal Organization Name or Registered Fictitious Name	Employer ID# (EIN)	Is the EIN a SSN?
MarkWest Liberty Midstream and Resources, L.L.C	30-0528059	☐ Yes ☒ No

State of Incorporation or Registration of Fictious Name	
Delaware	☐ Corporation ☒ LLC ☐ Partnership ☐ LLP ☐ LP ☐ Sole Proprietorship ☐ Association/Organization ☐ Estate/Trust ☐ Other

Individual Last Name	First Name	MI	Suffix

Additional Individual Last Name	First Name	MI	Suffix

Mailing Address Line 1	Mailing Address Line 2
1515 Arapahoe St	Tower 1, Suite 1600

Address Last Line – City	State	ZIP+4	Country
Denver	CO	80202-2137	USA

Client Contact Last Name	First Name	MI	Suffix
Wheldon	Nathan	M	

Client Contact Title	Phone	Ext	Cell Phone
Environmental Manager	970-631-6127		

Email Address	FAX
nmwheldon@marathonpetroleum.com	303-573-4954

SITE INFORMATION

DEP Site ID#	Site Name
823541	Harmon Creek Gas Plant

EPA ID# **Estimated Number of Employees to be Present at Site** 25

Description of Site

Natural Gas Processing Plant

Tax Parcel ID(s):

County Name(s)	Municipality(ies)	City	Boro	Twp	State
Washington	Smith	☐	☐	☒	PA
		☐	☐	☐	
		☐	☐	☐	

☐	☐	☐

Site Location Line 1	**Site Location Line 2**
123 Point Pleasant Rd	

Site Location Last Line – City	**State**	**ZIP+4**
Bulger	PA	15019

Detailed Written Directions to Site

From Pittsburgh head west on Hwy 22 to Exit 60A, stay left on Steubenville Pike (0.9 mi.), turn left onto Creek Road (0.5 mi.), keep left to stay on Point Pleasant Road (1.3 mi.), turn left into Harmon Creek Gas Plant

Site Contact Last Name	**First Name**	**MI**	**Suffix**
Ettore	David	G	

Site Contact Title	**Site Contact Firm**
Environmental Manager	MarkWest Liberty Midstream and Resources, L.L.C.

Mailing Address Line 1	**Mailing Address Line 2**
4600 J. Barry Court	Suite 500

Mailing Address Last Line – City	**State**	**ZIP+4**
Canonsburg	**PA**	**15317**

Phone	**Ext**	**FAX**	**Email Address**
724-873-2803			DGEttore@marathonpetroleum.com

NAICS Codes (Two- & Three-Digit Codes – List All That Apply)	**6-Digit Code** (Optional)
211130	NA

Client to Site Relationship

OWNOP

FACILITY INFORMATION

Modification of Existing Facility	**Yes**	**No**
1. Will this project modify an existing facility, system, or activity?	☐	☒
2. Will this project involve an addition to an existing facility, system, or activity?	☐	☒

If "Yes", check all relevant facility types and provide DEP facility identification numbers below.

	Facility Type	**DEP Fac ID#**		**Facility Type**	**DEP Fac ID#**
☒	Air Emission Plant	819388	☐	Industrial Minerals Mining Operation	
☐	Beneficial Use (water)		☐	Laboratory Location	
☐	Blasting Operation		☐	Land Recycling Cleanup Location	
☐	Captive Hazardous Waste Operation		☐	Mine Drainage Treatment / Land Recycling Project Location	
☐	Coal Ash Beneficial Use Operation		☐	Municipal Waste Operation	
☐	Coal Mining Operation		☐	Oil & Gas Encroachment Location	
☐	Coal Pillar Location		☐	Oil & Gas Location	
☐	Commercial Hazardous Waste Operation		☐	Oil & Gas Water Poll Control Facility	
☐	Dam Location		☐	Public Water Supply System	
☐	Deep Mine Safety Operation -Anthracite		☐	Radiation Facility	
☐	Deep Mine Safety Operation -Bituminous		☐	Residual Waste Operation	
☐	Deep Mine Safety Operation -Ind Minerals		☐	Storage Tank Location	
☐	Encroachment Location (water, wetland)		☐	Water Pollution Control Facility	
☐	Erosion & Sediment Control Facility		☐	Water Resource	
☐	Explosive Storage Location		☐	Other:	

Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
Harmon Creek Gas Plant	40	24	4	80	21	26

Horizontal Accuracy Measure	Feet	*--or--*	Meters	
Horizontal Reference Datum Code	☐	North American Datum of 1927		
	☐	North American Datum of 1983		
	☒	World Geodetic System of 1984		
Horizontal Collection Method Code				
Reference Point Code				
Altitude	Feet	1,171	*--or--*	Meters
Altitude Datum Name	☐	The National Geodetic Vertical Datum of 1929		
	☐	The North American Vertical Datum of 1988 (NAVD88)		
Altitude (Vertical) Location Datum Collection Method Code				
Geometric Type Code				
Data Collection Date				
Source Map Scale Number		Inch(es)	=	Feet
--or--		Centimeter(s)	=	Meters

PROJECT INFORMATION

Project Name

Harmon Creek 3

Project Description

Operating permit to authorize continued operation of existing equipment under AG5-63-00011A and PA-63-01011

Project Consultant Last Name	First Name	MI	Suffix
None used			

Project Consultant Title	Consulting Firm

Mailing Address Line 1	Mailing Address Line 2

Address Last Line – City	State	ZIP+4

Phone	Ext	FAX	Email Address

Time Schedules	Project Milestone (Optional)

1. Is the project located in or within a 0.5-**mile radius of an Environmental Justice community as defined by DEP?** ☒ Yes ☐ No

To determine if the project is located in or within a 0.5-mile radius of an environmental justice community, please use the online PennEnviroScreen tool. To see specific EJ areas, select the appropriate year of your submittal from the themes box on the right.

2. Have you informed the surrounding community prior to submitting the application to the Department? ☒ Yes ☐ No

Method of notification: Municipal notifications per 25 Pa. Code § 127.413

3. **Have you addressed community concerns that were identified?** ☐ Yes ☐ No ☒ N/A

If no, please briefly describe the community concerns that have been expressed and not addressed.

4. **Is your project funded by state or federal grants?** ☐ Yes ☒ No

Note: If "Yes", specify what aspect of the project is related to the grant and provide the grant source, contact person and grant expiration date.

Aspect of Project Related to Grant

Grant Source: _____

Grant Contact Person: _____

Grant Expiration Date: _____

5. **Is this application for an authorization on Appendix A of the Land Use Policy? (For referenced list, see Appendix A of the Land Use Policy attached to GIF instructions)** ☐ Yes ☒ No

Note: If "No" to Question 5, the application is not subject to the Land Use Policy.

If "Yes" to Question 5, the application is subject to this policy and the Applicant should answer the additional questions in the **Land Use Information** section.

LAND USE INFORMATION

Note: Applicants should submit copies of local land use approvals or other evidence of compliance with local comprehensive plans and zoning ordinances.

1. **Is there an adopted county or multi-county comprehensive plan?** ☐ Yes ☐ No

2. **Is there a county stormwater management plan?** ☐ Yes ☐ No

3. **Is there an adopted municipal or multi-municipal comprehensive plan?** ☐ Yes ☐ No

4. **Is there an adopted county-wide zoning ordinance, municipal zoning ordinance or joint municipal zoning ordinance?** ☐ Yes ☐ No

Note: If the Applicant answers "No" to either Questions 1, 3 or 4, the provisions of the PA MPC are not applicable and the Applicant does not need to respond to questions 5 and 6 below.

If the Applicant answers "Yes" to questions 1, 3 and 4, the Applicant should respond to questions 5 and 6 below.

5. **Does the proposed project meet the provisions of the zoning ordinance or does the proposed project have zoning approval?** If zoning approval has been received, attach documentation. ☐ Yes ☐ No

6. **Have you attached Municipal and County Land Use Letters for the project?** ☐ Yes ☐ No

COORDINATION INFORMATION

Note: The PA Historical and Museum Commission must be notified of proposed projects in accordance with DEP Technical Guidance Document 012-0700-001 at PHMC's online portal, PA-SHARE.

If the activity will be a mining project (i.e., mining of coal or industrial minerals, coal refuse disposal and/or the operation of a coal or industrial minerals preparation/processing facility), respond to questions 1.0 through 2.5 below.

If the activity will not be a mining project, skip questions 1.0 through 2.5 and begin with question 3.0.

1.0	**Is this a coal mining project?** If "Yes", respond to 1.1-1.6. If "No", skip to Question 2.0.	☐	Yes	☒	No
1.1	**Will this coal mining project involve coal preparation/ processing activities in which the total amount of coal prepared/processed will be equal to or greater than 200 tons/day?**	☐	Yes	☐	No
1.2	**Will this coal mining project involve coal preparation/ processing activities in which the total amount of coal prepared/processed will be greater than 50,000 tons/year?**	☐	Yes	☐	No
1.3	**Will this coal mining project involve coal preparation/ processing activities in which thermal coal dryers or pneumatic coal cleaners will be used?**	☐	Yes	☐	No
1.4	**For this coal mining project, will sewage treatment facilities be constructed and treated waste water discharged to surface waters?**	☐	Yes	☐	No
1.5	**Will this coal mining project involve the construction of a permanent impoundment meeting one or more of the following criteria: (1) a contributory drainage area exceeding 100 acres; (2) a depth of water measured by the upstream toe of the dam at maximum storage elevation exceeding 15 feet; (3) an impounding capacity at maximum storage elevation exceeding 50 acre-feet?**	☐	Yes	☐	No
1.6	**Will this coal mining project involve underground coal mining to be conducted within 500 feet of an oil or gas well?**	☐	Yes	☐	No
2.0	**Is this a non-coal (industrial minerals) mining project?** If "Yes", respond to 2.1-2.6. If "No", skip to Question 3.0.	☐	Yes	☒	No
2.1	**Will this non-coal (industrial minerals) mining project involve the crushing and screening of non-coal minerals other than sand and gravel?**	☐	Yes	☐	No
2.2	**Will this non-coal (industrial minerals) mining project involve the crushing and/or screening of sand and gravel with the exception of wet sand and gravel operations (screening only) and dry sand and gravel operations with a capacity of less than 150 tons/hour of unconsolidated materials?**	☐	Yes	☐	No
2.3	**Will this non-coal (industrial minerals) mining project involve the construction, operation and/or modification of a portable non-metallic (i.e., non-coal) minerals processing plant under the authority of the General Permit for Portable Non-metallic Mineral Processing Plants (i.e., BAQ-PGPA/GP-3)?**	☐	Yes	☐	No
2.4	**For this non-coal (industrial minerals) mining project, will sewage treatment facilities be constructed and treated waste water discharged to surface waters?**	☐	Yes	☐	No

2.5	**Will this non-coal (industrial minerals) mining project involve the construction of a permanent impoundment meeting one or more of the following criteria: (1) a contributory drainage area exceeding 100 acres; (2) a depth of water measured by the upstream toe of the dam at maximum storage elevation exceeding 15 feet; (3) an impounding capacity at maximum storage elevation exceeding 50 acre-feet?**	☐ Yes	☐ No
3.0	**Will your project, activity, or authorization have anything to do with a well related to oil or gas production, have construction within 200 feet of, affect an oil or gas well, involve the waste from such a well, or string power lines above an oil or gas well?** If "Yes", respond to 3.1-3.3. If "No", skip to Question 4.0.	☒ Yes	☐ No
3.1	**Does the oil- or gas-related project involve any of the following: placement of fill, excavation within or placement of a structure, located in, along, across or projecting into a watercourse, floodway or body of water (including wetlands)?**	☐ Yes	☒ No
3.2	**Will the oil- or gas-related project involve discharge of industrial wastewater or stormwater to a dry swale, surface water, ground water or an existing sanitary sewer system or storm water system?** If "Yes", discuss in *Project Description*.	☐ Yes	☐ No
3.3	**Will the oil- or gas-related project involve the construction and operation of industrial waste treatment facilities?**	☐ Yes	☒ No
4.0	**Will the project involve a construction activity that results in earth disturbance?** If "Yes", specify the total disturbed acreage.	☐ Yes	☒ No
	4.0.1 Total Disturbed Acreage		
	4.0.2 Will the project discharge or drain to a special protection water (EV or HQ) or an EV wetland?	☐ Yes	☐ No
	4.0.3 Will the project involve a construction activity that results in earth disturbance in the area of the earth disturbance that are contaminated at levels exceeding residential or non-residential medium-specific concentrations (MSCs) in 25 Pa. Code Chapter 250 at residential or non-residential construction sites, respectively?	☐ Yes	☐ No
5.0	**Does the project involve any of the following: water obstruction and/or encroachment, wetland impacts, or floodplain project by the Commonwealth/political subdivision or public utility?** If "Yes", respond to 5.1-5.7. If "No", skip to Question 6.0.	☐ Yes	☒ No
5.1	**Water Obstruction and Encroachment Projects – Does the project involve any of the following: placement of fill, excavation within or placement of a structure, located in, along, across or projecting into a watercourse, floodway or body of water?**	☐ Yes	☐ No
5.2	**Wetland Impacts – Does the project involve any of the following: placement of fill, excavation within or placement of a structure, located in, along, across or projecting into a wetland?**	☐ Yes	☐ No

5.3	**Floodplain Projects by the Commonwealth, a Political Subdivision of the Commonwealth or a Public Utility – Does the project involve any of the following: placement of fill, excavation within or placement of a structure, located in, along, across or projecting into a floodplain?**	☐ Yes	☐ No
5.4	**Is your project an interstate transmission natural gas pipeline?**	☐ Yes	☐ No
5.5	**Does your project consist of linear construction activities which result in earth disturbance in two or more DEP regions AND three or more counties?**	☐ Yes	☐ No
5.6	**Does your project utilize Floodplain Restoration as a best management practice for Post Construction Stormwater Management?**	☐ Yes	☐ No
5.7	**Does your project utilize Class V Gravity / Injection Wells as a best management practice for Post Construction Stormwater Management?**	☐ Yes	☐ No
6.0	**Will the project involve discharge of construction related stormwater to a dry swale, surface water, ground water or separate storm water system?**	☐ Yes	☒ No
6.1	**Will the project involve discharge of industrial waste stormwater or wastewater from an industrial activity or sewage to a dry swale, surface water, ground water or an existing sanitary sewer system or separate storm water system?**	☐ Yes	☐ No
7.0	**Will the project involve the construction and operation of industrial waste treatment facilities?**	☐ Yes	☒ No
8.0	**Will the project involve construction of sewage treatment facilities, sanitary sewers, or sewage pumping stations?** If "Yes", indicate estimated proposed flow (gal/day). Also, discuss the sanitary sewer pipe sizes and the number of pumping stations/treatment facilities/name of downstream sewage facilities in the *Project Description*, where applicable.	☐ Yes	☒ No
8.0.1	**Estimated Proposed Flow (gal/day)**		
9.0	**Will the project involve the subdivision of land, or the generation of 800 gpd or more of sewage on an existing parcel of land or the generation of an additional 400 gpd of sewage on an already-developed parcel, or the generation of 800 gpd or more of industrial wastewater that would be discharged to an existing sanitary sewer system?**	☐ Yes	☒ No
9.0.1	**Was Act 537 sewage facilities planning submitted and approved by DEP?** If "Yes" attach the approval letter. Approval required prior to 105/NPDES approval.	☐ Yes	☐ No
10.0	**Is this project for the beneficial use of biosolids for land application within Pennsylvania?** If "Yes" indicate how much (i.e. gallons or dry tons per year).	☐ Yes	☒ No
10.0.1	**Gallons Per Year (residential septage)**		
10.0.2	**Dry Tons Per Year (biosolids)**		

11.0 **Does the project involve construction, modification or removal of a dam?** If "Yes", identify the dam. ☐ Yes ☒ No

11.0.1 **Dam Name**

12.0 **Will the project interfere with the flow from, or otherwise impact, a dam?** If "Yes", identify the dam. ☐ Yes ☒ No

12.0.1 **Dam Name**

13.0 **Will the project involve operations (excluding during the construction period) that produce air emissions (i.e., NOX, VOC, etc.)?** ☒ Yes ☐ No

13.0.1 If "Yes", is the operation subject to the agricultural exemption in 35 P.S. § 4004.1? ☐ Yes ☒ No

13.0.2 If the answer to 13.0.1 is "No", identify each type of emission followed by the estimated amount of that emission.

Enter all types & amounts of emissions; separate each set with semicolons. Detailed emission estimates are attached

14.0 **Does the project include the construction or modification of a drinking water supply to serve 15 or more connections or 25 or more people, at least 60 days out of the year?** If "Yes," check all proposed sub-facilities. ☐ Yes ☒ No

14.0.1 **Number of Persons Served**

14.0.2 **Number of Employee/Guests**

14.0.3 **Number of Connections**

14.0.4 **Sub-Fac: Distribution System** ☐ Yes ☐ No

14.0.5 **Sub-Fac: Water Treatment Plant** ☐ Yes ☐ No

14.0.6 **Sub-Fac: Source** ☐ Yes ☐ No

14.0.7 **Sub-Fac: Pump Station** ☐ Yes ☐ No

14.0.8 **Sub-Fac: Transmission Main** ☐ Yes ☐ No

14.0.9 **Sub-Fac: Storage Facility** ☐ Yes ☐ No

15.0 **Will your project include infiltration of storm water or waste water to ground water within one-half mile of a public water supply well, spring or infiltration gallery?** ☐ Yes ☒ No

16.0 **Is your project to be served by an existing public water supply?** If "Yes", indicate name of supplier and attach letter from supplier stating that it will serve the project. ☐ Yes ☒ No

16.0.1 **Supplier's Name**

16.0.2 **Letter of Approval from Supplier is Attached** ☐ Yes ☐ No

17.0 **Will this project be served by on-lot drinking water wells?** ☐ Yes ☒ No

18.0 **Will this project involve a new or increased drinking water withdrawal from a river, stream, spring, lake, well or other water bod(ies)?** If "Yes," reference Safe Drinking Water Program. ☐ Yes ☒ No

18.0.1 **Source Name**

19.0	**Will the construction or operation of this project involve treatment, storage, reuse, or disposal of waste?** If "Yes," indicate what type (i.e., hazardous, municipal (including infectious & chemotherapeutic), residual) and the amount to be treated, stored, re-used or disposed. **19.0.1 Type & Amount**	☐ Yes	☒ No
20.0	**Will your project involve the removal of coal, minerals, contaminated media, or solid waste as part of any earth disturbance activities?**	☐ Yes	☒ No
21.0	**Does your project involve installation of a field constructed underground storage tank?** If "Yes," list each Substance & its Capacity. **Note:** Applicant may need a Storage Tank Site Specific Installation Permit. **21.0.1 Enter all substances & capacity of each; separate each set with semicolons.**	☐ Yes	☒ No
22.0	**Does your project involve installation of an aboveground storage tank greater than 21,000 gallons capacity at an existing facility?** If "Yes," list each Substance & its Capacity. **Note:** Applicant may need a Storage Tank Site Specific Installation Permit. **22.0.1 Enter all substances & capacity of each; separate each set with semicolons.**	☐ Yes	☒ No
23.0	**Does your project involve installation of a tank greater than 1,100 gallons which will contain a highly hazardous substance as defined in DEP's Regulated Substances List, 2570-BK-DEP2724?** If "Yes," list each Substance & its Capacity. **Note:** Applicant may need a Storage Tank Site Specific Installation Permit. **23.0.1 Enter all substances & capacity of each; separate each set with semicolons.**	☐ Yes	☒ No
24.0	**Does your project involve installation of a storage tank at a new facility with a total AST capacity greater than 21,000 gallons?** If "Yes", list each Substance & its Capacity. **Note:** Applicant may need a Storage Tank Site Specific Installation Permit. **24.0.1 Enter all substances & capacity of each; separate each set with semicolons.**	☐ Yes	☒ No
	NOTE: If the project includes the installation of a regulated storage tank system, including diesel emergency generator systems, the project may require the use of a Department Certified Tank Handler. For a full list of regulated storage tanks and substances, please go to www.dep.pa.gov search term storage tanks		
25.0	**Will the intended activity involve the use of a radiation source?**	☐ Yes	☒ No

CERTIFICATION

I certify that I have the authority to submit this application on behalf of the applicant named herein and that the information provided in this application is true and correct to the best of my knowledge and information.

For applicants supplying an EIN number: I am applying for a permit or authorization from the Pennsylvania Department of Environmental Protection (DEP). As part of this application, I will provide DEP with an accurate EIN number for the applicant entity. By filing this application with DEP, I hereby authorize DEP to confirm the accuracy of the EIN number provided with the Pennsylvania Department of Revenue. As applicant, I further consent to the Department of Revenue discussing the same with DEP prior to issuance of the Commonwealth permit or authorization.

Type or Print Name Robert W. Shough III

	Operations Director	1/3/2025
Signature	**Title**	**Date**

Section 5
Compliance Review Form

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

AIR POLLUTION CONTROL ACT COMPLIANCE REVIEW FORM

Fully and accurately provide the following information, as specified. Attach additional sheets as necessary.

Type of Compliance Review Form Submittal (check all that apply)

☐ Original Filing
☒ Amended Filing

Date of Last Compliance Review Form Filing:
2024

Type of Submittal

☐ New Plan Approval ☒ New Operating Permit ☐ Renewal of Operating Permit
☐ Extension of Plan Approval ☐ Change of Ownership ☐ Periodic Submission (@ 6 mos)
☐ Other: _____

SECTION A. GENERAL APPLICATION INFORMATION

Name of Applicant/Permittee/("applicant")
(non-corporations-attach documentation of legal name)
MarkWest Liberty Midstream and Resources, L.L.C.

Address 1515 Arapahoe Street, Tower 1, Suite 1600
Denver, CO. 80202-2137

Telephone (303) 925-9200 **Taxpayer ID#** 30-0528059

Permit, Plan Approval or Application ID#

Identify the form of management under which the applicant conducts its business (check appropriate box)

☐ Individual ☐ Syndicate ☐ Government Agency
☐ Municipality ☐ Municipal Authority ☐ Joint Venture
☐ Proprietorship ☐ Fictitious Name ☐ Association
☒ Public Corporation ☐ Partnership ☐ Other Type of Business, specify below:
☐ Private Corporation ☐ Limited Partnership

Describe below the type(s) of business activities performed.

MarkWest Liberty Midstream and Resources, L.L.C. is a natural gas gathering and processing company.

SECTION B. GENERAL INFORMATION REGARDING "APPLICANT"

If applicant is a corporation or a division or other unit of a corporation, provide the names, principal places of business, state of incorporation, and taxpayer ID numbers of all domestic and foreign parent corporations (including the ultimate parent corporation), and all domestic and foreign subsidiary corporations of the ultimate parent corporation with operations in Pennsylvania. Please include all corporate divisions or units, (whether incorporated or unincorporated) and privately held corporations. (A diagram of corporate relationships may be provided to illustrate corporate relationships.) Attach additional sheets as necessary.

Unit Name	Principal Places of Business	State of Incorporation	Taxpayer ID	Relationship to Applicant
MPLX LP	Various	Delaware	27-0005456	Parent
MarkWest Energy Partners, L.P.	Various	Delaware	37-1802743	Subsidiary of MPLX LP
MarkWest Energy Operating Company, L.L.C.	Various	Delaware	27-0005448	Subsidiary of MarkWest Energy Partners, L.P.
MarkWest Liberty Gas Gathering, L.L.C.	Pennsylvania	Delaware	26-2368254	Subsidiary of MarkWest Energy Operating Company, L.L.C.
MarkWest Liberty Midstream & Resources, L.L.C.	Pennsylvania, Ohio, West Virginia	Delaware	30-0528059	***Applicant*** Subsidiary of MarkWest Liberty Gas Gathering, L.L.C.
MarkWest Liberty Bluestone, L.L.C.	Pennsylvania	Delaware	45-5100747	Subsidiary of MarkWest Liberty Midstream & Resources, L.L.C.
MarkWest Liberty Ethane Pipeline, L.L.C.	Pennsylvania, Ohio, West Virginia	Delaware	46-1374029	Subsidiary of MarkWest Liberty Midstream & Resources, L.L.C.
MarkWest Bluestone Ethane Pipeline, L.L.C.	Pennsylvania	Delaware	46-4866522	Subsidiary of MarkWest Liberty Midstream & Resources, L.L.C.
MarkWest Liberty NGL Pipeline, L.L.C.	Pennsylvania, Ohio, West Virginia	Delaware	82-1883261	Subsidiary of MarkWest Liberty Midstream & Resources, L.L.C.
MarkWest Mariner Pipeline, L.L.C.	Pennsylvania	Delaware	45-5147892	Subsidiary of MarkWest Liberty Midstream & Resources, L.L.C.

SECTION C. SPECIFIC INFORMATION REGARDING APPLICANT AND ITS "RELATED PARTIES"

Pennsylvania Facilities. List the name and location (mailing address, municipality, county), telephone number, and relationship to applicant (parent, subsidiary or general partner) of applicant and all Related Parties' places of business, and facilities in Pennsylvania. Attach additional sheets as necessary.

Unit Name	Street Address	County and Municipality	Telephone No.	Relationship to Applicant
Baker CS	151 Baker Station Road	Washington County / Amwell Township	(303) 925-9200	Applicant
Brigich CS	340 Brigich Road	Washington County / Chartiers Township	(303) 925-9200	Applicant
Carpenter CS	265 Old National Pike	Washington County / Donegal Township	(303) 925-9200	Applicant
Down Homes CS	2037 Sunnyhill Road	Washington County / Robinson Township	(303) 925-9200	Applicant
Dryer CS	819 Scenic Drive	Washington County / Independence Township	(303) 925-9200	Applicant
Fulton CS	103 Washington Avenue	Washington County / Mt. Pleasant Township	(303) 925-9200	Applicant
Godwin CS	2158 Henderson Avenue	Washington County / Canton Township	(303) 925-9200	Applicant
Harmon Creek Gas Plant	123 Point Pleasant Road	Washington County / Smith Township	(303) 925-9200	Applicant
Hoskins CS	4026 Buffalo Creek Road	Washington County / Blaine Township	(303) 925-9200	Applicant
Houston Gas Plant	800 Western Avenue	Washington County / Chartiers Township	(303) 925-9200	Applicant
Imperial-Cibus Ranch CS	2213 Quiksilver Road 2199 Quiksilver Road	Washington County / Robinson Township	(303) 925-9200	Applicant
Johnston CS	210 Johnston Hill Road	Washington County / Chartiers Township	(303) 925-9200	Applicant
Lowry CS	100 Oakleaf Road	Washington County / Hopewell Township	(303) 925-9200	Applicant
McMichael CS	1982 Hookstown Grade Road	Washington County / Independence Township	(303) 925-9200	Applicant
Redd CS	576 Redd Run Road	Washington County / Amwell Township	(303) 925-9200	Applicant
Shaw CS	492 Arden Mine Road	Washington County / Chartiers Township	(303) 925-9200	Applicant
Smith CS	320 Point Pleasant Road	Washington County / Smith Township	(303) 925-9200	Applicant
Stewart CS	185 Avella Road	Washington County / Mt. Pleasant Township	(303) 925-9200	Applicant
Three Brothers CS	858 Atlasburg Road	Washington County / Smith Township	(303) 925-9200	Applicant
Timberlake CS	305 Timberlake Road	Washington County / Buffalo Township	(303) 925-9200	Applicant
Tupta Day CS	200 Johnson Road	Washington County / Amwell Township	(303) 925-9200	Applicant
Welling CS	165 Carlisle Road	Washington County / Buffalo Township	(303) 925-9200	Applicant
Huntington Farms L/R Site	588 Lynn Portal Road	Washington County / Canton Township	(303) 925-9200	Applicant
Loffert (Joe Cain) L/R Site	296 Joe Cain Road	Washington County / Smith Township	(303) 925-9200	Applicant
Post Road L/R Site	186 Post Road	Washington County / Blaine Township	(303) 925-9200	Applicant
Smith Tee L/R Site	471 Hickory Nut Road	Washington County / Independence Township	(303) 925-9200	Applicant
Wilhelm L/R Site	156 Wilhelm Road	Washington County / Donegal Township	(303) 925-9200	Applicant

Sarsen Gas Plant	774 Prospect Road	Butler County / Forward Township	(303) 925-9200	Subsidiary
Voll CS	318 Woodlands Road	Butler County / Connoquenessing Township	(303) 925-9200	Subsidiary
Trillith CS	222 E Lancaster Road	Butler County / Lancaster Township	(303) 925-9200	Subsidiary
Royal Oak CS	961 Brownsdale Road	Butler County / Forward Township	(303) 925-9200	Subsidiary
Bluestone Gas Plant	440 Hartmann Road	Butler County / Jackson Township	(303) 925-9200	Subsidiary

Provide the names and business addresses of all general partners of the applicant and parent and subsidiary corporations, if any.

Name	Business Address
MPLX, LP	200 E. Hardin Street, Findlay, OH 45840
MarkWest Energy Partners, L.P.	1515 Arapahoe St, Tower 1, Suite 1600, Denver, CO 80202
MarkWest Energy Operating Company, L.L.C.	1515 Arapahoe St, Tower 1, Suite 1600, Denver, CO 80202
MarkWest Liberty Gas Gathering, L.L.C.	800 Western Avenue, Washington, PA 15301
MarkWest Liberty Midstream & Resources, L.L.C.	1515 Arapahoe St, Tower 1, Suite 1600, Denver, CO 80202
MarkWest Liberty Bluestone, L.L.C.	1515 Arapahoe St, Tower 1, Suite 1600, Denver, CO 80202
MarkWest Liberty Ethane Pipeline, L.L.C.	1515 Arapahoe St, Tower 1, Suite 1600, Denver, CO 80202
MarkWest Liberty Bluestone Ethane Pipeline, L.L.C.	1515 Arapahoe St, Tower 1, Suite 1600, Denver, CO 80202
MarkWest Liberty NGL Pipeline, L.L.C.	1515 Arapahoe St, Tower 1, Suite 1600, Denver, CO 80202
MarkWest Mariner Pipeline, L.L.C.	1515 Arapahoe St, Tower 1, Suite 1600, Denver, CO 80202

List the names and business address of persons with overall management responsibility for the process being permitted (i.e. plant manager).

Name	Business Address
Robert W. Shough III, Operations Director, G&P East	4600 J. Barry Ct., Canonsburg, PA. 15317
Harold Rinehart, VP Operations Processing	4600 J. Barry Ct., Canonsburg, PA. 15317
Jonathan C. Jackson, VP Eastern Region G&P	1515 Arapahoe St, Tower 1, Suite 1600, Denver, CO. 80016
Gregory S. Floerke, EVP & COO MPLX	1515 Arapahoe St, Tower 1, Suite 1600, Denver, CO. 80016

Plan Approvals or Operating Permits. List all plan approvals or operating permits issued by the Department or an approved local air pollution control agency under the APCA to the applicant or related parties that are currently in effect or have been in effect at any time 5 years prior to the date on which this form is notarized. This list shall include the plan approval and operating permit numbers, locations, issuance and expiration dates. Attach additional sheets as necessary.

Air Contamination Source	Plan Approval/ Operating Permit#	Location	Issuance Date	Expiration Date
Houston Gas Plant	PA-63-00936F	800 Western Ave	10/4/2012	4/2019 (Renewal Submitted 10/25/2018) (Plan Approval Submitted 4/27/2021)
Baker CS	GP5-63-00960E/AG5-63-00013A & GP9-63-00960B	151 Baker Station Road	6/28/2021	6/28/2026
Brigich CS	GP5-63-00954C	340 Brigich Road	5/11/2022	5/11/2027
Carpenter CS	GP5-63-00987A	265 Old National Pike	11/30/2022	11/30/2027
Down Homes CS	GP5-63-1009A	2037 Sunnyhill Road	5/16/2017	5/16/2022
Dryer CS	SOOP-63-00942	819 Scenic Drive	10/13/2020	10/13/2025
Fulton CS	SOOP-63-00937	103 Washington Ave	10/13/2020	10/13/2025
Godwin CS	SOOP-63-00934	2158 Henderson Ave	7/29/2021	7/29/2026
Harmon Creek Gas Plant	GP5-63-01011B PA-63-01011	123 Point Pleasant Rd	6/29/2022 4/12/2023	6/29/2027 3/28/2024
Hoskins CS	GP5-63-00938B	4026 Buffalo Creek Road	6/28/2022	6/28/2027
Imperial-Cibus Ranch CS	GP5-63-00992A	2213 Quiksilver Rd. 2199 Quiksilver Rd.	3/22/2022	3/22/2027
Johnston CS	SOOP-63-00933	210 Johnston Hill Road	3/22/2022	3/22/2027
Lowry CS	GP5-63-00947B	100 Oakleaf Rd	9/20/2022	9/20/2027
McMichael CS	GP5-04-00747	198Z Hookstown Grade Rd.	12/14/2023	12/14/2028
Redd CS	GP5-63-00962	576 Redd Run Rd.	7/2/2021	7/2/2026
Shaw CS	GP5-63-00940C	492 Arden Mine Rd	7/26/2022	7/26/2027
Smith CS	SOOP-63-00962	320 Point Pleasant Rd	12/2/2019	12/2/2024
Stewart CS	SOOP-63-00939	185 Avella Road	7/6/2021	7/6/2026
Timberlake CS	GP5-63-01064/ AG5-63-00022A	305 Timberlake Road	7/30/2022	7/30/2027
Three Brothers CS	GP5-63-00969 & Plan Approval 63-00969A	858 Atlasburg Road	3/18/2019	3/18/2024 (Renewal Submitted 9/14/2023)
Tupta Day CS	GP5-63-00948E	200 Johnson Rd	1/10/2022	1/10/2027
Welling CS	GP5-00958A	165 Carlisle Rd	8/2/2022	8/2/2027
Huntington Farms L/R Site	SOOP-63-01050	588 Lynn Portal Road	1/4/2022	1/4/2027
Loffert (Joe Cain) L/R Site	SOOP-63-01046	296 Joe Cain Road	12/9/2021	12/9/2026
Post Road L/R Site	SOOP-63-01048	186 Post Road	3/14/2022	3/14/2027
Smith Tee L/R Site	SOOP-63-01049	471 Hickory Nut Road	2/8/2022	2/8/2027

Huntington Farms L/R Site	SOOP-63-01047	156 Wilhelm Road	12/21/2021	12/21/2026
Sarsen Gas Plant	SOOP 10-00359	774 Prospect Rd.	12/03/2013	1/31/2024 (Renewal Submitted 7/28/2023)
Voll CS	SOOP-10-00367	318 Woodlands Rd. Evans City, PA	9/9/2020	8/31/2025
Trillith CS	GP5-10-370F	Southeast of intersection of Highway 79 an E Lancaster Rd	12/26/2018	11/30/2023
Royal Oak CS	SOOP 10-00390	961 Brownsdale Rd	12/16/2019	11/30/2024
Bluestone Gas Plant	TV-10-00368	440 Hartmann Rd.	2/20/2020	1/31/2025

Compliance Background. (Note: Copies of specific documents, if applicable, must be made available to the Department upon its request.) List all documented conduct of violations or enforcement actions identified by the Department pursuant to the APCA, regulations, terms and conditions of an operating permit or plan approval or order by applicant or any related party, using the following format grouped by source and location in reverse chronological order. Attach additional sheets as necessary. See the definition of "documented conduct" for further clarification. Unless specifically directed by the Department, deviations which have been previously reported to the Department in writing, relating to monitoring and reporting, need not be reported.

Date	Location	Plan Approval/ Operating Permit#	Nature of Documented Conduct	Type of Department Action	Status: Litigation Existing/Continuing or Corrected/Date	Dollar Amount Penalty
11/14/2021	Houston	63-00936F	Failure to Operate and maintain a source or control device in accordance with the specifications	Notice of Violation	Corrected/Abated 1/14/2022 Penalty Paid: 12/16/2022	$7,832
2/6/2021	Houston	63-00936F	Visible emissions event	Notice of Violation	Corrected/Abated 2/16/2021	N/A
				Consent Assessment of Civil Penalty	Penalty Final Date: 10/6/2021	$5,200
11/23/2020	Houston	63-00936F	Visible emissions event	Notice of Violation	Corrected/Abated 11/23/2020	N/A
				Consent Assessment of Civil Penalty	Penalty Final Date: 10/6/2021	$5,200
7/9/2018	Houston	63-00936F	Powers and duties or DEP	Consent Decree	See Consent Decrees in Section Below	N/A
4/29/2021 4/23/2021 3/8/2021 1/25/2021	Harmon Creek	63-01011B	Failure to prevent visible emissions into the atmosphere	Notice of Violation	Corrected/Abated 4/23/2021	N/A
				Consent Assessment of Civil Penalty	Penalty Final Date: 10/5/2022	$5,400
9/6/2021	Down Homes CS Shaw CS Stewart CS	63-01009B 63-00940 63-00939	LDAR deviations	Notice of Violation	Corrected/Abated 3/22/2021	N/A
				Consent Assessment of Civil Penalty	Penalty Final Date: 10/6/2021	$19,500
10/2/2019	Smith CS Three Brothers CS	63-00968 63-00969	Failure to perform fractional analysis at inlet	Notice of Violation	Corrected/Abated 10/2/2019	N/A
				Consent Assessment of Civil Penalty	4/29/2020	$14,600
1/18/2019	Bluestone Gas Plant	10-00368	Powers and duties or DEP	Consent Decree	See Consent Decrees in Section Below	N/A
1/17/2019	Royal Oak CS Sarsen Gas Plant Bluestone Gas Plant	10-00390 10-00359 10-00368	Failure to submit operating permit fees	Notice of Violation	Corrected	N/A

List all incidents of deviations of the APCA, regulations, terms and conditions of an operating permit or plan approval or order by applicant or any related party, using the following format grouped by source and location in reverse chronological order. This list must include items both currently known and unknown to the Department. Attach additional sheets as necessary. See the definition of "deviations" for further clarification.

Date	Location	Plan Approval/ Operating Permit#	Nature of Deviation	Incident Status: Litigation Existing/Continuing Or Corrected/Date
July 6, 2015	Various	--	Pig Launcher/Receiver Permitting	Signed Consent Decree with USEPA and PADEP. 7/19/2018
2016	Houston Plant and Other Gas Plants	PA-63-00936F	LDAR	Signed Consent Decree with USEPA and PADEP. 1/9/2019
March 23, 2017	Sarsen Gas Processing Plant	SOOP 10-00359	NSPS Subpart KKK	Signed Consent Decree with USEPA. 3/26/2017
August 28, 2020	Sarsen Gas Processing Plant	SOOP 10-00359	NSPS Subpart OOOO LDAR	Signed Consent Agreement and Final Order with USEPA. Filed 8/28/2020.

CONTINUING OBLIGATION. Applicant is under a continuing obligation to update this form using the Compliance Review Supplemental Form if any additional deviations occur between the date of submission and Department action on the application.

VERIFICATION STATEMENT
Subject to the penalties of Title 18 Pa.C.S. Section 4904 and 35 P.S. Section 4009(b)(2), I verify under penalty of law that I am authorized to make this verification on behalf of the Applicant/Permittee. I further verify that the information contained in this Compliance Review Form is true and complete to the best of my belief formed after reasonable inquiry. I further verify that reasonable procedures are in place to ensure that "documented conduct" and "deviations" as defined in 25 Pa Code Section 121.1 are identified and included in the information set forth in this Compliance Review Form.
Signature — Date: 1/3/2025
Robert W. Shough III
Name (Print or Type)
Operations Director
Title

Section 6
SOOP Application

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

FOR OFFICIAL USE ONLY

OP #: _____

Date: _____

STATE-ONLY OPERATING PERMIT APPLICATION

Section 1 – General Information

1.1 Application Type

Type of permit for which application is made: (Check one)

☒ Initial Plan Approval No. 63-01011

☐ Renewal/Modification Operating Permit No.

1.2 Facility Information

Firm Name: MarkWest Liberty Midstream & Resources, L.L.C.

Federal Tax ID: 30-0528059

Facility Name: Harmon Creek Gas Processing Plant

Plant Code:

NAICS Code: 211130

SIC Code: 1311

Description of NAICS Code: Natural Gas Extraction

Description of SIC Code: Crude Petroleum & Natural Gas

County: Washington

Municipality: Smith Township

Latitude: 40° 24’ 04” N

Longitude: 80° 21’ 26” W

Horizontal Reference Datum: WGS 1984

Horizontal Collection Method:

Reference Point:

1.3 Permit Contact Information

Name: Nathan Wheldon

Title: Environmental Manager

Address: 1515 Arapahoe Street

City: Denver

State: CO

ZIP: 80202

Telephone: (970) 631-6127

Email: nmwheldon@marathonpetroleum.com

1.4 Small Business Question

Are you a small business as defined by the Pennsylvania Air Pollution Control Act? ☐ Yes ☒ No

Are you a small business as defined by the U.S. Small Business Administration? ☐ Yes ☒ No

1.5 Request for Confidentiality

Do you request any information on this application to be treated as "Confidential"? ☐ Yes ☒ No

Place confidential information on separate page(s) marked "Confidential".

In order to request confidential treatment for information in any document, you must submit a redacted version of the relevant document with the confidential information blacked out (and thus suitable for public disclosure), along with a letter of request containing a table identifying the page and line number of each redaction, along with a justification for each redacted item as to why it should be deemed confidential under the specific criteria allowed under 25 Pa. Code § 127.12(d) and Section 13.2 of the APCA.

1.6 Certification of Truth, Accuracy and Completeness by a Responsible Official

I certify that, subject to the penalties of Title 18 Pa. C.S.A. Section 4904 and 35 P.S. Section 4009(b)(2), I am the responsible official having primary responsibility for the design and operation of the facilities to which this application applies and that the information provided in this application is true, accurate, and complete to the best of my knowledge, information, and belief formed after reasonable inquiry.

(Signed) _____ Date: 1/3/2025

Name (Typed): Robert W. Shough III Title: Operations Director

Telephone: (724) 998-6644

Email: RWShough@marathonpetroleum.com

Section 2 – Site Information

2.1 Potential Emission Estimates for the Site

Provide the estimated potential emission for the site BEFORE and AFTER utilizing the proposed restriction(s) and/or limitation(s).

Pollutant or CAS No.	Potential Emission BEFORE taking Limitations (TPY)	Potential Emission AFTER taking Limitations (TPY)
NOx	28.77	28.77
CO	49.73	49.73
VOC	40.16	40.16
SO2	0.46	0.46
PM	5.66	5.66
Benzene	0.02	0.02
Ethylbenzene	0.02	0.02
Toluene	0.04	0.04
Xylenes	0.01	0.01
n-Hexane	1.25	1.25
Formaldehyde	0.05	0.05
Total HAPs	2.12	2.12

*** Provide all supporting calculation methods as an attachment.**

2.2 Facility Type

Is this facility a Synthetic Minor Facility? ☐ Yes ☒ No

IMPORTANT: Note that all Synthetic Minor Facilities must be able to meet the proposed restriction(s) and/or limitation(s) immediately upon the submission of this application. By signing the Certification of Compliance in Section 13 of this application, the facility for which a Synthetic Minor Status is proposed will be deemed a Synthetic Minor Facility according to the restriction(s) and/or limitation(s) proposed upon receipt of the application by the DEP, unless the DEP determines that the facility is unable to meet the Synthetic Minor requirements at a later date.

2.3 Synthetic Minor Facility Information (to be completed by all facilities seeking Synthetic Minor Status)

Synthetic Minor Status for this facility can be taken at the: Source Level ☐ AND/OR Site Level ☐

If limitation(s) and/or restriction(s) can be taken at the site level (for all sources within this facility), complete the following questions, otherwise please go on to Section 3, "Site Inventory".

Synthetic Minor Status for the Entire Site is achievable through the following restrictions: (Please check all that apply and describe in detail what is/are proposed):

☐	Hours of Operation:	
☐	Production/Throughput Rate:	
☐	Type of Fuel:	
☐	Fuel Usage:	
☐	Control Devices:	
☐	Emissions Limitations:	
☐	Other:	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor

2.4 Compliance Method for the Site

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 2.3.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s) listed in Section 2.3:

b. Describe what is to be reported in the compliance report:

c. Reporting start date:

d. Indicate the frequency for submitting compliance report as explained above:

Section 3 – Site Inventory

3.1 Provide a complete list of all air pollution sources, control equipment, emission points, and fuel material locations within this site.

If preprinted information is provided, correct and/or add any new sources as necessary. Note: One (1) of the following sections (5, 6 or 7) of the application must be completed for each new source listed here.

Unit ID/ Source ID	Unit Name	Unit Type
	Plant Sources	
31	10.25 MMBTU/HR CRYO PLANT 1 REGEN HEATER	Combustion Unit
33	41.22 MMBTU/HR DE-ETHANIZER HMO HEATER 1	Combustion Unit
34	41.22 MMBTU/HR DE-ETHANIZER HMO HEATER 2	Combustion Unit
35	5.79 MMBTU/HR DE-ETHANIZER REGEN HEATER	Combustion Unit
36	10.37 MMBTU/HR STABILIZATION HMO HEATER	Combustion Unit
37	17.84 MMBTU/HR CRYO PLANT 2 REGEN HEATER	Combustion Unit
101	ELECTRIC DRIVEN COMPRESSORS	Process
102	EMERGENCY DIESEL-FIRED GENERATORS	Process
103	3 ELECTRIC DRIVEN COMPRESSORS WITH ROD-PACKING	Process
301	TANKS/VESSELS	Process
302	500 GALLON METHANOL TANK	Process
601	VENTING/BLOWDOWNS	Process
701	FUGITIVES	Process
702	TRUCK LOADOUT	Process
703	MEASUREMENT DEVICES	Process
801	PIGGING	Process
	Control Devices	
C037	CRYO PLANT 2 REGEN HEATER FGR	Control
C601	PLANT FLARE	Control
	Fuel Material Location	
FML01	Natural Gas	fuel

3.2 Provide a narrative description of the facility's operation. The project narrative should include a description of the basic operational activities this facility is engaged in. The narrative should describe how these activities generate air emissions and how they are controlled. Attach the narrative if more space is needed.

See Process Flow Narrative attached

3.3 Attach flow diagram of processes giving all (gaseous, liquid and solid) flow rates. Also, list all raw materials charged to process equipment, and the amounts charged (tons/hour, etc.) at rated capacity (give maximum, minimum and average charges describing fully expected variations in production rates). Indicate (on diagram) all points where contaminants are controlled (location of water sprays, collection hoods, or other pickup points, etc.) Describe collection hoods location, design, airflow and capture efficiency. Describe any restriction requested and how it will be monitored. Indicate all fugitive emission points and any by-pass stack.

See Process Flow Diagram attached.

3.4 Provide a listing of all changes in chronological order (additions and subtractions) made at a facility since the last submittal and attach it to this application. For example:

- March 2016 - Added shot blast booth 5, exempted by the attached Request for Determination.
- Dec 2017 - Installed new paint line in accordance with Plan Approval XX-XXXXX
- Etc.

NA

3.5 For renewals, please review the current operating permit. If you are proposing any changes to the conditions of the existing permit, please provide the condition number, the requested change, and justification for the requested change.

NA

Section 4 – Source Group (optional)

4.1 Source Group Definition

Define groups of sources that are subject to one or more applicable requirements that apply to all sources in the group.

Group No.	Source ID (for sources in this group)
Group #1 Heaters	031, 033-037
Group #2 Rod Packing	601
Group #3 Dry Seal Vents	602
Group #4 Fugitives	701

4.2 Applicable Requirements for Source Groups – *See Addendum 1 and Regulatory Review*

Describe and cite all applicable requirements pertaining to all source groups.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Group No.	Citation No.	Citation Limitation	Limitation Used

Section 5 – Combustion Operational Inventory

(Complete this section for each combustion source in this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new combustion unit listed in Section 3 of this application.

5.1 General Source Information

a. Source ID: 031 b. Source Name: H-1711

c. Plan Approval or Operating Permit Number: AG5-63-00011A

d. Manufacturer: Tulsa Heaters e. Model Number: MJ17-257

f. Source Description: Cryo I Regen Heater

g. Rated Heat Input/Throughput: 11.84 h. Installation Date: 2018

i. Exhaust Temperature:	Units:	j. Exhaust % Moisture:	k. Exhaust Flow Volume:	
426	deg F	Approx. 11	Approx. 5702	ACFM

5.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit ID	Unit ID Description	To Unit ID	Unit ID Description	Percent Flow
031	Combustion Unit	S031	Stack	100

5.3 Source Classification Code (SCC) Listing for Standard Operation

Fuel/Material	Associated SCC	Max. Throughput Rate	Firing Sequence
Natural Gas		11.84 mmbtu/hr	

5.4 Maximum Fuel Physical Characteristics

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfur	% Ash	BTU Content (Units)
Natural Gas	FML01	Negligible	Negligible	Approx. 1,153 Btu/scf (HHV)

*FML = Fuel Material Location

5.5 Limitations on Source Operation

Maximum number of hours of source operation per year: _____

☐	Hours of Operation:	
☐	Production/Throughput Rate:	
☐	Type of Fuel:	
☐	Fuel Usage:	
☐	Control Devices:	
☐	Emissions Limitations:	
☐	Other:	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?

5.6 Compliance Method for this source

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 5.5.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

5.7 Source Potential to Emit – *See Detailed Emission Estimates Attached*

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or proposed in Section 5.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

5.8 Source Applicable Requirements – *See Addendum 1*

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Fuel/SCC	Citation Number	Limitation associated with the citation	Limitation Used

Section 5 – Combustion Operational Inventory

(Complete this section for each combustion source in this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new combustion unit listed in Section 3 of this application.

5.1 General Source Information

a. Source ID: 037 b. Source Name: H-2711

c. Plan Approval or Operating Permit Number: PA-63-01011

d. Manufacturer: Tulsa Heaters e. Model Number: MJ17-300

f. Source Description: Cryo 2 Regen Heater

g. Rated Heat Input/Throughput: 17.84 MMBtu/hr h. Installation Date: 2023

i. Exhaust Temperature:	Units:	j. Exhaust % Moisture:	k. Exhaust Flow Volume:	
461	deg F	NA	Approx. 15,796	ACFM

5.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit ID	Unit ID Description	To Unit ID	Unit ID Description	Percent Flow
037	Combustion Unit	C037	FGR	100

5.3 Source Classification Code (SCC) Listing for Standard Operation

Fuel/Material	Associated SCC	Max. Throughput Rate	Firing Sequence
Natural Gas		17.84 mmbtu/hr	

5.4 Maximum Fuel Physical Characteristics

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfur	% Ash	BTU Content (Units)
Natural Gas	FML01	Negligible	Negligible	Approx. 1,153 Btu/scf (HHV)

*FML = Fuel Material Location

5.5 Limitations on Source Operation

Maximum number of hours of source operation per year: _____

☐	Hours of Operation:	
☐	Production/Throughput Rate:	
☐	Type of Fuel:	
☐	Fuel Usage:	
☐	Control Devices:	
☐	Emissions Limitations:	
☐	Other:	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?

5.6 Compliance Method for this source

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 5.5.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

5.7 Source Potential to Emit – *See Detailed Emission Estimates Attached*

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or proposed in Section 5.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

5.8 Source Applicable Requirements – *See Addendum 1*

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Fuel/SCC	Citation Number	Limitation associated with the citation	Limitation Used

Section 5 – Combustion Operational Inventory

(Complete this section for each combustion source in this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new combustion unit listed in Section 3 of this application.

5.1 General Source Information

a. Source ID: 033 and 034 b. Source Name: H-1767 and H-1768

c. Plan Approval or Operating Permit Number: AG5-63-00011A

d. Manufacturer: Scelerin Heater e. Model Number: HP17-843.B

f. Source Description: DeEthanizer HMO Heaters

g. Rated Heat Input/Throughput: 48.15 h. Installation Date: 2018

i. Exhaust Temperature:	Units:	j. Exhaust % Moisture:	k. Exhaust Flow Volume:	
511	deg F	Approx. 11	Approx. 20,819	ACFM

5.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit ID	Unit ID Description	To Unit ID	Unit ID Description	Percent Flow
033-034	Combustion Unit	S033-S034	Stack	100

5.3 Source Classification Code (SCC) Listing for Standard Operation

Fuel/Material	Associated SCC	Max. Throughput Rate	Firing Sequence
Natural Gas		48.15 mmbtu/hr	

5.4 Maximum Fuel Physical Characteristics

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfur	% Ash	BTU Content (Units)
Natural Gas	FML01	Negligible	Negligible	Approx. 1,153 Btu/scf (HHV)

*FML = Fuel Material Location

5.5 Limitations on Source Operation

Maximum number of hours of source operation per year: _____

☐	Hours of Operation:	
☐	Production/Throughput Rate:	
☐	Type of Fuel:	
☐	Fuel Usage:	
☐	Control Devices:	
☐	Emissions Limitations:	
☐	Other:	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?

5.6 Compliance Method for this source

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 5.5.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

5.7 Source Potential to Emit – *See Detailed Emission Estimates Attached*

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or proposed in Section 5.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

5.8 Source Applicable Requirements – *See Addendum 1*

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Fuel/SCC	Citation Number	Limitation associated with the citation	Limitation Used

Section 5 – Combustion Operational Inventory

(Complete this section for each combustion source in this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new combustion unit listed in Section 3 of this application.

5.1 General Source Information

a. Source ID: 035 b. Source Name: H-1775

c. Plan Approval or Operating Permit Number: AG5-63-00011A

d. Manufacturer: Tulsa Heaters e. Model Number: P17-0422

f. Source Description: DeEthanizer Regen Heater

g. Rated Heat Input/Throughput: 6.60 h. Installation Date: 2018

i. Exhaust Temperature:	Units:	j. Exhaust % Moisture:	k. Exhaust Flow Volume:	
437	deg F	Approx. 11	Approx. 3,259	ACFM

5.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit ID	Unit ID Description	To Unit ID	Unit ID Description	Percent Flow
035	Combustion Unit	S035	Stack	100

5.3 Source Classification Code (SCC) Listing for Standard Operation

Fuel/Material	Associated SCC	Max. Throughput Rate	Firing Sequence
Natural Gas		6.60 mmbtu/hr	

5.4 Maximum Fuel Physical Characteristics

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfur	% Ash	BTU Content (Units)
Natural Gas	FML01	Negligible	Negligible	Approx. 1,153 Btu/scf (HHV)

*FML = Fuel Material Location

5.5 Limitations on Source Operation

Maximum number of hours of source operation per year: _____

☐	Hours of Operation:	
☐	Production/Throughput Rate:	
☐	Type of Fuel:	
☐	Fuel Usage:	
☐	Control Devices:	
☐	Emissions Limitations:	
☐	Other:	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?

5.6 Compliance Method for this source

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 5.5.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

5.7 Source Potential to Emit – *See Detailed Emission Estimates Attached*

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or proposed in Section 5.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

5.8 Source Applicable Requirements – *See Addendum 1*

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Fuel/SCC	Citation Number	Limitation associated with the citation	Limitation Used

Section 5 – Combustion Operational Inventory

(Complete this section for each combustion source in this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new combustion unit listed in Section 3 of this application.

5.1 General Source Information

a. Source ID: 036 b. Source Name: H-1769

c. Plan Approval or Operating Permit Number: AG5-63-00011A

d. Manufacturer: Tulsa Heaters e. Model Number: P17-0423

f. Source Description: Stabilization HMO Heater

g. Rated Heat Input/Throughput: 11.99 h. Installation Date: 2017

i. Exhaust Temperature:	Units:	j. Exhaust % Moisture:	k. Exhaust Flow Volume:	
373	deg F	Approx. 11	Approx. 5,433	ACFM

5.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit ID	Unit ID Description	To Unit ID	Unit ID Description	Percent Flow
036	Combustion Unit	S036	Stack	100

5.3 Source Classification Code (SCC) Listing for Standard Operation

Fuel/Material	Associated SCC	Max. Throughput Rate	Firing Sequence
Natural Gas		11.99 mmbtu/hr	

5.4 Maximum Fuel Physical Characteristics

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfur	% Ash	BTU Content (Units)
Natural Gas	FML01	Negligible	Negligible	Approx. 1,153 Btu/scf (HHV)

*FML = Fuel Material Location

5.5 Limitations on Source Operation

Maximum number of hours of source operation per year: _____

☐	Hours of Operation:	
☐	Production/Throughput Rate:	
☐	Type of Fuel:	
☐	Fuel Usage:	
☐	Control Devices:	
☐	Emissions Limitations:	
☐	Other:	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?

5.6 Compliance Method for this source

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 5.5.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

5.7 Source Potential to Emit – *See Detailed Emission Estimates Attached*

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or proposed in Section 5.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

5.8 Source Applicable Requirements – *See Addendum 1*

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Fuel/SCC	Citation Number	Limitation associated with the citation	Limitation Used

Section 5 – Combustion Operational Inventory

(Complete this section for each combustion source in this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new combustion unit listed in Section 3 of this application.

5.1 General Source Information

a. Source ID: 102 b. Source Name: G-1 and G-2

c. Plan Approval or Operating Permit Number: Exempt

d. Manufacturer: Generac e. Model Number: SD015 and 4BT3.3-G5

f. Source Description: Control Room Emergency Generators

g. Rated Heat Input/Throughput: 49 and 279 bhp h. Installation Date: 2019

i. Exhaust Temperature:	Units:	j. Exhaust % Moisture:	k. Exhaust Flow Volume:
NA		NA	NA ACFM

5.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit ID	Unit ID Description	To Unit ID	Unit ID Description	Percent Flow
G-1 (102)	Combustion Unit	S102	Stack	100
G-2 (102)	Combustion Unit	S102	Stack	100

5.3 Source Classification Code (SCC) Listing for Standard Operation

Fuel/Material	Associated SCC	Max. Throughput Rate	Firing Sequence
Diesel		13.5 gal/hr	

5.4 Maximum Fuel Physical Characteristics

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfur	% Ash	BTU Content (Units)
Diesel	FML02	Negligible	Negligible	137,380 Btu/gal (HHV)

*FML = Fuel Material Location

5.5 Limitations on Source Operation		
Maximum number of hours of source operation per year: _____		
☐	Hours of Operation:	
☐	Production/Throughput Rate:	
☐	Type of Fuel:	
☐	Fuel Usage:	
☐	Control Devices:	
☐	Emissions Limitations:	
☐	Other:	
Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?		

5.6 Compliance Method for this source

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 5.5.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

5.7 Source Potential to Emit – *See Detailed Emission Estimates Attached*

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or proposed in Section 5.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

5.8 Source Applicable Requirements – *Not Applicable for Exempt Sources*

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Fuel/SCC	Citation Number	Limitation associated with the citation	Limitation Used

Section 6 – Incinerator Operational Inventory – *Not Applicable*

(Complete this section for each incinerator at this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new incinerator listed in Section 3 of this application.

6.1 General Source Information

a. Source ID: _____ b. Source Name: _____

c. Plan Approval or Operating Permit Number: _____

d. Manufacturer: _____ e. Model Number: _____

f. Source Description: _____

g. Rated Heat Input/Throughput: _____ h. Installation Date: _____

i. Exhaust Temperature: _____ Units: _____ j. Exhaust % Moisture: _____ k. Exhaust Flow Volume: _____ SCFM

l. Capacity: _____ Lbs/Hr m. Primary Burner Heat Input: _____ Units: _____

n. Exhaust % CO_2: _____ o. Secondary Burner Heat Input: _____ Units: _____

p. Incinerator Class: _____

q. Waste Type: _____ r. Waste BTU/lb: _____

6.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit ID	Unit ID Description	To Unit ID	Unit ID Description	Percent Flow

6.3 Source Classification Code (SCC) Listing for Standard Operation

Fuel/Material	Associated SCC	Max. Throughput Rate	Firing Sequence

6.4 Maximum Fuel Physical Characteristics

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfur	% Ash	BTU Content (Units)

*FML = Fuel Material Location

6.5 Limitations on Source Operation

Maximum number of hours of source operation per year: _____

☐	Hours of Operation:	
☐	Production/Throughput Rate:	
☐	Type of Fuel:	
☐	Fuel Usage:	
☐	Control Devices:	
☐	Emissions Limitations:	
☐	Other:	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?

6.6 Compliance Method for this source

Complete this section only if limitation(s) and/or restriction(s) were identified in Section 6.5.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

6.7 Source Potential to Emit

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or limitation(s) proposed in Section 6.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

6.8 Source Applicable Requirements

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Fuel/SCC	Citation Number	Limitation associated with the citation	Limitation Used

Section 7 – Process Operational Inventory

(Complete this section for each process at this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new process listed in Section 3 of this application.

7.1 General Source Information

a. Source ID: 703 b. Source Name: Measurement Devices

c. Plan Approval or Operating Permit Number: 63-01011

d. Manufacturer: NA e. Model Number: NA

f. Source Description: O2 analyzers and GC streams

g. Rated Capacity (for engines use BHP): NA h. Installation Date: 2018/2023

i. Exhaust Temperature: Atm Units: F j. Exhaust % Moisture: Atm k. Exhaust Flow Volume: 2.15 SCFH

.12

7.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit ID	Unit ID Description	To Unit ID	Unit ID Description	Percent Flow
703	Measurement Vents	Atm	Atm	100

7.3 Source Classification Code (SCC) Listing for Standard Operation – *Not Applicable*

Fuel/Material	Associated SCC	Max. Throughput Rate	Firing Sequence

7.4 Maximum Fuel Physical Characteristics – *Not Applicable*

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfur	% Ash	BTU Content (Units)

*FML = Fuel Material Location

7.5 Limitations on Source Operation

Maximum number of hours of source operation per year: _____

☐	Hours of Operation:	
☐	Production/Throughput Rate:	
☐	Type of Fuel:	
☐	Fuel Usage:	
☐	Control Devices:	
☐	Emissions Limitations:	
☐	Other:	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?

7.6 Compliance Method for this source

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 7.6.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

7.7 Source Potential to Emit – *See Detailed Emission Estimates Attached*

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or limitation(s) proposed in Section 7.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

7.8 Source Applicable Requirements – *See Addendum 1*

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Fuel/SCC	Citation Number	Limitation associated with the citation	Limitation Used

Section 7 – Process Operational Inventory

(Complete this section for each process at this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new process listed in Section 3 of this application.

7.1 General Source Information

a. Source ID: 301 b. Source Name: Closed Drain Tanks

c. Plan Approval or Operating Permit Number: 63-01011

d. Manufacturer: NA e. Model Number: NA

f. Source Description: Closed Drain and Amine Closed Drain Tanks

g. Rated Capacity (for engines use BHP): NA h. Installation Date: 2018

i. Exhaust Temperature: NA Units: NA j. Exhaust % Moisture: NA k. Exhaust Flow Volume: NA SCFM

7.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit ID	Unit ID Description	To Unit ID	Unit ID Description	Percent Flow
301	Closed Drain Tanks	C601	Flare	100

7.3 Source Classification Code (SCC) Listing for Standard Operation – *Not Applicable*

Fuel/Material	Associated SCC	Max. Throughput Rate	Firing Sequence

7.4 Maximum Fuel Physical Characteristics – *Not Applicable*

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfur	% Ash	BTU Content (Units)

*FML = Fuel Material Location

7.5 Limitations on Source Operation – *Not Applicable*

Maximum number of hours of source operation per year: _____

☐	Hours of Operation:	
☐	Production/Throughput Rate:	
☐	Type of Fuel:	
☐	Fuel Usage:	
☐	Control Devices:	
☐	Emissions Limitations:	
☐	Other:	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?

7.6 Compliance Method for this source – *Not Applicable*

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 7.6.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

7.7 Source Potential to Emit – *See Detailed Emission Estimates Attached*

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or limitation(s) proposed in Section 7.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

7.8 Source Applicable Requirements – *See Addendum 1*

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Fuel/SCC	Citation Number	Limitation associated with the citation	Limitation Used

Section 7 – Process Operational Inventory

(Complete this section for each process at this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new process listed in Section 3 of this application.

7.1 General Source Information

a. Source ID: 702 b. Source Name: LO-1

c. Plan Approval or Operating Permit Number: 63-01011

d. Manufacturer: NA e. Model Number: NA

f. Source Description: Truck Load Out Operation

g. Rated Capacity (for engines use BHP): 220,000 gal/yr h. Installation Date: 2018

i. Exhaust Temperature: Atm Units: F j. Exhaust % Moisture: Atm k. Exhaust Flow Volume: NA SCFM

7.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit ID	Unit ID Description	To Unit ID	Unit ID Description	Percent Flow
702	Truck Loadout	C601	Flare	100
C601	Flare	ATM	Atmosphere	2

7.3 Source Classification Code (SCC) Listing for Standard Operation – *Not Applicable*

Fuel/Material	Associated SCC	Max. Throughput Rate	Firing Sequence

7.4 Maximum Fuel Physical Characteristics – *Not Applicable*

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfur	% Ash	BTU Content (Units)

*FML = Fuel Material Location

7.5 Limitations on Source Operation – *Not Applicable*

Maximum number of hours of source operation per year: _____

☐	Hours of Operation:	
☐	Production/Throughput Rate:	
☐	Type of Fuel:	
☐	Fuel Usage:	
☐	Control Devices:	
☐	Emissions Limitations:	
☐	Other:	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?

7.6 Compliance Method for this source – *Not Applicable*

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 7.6.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

7.7 Source Potential to Emit – *See Detailed Emission Estimates Attached*

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or limitation(s) proposed in Section 7.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

7.8 Source Applicable Requirements – *Not Applicable*

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Fuel/SCC	Citation Number	Limitation associated with the citation	Limitation Used

Section 7 – Process Operational Inventory

(Complete this section for each process at this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new process listed in Section 3 of this application.

7.1 General Source Information

a. Source ID: 701 b. Source Name: FUG-1

c. Plan Approval or Operating Permit Number: 63-01011

d. Manufacturer: NA e. Model Number: NA

f. Source Description: Fugitives

g. Rated Capacity (for engines use BHP): NA h. Installation Date: 2018

i. Exhaust Temperature: Atm Units: F j. Exhaust % Moisture: Atm k. Exhaust Flow Volume: NA SCFM

7.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit ID	Unit ID Description	To Unit ID	Unit ID Description	Percent Flow
701	Fugitives	ATM	Atmosphere	100

7.3 Source Classification Code (SCC) Listing for Standard Operation – *Not Applicable*

Fuel/Material	Associated SCC	Max. Throughput Rate	Firing Sequence

7.4 Maximum Fuel Physical Characteristics – *Not Applicable*

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfur	% Ash	BTU Content (Units)

*FML = Fuel Material Location

7.5 Limitations on Source Operation – *Not Applicable*

Maximum number of hours of source operation per year: _____

☐	Hours of Operation:	
☐	Production/Throughput Rate:	
☐	Type of Fuel:	
☐	Fuel Usage:	
☐	Control Devices:	
☐	Emissions Limitations:	
☐	Other:	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?

7.6 Compliance Method for this source – *Not Applicable*

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 7.6.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

7.7 Source Potential to Emit – *See Detailed Emission Estimates Attached*

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or limitation(s) proposed in Section 7.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

7.8 Source Applicable Requirements – *Not Applicable*

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Fuel/SCC	Citation Number	Limitation associated with the citation	Limitation Used

Section 7 – Process Operational Inventory

(Complete this section for each process at this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new process listed in Section 3 of this application.

7.1 General Source Information

a. Source ID: 801 b. Source Name: PIG-1

c. Plan Approval or Operating Permit Number: 63-00968A

d. Manufacturer: NA e. Model Number: NA

f. Source Description: Pigging Emissions

g. Rated Capacity (for engines use BHP): NA h. Installation Date: 2018

i. Exhaust Temperature: Atm Units: F j. Exhaust % Moisture: Atm k. Exhaust Flow Volume: NA SCFM

7.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit ID	Unit ID Description	To Unit ID	Unit ID Description	Percent Flow
PIG-1	Pigging Emissions	C601	Flare	100
C601	Flare	ATM	Atmosphere	2

7.3 Source Classification Code (SCC) Listing for Standard Operation – *Not Applicable*

Fuel/Material	Associated SCC	Max. Throughput Rate	Firing Sequence

7.4 Maximum Fuel Physical Characteristics – *Not Applicable*

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfur	% Ash	BTU Content (Units)

*FML = Fuel Material Location

7.5 Limitations on Source Operation – *Not Applicable*

Maximum number of hours of source operation per year: _____

☐	Hours of Operation:	
☐	Production/Throughput Rate:	
☐	Type of Fuel:	
☐	Fuel Usage:	
☐	Control Devices:	
☐	Emissions Limitations:	
☐	Other:	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?

7.6 Compliance Method for this source – *Not Applicable*

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 7.6.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

7.7 Source Potential to Emit – *See Detailed Emission Estimates Attached*

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or limitation(s) proposed in Section 7.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

7.8 Source Applicable Requirements – *Not Applicable*

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Fuel/SCC	Citation Number	Limitation associated with the citation	Limitation Used

Section 7 – Process Operational Inventory

(Complete this section for each process at this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new process listed in Section 3 of this application.

7.1 General Source Information

a. Source ID: 601 b. Source Name: BD-1

c. Plan Approval or Operating Permit Number: 63-01011

d. Manufacturer: NA e. Model Number: NA

f. Source Description: Blowdowns/Venting

g. Rated Capacity (for engines use BHP): NA h. Installation Date: 2018

i. Exhaust Temperature: Atm Units: F j. Exhaust % Moisture: Atm k. Exhaust Flow Volume: NA SCFM

7.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit ID	Unit ID Description	To Unit ID	Unit ID Description	Percent Flow
BD-1	Blowdowns/Venting	C601	Flare	100
C601	Flare	ATM	Atmosphere	

7.3 Source Classification Code (SCC) Listing for Standard Operation – *Not Applicable*

Fuel/Material	Associated SCC	Max. Throughput Rate	Firing Sequence

7.4 Maximum Fuel Physical Characteristics – *Not Applicable*

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfur	% Ash	BTU Content (Units)

*FML = Fuel Material Location

7.5 Limitations on Source Operation – *Not Applicable*

Maximum number of hours of source operation per year: _____

☐	Hours of Operation:	
☐	Production/Throughput Rate:	
☐	Type of Fuel:	
☐	Fuel Usage:	
☐	Control Devices:	
☐	Emissions Limitations:	
☐	Other:	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?

7.6 Compliance Method for this source – *Not Applicable*

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 7.6.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

7.7 Source Potential to Emit – *See Detailed Emission Estimates Attached*

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or limitation(s) proposed in Section 7.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

7.8 Source Applicable Requirements – *Not Applicable*

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Fuel/SCC	Citation Number	Limitation associated with the citation	Limitation Used

Section 7 – Process Operational Inventory

(Complete this section for each process at this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new process listed in Section 3 of this application.

7.1 General Source Information

a. Source ID: 104 b. Source Name: Dry Seal Vents

c. Plan Approval or Operating Permit Number: NA

d. Manufacturer: NA e. Model Number: NA

f. Source Description: Centrifugal Dry Seal Vents

g. Rated Capacity (for engines use BHP): NA h. Installation Date: 2018

i. Exhaust Temperature: Atm Units: F j. Exhaust % Moisture: Atm k. Exhaust Flow Volume: Varies SCFM

7.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit ID	Unit ID Description	To Unit ID	Unit ID Description	Percent Flow
104	Residue Dry Seal Vents	ATM	Atmosphere	100
104	Regen Dry Seal Vents	C601	Flare	100
C601	Flare	ATM	Atmosphere	2

7.3 Source Classification Code (SCC) Listing for Standard Operation – *Not Applicable*

Fuel/Material	Associated SCC	Max. Throughput Rate	Firing Sequence

7.4 Maximum Fuel Physical Characteristics – *Not Applicable*

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfur	% Ash	BTU Content (Units)

*FML = Fuel Material Location

7.5 Limitations on Source Operation – *Not Applicable*

Maximum number of hours of source operation per year: _____

☐	Hours of Operation:	
☐	Production/Throughput Rate:	
☐	Type of Fuel:	
☐	Fuel Usage:	
☐	Control Devices:	
☐	Emissions Limitations:	
☐	Other:	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?

7.6 Compliance Method for this source – *Not Applicable*

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 7.6.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

7.7 Source Potential to Emit – *See Detailed Emission Estimates Attached*

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or limitation(s) proposed in Section 7.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

7.8 Source Applicable Requirements – *See Addendum 1*

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Fuel/SCC	Citation Number	Limitation associated with the citation	Limitation Used

Section 7 – Process Operational Inventory

(Complete this section for each process at this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new process listed in Section 3 of this application.

7.1 General Source Information

a. Source ID: 103 b. Source Name: RP-1

c. Plan Approval or Operating Permit Number: N/A

d. Manufacturer: NA e. Model Number: NA

f. Source Description: Rod-Packing Vents

g. Rated Capacity (for engines use BHP): NA h. Installation Date: 2018

i. Exhaust Temperature: Atm Units: F j. Exhaust % Moisture: Atm k. Exhaust Flow Volume: Varies SCFH

7.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit ID	Unit ID Description	To Unit ID	Unit ID Description	Percent Flow
103	Rod-Packing Vents	ATM	Atmosphere	100

7.3 Source Classification Code (SCC) Listing for Standard Operation – *Not Applicable*

Fuel/Material	Associated SCC	Max. Throughput Rate	Firing Sequence

7.4 Maximum Fuel Physical Characteristics – *Not Applicable*

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfur	% Ash	BTU Content (Units)

*FML = Fuel Material Location

7.5 Limitations on Source Operation – *Not Applicable*

Maximum number of hours of source operation per year: _____

☐	Hours of Operation:	
☐	Production/Throughput Rate:	
☐	Type of Fuel:	
☐	Fuel Usage:	
☐	Control Devices:	
☐	Emissions Limitations:	
☐	Other:	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?

7.6 Compliance Method for this source – *Not Applicable*

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 7.6.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

7.7 Source Potential to Emit – *See Detailed Emission Estimates Attached*

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or limitation(s) proposed in Section 7.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

7.8 Source Applicable Requirements – *See Addendum 1*

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Fuel/SCC	Citation Number	Limitation associated with the citation	Limitation Used
	OOOOa		

Section 7 – Process Operational Inventory

(Complete this section for each process at this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new process listed in Section 3 of this application.

7.1 General Source Information

a. Source ID: 302 b. Source Name: Methanol Tanks

c. Plan Approval or Operating Permit Number: N/A

d. Manufacturer: NA e. Model Number: NA

f. Source Description: Methanol Tank Losses

g. Rated Capacity (for engines use BHP): 100 gal/year h. Installation Date: 2018/2023

i. Exhaust Temperature: Atm Units: F j. Exhaust % Moisture: Atm k. Exhaust Flow Volume: NA SCFM

7.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit ID	Unit ID Description	To Unit ID	Unit ID Description	Percent Flow
TK-6	Methanol Tank Losses	ATM	Atmosphere	100

7.3 Source Classification Code (SCC) Listing for Standard Operation – *Not Applicable*

Fuel/Material	Associated SCC	Max. Throughput Rate	Firing Sequence

7.4 Maximum Fuel Physical Characteristics – *Not Applicable*

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfur	% Ash	BTU Content (Units)

*FML = Fuel Material Location

7.5 Limitations on Source Operation – *Not Applicable*

Maximum number of hours of source operation per year: _____

☐	Hours of Operation:	
☐	Production/Throughput Rate:	
☐	Type of Fuel:	
☐	Fuel Usage:	
☐	Control Devices:	
☐	Emissions Limitations:	
☐	Other:	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?

7.6 Compliance Method for this source – *Not Applicable*

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 7.6.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

7.7 Source Potential to Emit – *See Detailed Emission Estimates Attached*

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or limitation(s) proposed in Section 7.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

7.8 Source Applicable Requirements – *Not Applicable*

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Fuel/SCC	Citation Number	Limitation associated with the citation	Limitation Used

Section 8 – Control Device Information (duplicate this section as needed)

For renewals, review and correct any pre-printed information and add additional sections for any new control device listed in Section 3 of this application.

8.1 General Control Device Information

a. Unit ID: C106 b. Unit Name: Process Flare

c. Used by Sources: 103, 104, 301, 601, 702, 801

d. Type: Air-Assisted Open Flare

e. Pressure Drop (in. H_2O): NA f. Capture Efficiency: Capture 100% and DRE 98%

g. Flow Rate (specify unit): Design Volumes provided by manufacturer varies based on different scenarios. Facility Potential Volume: 100 mmscf/yr

h. Manufacturer: John Zink i. Model Number: EEF Series

j. Installation Date: 2018

8.2 Control Device Efficiencies for this Control Device:

Pollutant Name	CAS No.	Control Efficiency	Basis for Efficiency Estimate
VOC		98%	Manufacturer Guarantee

Section 9 – Stack/Flue Information (duplicate this section as needed)

For renewals, review and correct any pre-printed information and add additional sections for any new stack/flue listed in Section 3 of this application.

9.1 General Stack/Vent Information

a. Unit ID: S031 b. Unit Name: Cryo 1 Regen Heater Stack

c. Discharge Type: Vertical Stack

d. Diameter (ft): ~1.83 Height (ft): ~21.3 Base Elevation (ft): ~1170

e. Exhaust Temperature: 426 deg F Exhaust % Moisture: 11 Exhaust Velocity: 36 fps

f. Exhaust Volume: NA ACFM Exhaust Volume: 10,483 lb/hr SCFM

g. Distance to Nearest Property Line (ft): See topo h. Weather Cap?: ☐ Yes ☒ No

i. Used by Units: 031

j. Latitude: 40° 24’ 4” N Longitude: 80° 21’ 26” W

Horizontal Reference Datum: WGS 1984 Horizontal Collection Method: Google Earth Reference Point: Harmon Creek

k. Does the stack have a bypass? ☐ Yes ☒ No

a. Unit ID: S037 b. Unit Name: Cryo 2 Regen Heater Stack

c. Discharge Type: Vertical Stack

d. Diameter (ft): ~2.5 Height (ft): ~20 Base Elevation (ft): ~1170

e. Exhaust Temperature: 461 deg F Exhaust % Moisture: 11 Exhaust Velocity: 0.378 lb/sec ft2

f. Exhaust Volume: NA ACFM Exhaust Volume: 15,796 SCFM

g. Distance to Nearest Property Line (ft): See topo h. Weather Cap?: ☐ Yes ☒ No

i. Used by Units: 037

j. Latitude: 40° 24’ 4” N Longitude: 80° 21’ 26” W

Horizontal Reference Datum: WGS 1984 Horizontal Collection Method: Google Earth Reference Point: Harmon Creek

k. Does the stack have a bypass? ☐ Yes ☒ No

Section 9 – Stack/Flue Information (duplicate this section as needed)

For renewals, review and correct any pre-printed information and add additional sections for any new stack/flue listed in Section 3 of this application.

9.1 General Stack/Vent Information

a. Unit ID: S033 and S034 b. Unit Name: DeEthanizer HMO Heaters Stacks

c. Discharge Type: Vertical Stack

d. Diameter (ft): ~3.13 Height (ft): ~20 Base Elevation (ft): ~1170

e. Exhaust Temperature: 511 deg F Exhaust % Moisture: 11 Exhaust Velocity: 42 fps

f. Exhaust Volume: NA ACFM Exhaust Volume: 44,406 lb/hr SCFM

g. Distance to Nearest Property Line (ft): See topo h. Weather Cap?: ☐ Yes ☒ No

i. Used by Units: 033 and 034

j. Latitude: 40° 24’ 4” N Longitude: 80° 21’ 26” W

Horizontal Reference Datum: WGS 1984 Horizontal Collection Method: Google Earth Reference Point: Harmon Creek

k. Does the stack have a bypass? ☐ Yes ☒ No

a. Unit ID: S035 b. Unit Name: DeEthanizer Regen Heater Stack

c. Discharge Type: Vertical Stack

d. Diameter (ft): ~1.83 Height (ft): ~21.5 Base Elevation (ft): ~1170

e. Exhaust Temperature: 373 deg F Exhaust % Moisture: 11 Exhaust Velocity: 31.2 fps

f. Exhaust Volume: NA ACFM Exhaust Volume: 10,621 SCFM

g. Distance to Nearest Property Line (ft): See topo h. Weather Cap?: ☐ Yes ☒ No

i. Used by Units: 035

j. Latitude: 40° 24’ 4” N Longitude: 80° 21’ 26” W

Horizontal Reference Datum: WGS 1984 Horizontal Collection Method: Google Earth Reference Point: Harmon Creek

k. Does the stack have a bypass? ☐ Yes ☒ No

Section 9 – Stack/Flue Information (duplicate this section as needed)

For renewals, review and correct any pre-printed information and add additional sections for any new stack/flue listed in Section 3 of this application.

9.1 General Stack/Vent Information

a. Unit ID: S036 b. Unit Name: Stabilization HMO Heater Stack

c. Discharge Type: Vertical Stack

d. Diameter (ft): ~1.33 Height (ft): ~20.3 Base Elevation (ft): ~1170

e. Exhaust Temperature: 437 Exhaust % Moisture: 11 Exhaust Velocity: 35.3 fps

f. Exhaust Volume: NA ACFM Exhaust Volume: 5,850 lb/hr SCFM

g. Distance to Nearest Property Line (ft): See topo h. Weather Cap?: ☐ Yes ☒ No

i. Used by Units: 036

j. Latitude: 40° 24’ 4” N Longitude: 80° 21’ 26” W

Horizontal Reference Datum: WGS 1984 Horizontal Collection Method: Google Earth Reference Point: Harmon Creek

k. Does the stack have a bypass? ☐ Yes ☒ No

a. Unit ID: C601 b. Unit Name: Plant Flare Stack

c. Discharge Type: Vertical Stack

d. Diameter (ft): 6.92 Height (ft): 199 Base Elevation (ft): ~1170

e. Exhaust Temperature: Varies Exhaust % Moisture: Varies Exhaust Velocity: Varies

f. Exhaust Volume: Varies ACFM Exhaust Volume: Varies SCFM

g. Distance to Nearest Property Line (ft): See topo h. Weather Cap?: ☐ Yes ☒ No

i. Used by Units: C601

j. Latitude: 40° 24’ 4” N Longitude: 80° 21’ 26” W

Horizontal Reference Datum: WGS 1984 Horizontal Collection Method: Google Earth Reference Point: Harmon Creek

k. Does the stack have a bypass? ☐ Yes ☒ No

Section 10 – Fuel Material Location (FML) Information

For renewals, review and correct any pre-printed information and add additional sections for any new FML listed in Section 3 of this application.

10.1 Fuel Material Location Information

a. FML ID: FML-01 b. Name: Fuel Material Location 1

c. Capacity: NA Units: NA d. Fuel: Natural Gas

e. Maximum Fuel Characteristics: If fuel is coal, what is the moisture content? NA

% Ash: Negligible % Sulfur: Negligible BTU Content: Approx.. 1153 Units: Btu/scf

f. Used by Source: 101 to 106, and 201

---

a. FML ID: b. Name:

c. Capacity: Units: d. Fuel:

e. Maximum Fuel Characteristics: If fuel is coal, what is the moisture content?

% Ash: % Sulfur: BTU Content: Units:

f. Used by Source:

---

a. FML ID: b. Name:

c. Capacity: Units: d. Fuel:

e. Maximum Fuel Characteristics: If fuel is coal, what is the moisture content?

% Ash: % Sulfur: BTU Content: Units:

f. Used by Source:

Section 11 – Compliance Plan for the Facility

11.1	Will your facility be in compliance with all applicable requirements at the time of permit issuance and continue to comply with these requirements during the permit duration?	☒ Yes	☐ No
11.2	Will your facility be in compliance with all applicable requirements presently scheduled to take effect during the term of the permit?	☒ Yes	☐ No
11.3	Will these requirements be met by the regulatory required dates?	☒ Yes	☐ No

If you checked "No" in Part 11.1, 11.2 or 11.3, answer the following questions:

11.4 Identify applicable requirement(s) for which compliance is not or will not be achieved:

Unit ID	Citation No.

11.4.1 Briefly describe how compliance with this/these applicable requirement(s) will be achieved:

11.4.2 Provide a detailed schedule of compliance for the noncomplying sources or activities identified in this section of the application. Include an enforceable sequence of corrective actions with milestone and projected compliance dates.

Date	Action/Milestone

11.4.3 Indicate the submittal frequency for the progress report (s): _____

11.4.4 Starting date for the submittal of the progress report(s): _____

Section 12 – Alternative Operating Scenario (optional) – *Not Applicable*

(Duplicate this section for each source participated in this alternative scenario.)

12.1 General Information

a. Alternative Operating Scenario Name or ID: _____

b. Unit ID: _____ c. Unit Name: _____

d. Unit Type (check one): ☐ Combustion ☐ Incinerator ☐ Process ☐ Control Device ☐ Fuel Material Location

e. Give a brief description of this alternative scenario stating how it is different from the standard operation:

12.2 Operational Flexibility Request

Check all that apply.

☐ Alternative exhaust system component configuration
If this box is checked, complete Sections 12.3 and 12.7

☐ Alternative type of fuel usage replacing or in addition to an existing fuel in standard operation.
If this box is checked, complete Sections 12.4 and/or 12.5 and 12.7

☐ Alternative process method replacing or in addition to a process SCC existing in standard operation.
If this box is checked, complete Section 12.6 and 12.7

☐ Alternative lower limitations. Describe

12.3 Exhaust System Components

Specify the complete exhaust system component configuration for this alternative operating scenario.

From Component Type	From Component Number	To Component Type	To Component Number	Percent Flow	Begin Date	End Date

12.4 Source Classification Code (SCC) Listing for Alternative Operation – *Section 12 Not Applicable*

Give a complete listing of all fuels burned, products produced by a process or waste incinerated for this alternative operating scenario.

Fuel	Associated SCC	Max. Throughput Rate	Firing Sequence

12.5 Alternative Fuel Physical Characteristics

Give a complete listing of all fuels physical characteristics for this alternative operating scenario.

SCC/Fuel Burned	FML	% Sulfur	% Ash	BTU Content (Units)

12.6 Alternative Process/Product Description

Give a complete listing of all fuels physical characteristics for this alternative operating scenario.

a. Briefly describe the change(s) in raw materials and/or process methods used in this operating scenario, if applicable:

b. Provide and briefly describe the process SCC associated with this alternative operating scenario:

Process SCC: SCC Description:

c. Alternative Product(s):

12.7 Source Potential to Emit – *Section 12 Not Applicable*

Give potential emission estimate for all air pollutants emitted at this source for this operating scenario.

Pollutant or CAS Number	Fuel/SCC	Emission/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

Section 13 – Certification of Compliance for Synthetic Minor Facilities - *Not Applicable*

In order for this Synthetic Minor facility to avoid the Title V Operating Permit requirements, the applicant must agree to be bound by the emissions limitation(s) and/or restriction(s) contained in this application. In addition, the applicant must agree that these emission limitation(s) are enforceable by DEP, the Environmental Protection Agency and the citizens.

13.1 Schedule for Compliance Certification Submission

a. Frequency of submittal: _____

b. Beginning date: _____

13.2 Certification of Compliance by a Responsible Official

I certify that, subject to the penalties of Title 18 Pa. C.S.A. Section 4904 and 35 P.S. Section 4009(b)(2), the sources covered by this application will comply with the emission limitations and other requirements contained in this application and all previously issued plan approvals and operating permits. I further certify that, based on information and belief formed after reasonable inquiry, the statements and information in this application are true, accurate, and complete.

(Signed) _____ Date _____

Name (Typed) _____

Title: _____

Section 7
Addendum 1

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum A: Source Applicable Requirements

Describe and cite all applicable requirements pertaining to this source.
Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Citation Number	Citation Limitation	Limitation Used
25 Pa. Code 123.11 (Entire site and Group #1)	0.4 lb/MMBtu of PM for combustion unit between 2.5 MMBtu/hr and 50 MMBtu/hr	NA
25 Pa. Code 127.12b (Group #1)	BAT Conditions for PM, SO_2, CO, and NOx	NA
25 Pa. Code 123.22 (Entire site and Group #1)	4.0 lb/MMBtu of SO_2 over a 1-hour period	NA
25 Pa. Code 123.41 (Entire site and Group #1)	Visible emissions may not be equal to or greater than 20% for 3 mins in 1 hour or may not be equal to or greater than 60% at any time.	NA
40 CFR Part 60 Subpart OOOOb (Group #2)	Rod packing and dry seal vent measurement on compressors installed after December 6, 2022	NA
40 CFR Part 60 Subpart OOOOb (Group #3)	Rod packing replacement on compressors installed after September 18, 2015	NA
40 CFR Part 60 Subpart OOOOb (Group #4)	Equipment Leak Standards	NA
40 CFR Part 60 Subpart OOOOb (Closed Drain Tank)	Route emissions to control device with a minimum DRE 95%	NA
40 CFR Part 60 Subpart OOOOb (Process Flare)	Monitoring of flame presence, flow, and heating value	NA
25 Pa. Code 123.1 (Entire site)	Prohibition of Fugitive Emissions	NA
25 Pa. Code 123.2 (Entire site)	Fugitive particulate matter outside property	NA
25 Pa. Code 123.13 (Entire site)	Process Particulate Emissions	NA
25 Pa. Code 123.14 (Entire site)	Open Burning Requirements	NA
25 Pa. Code 123.21 (Entire site)	500 ppmv SO_2	NA
25 Pa. Code 123.31 (Entire site)	Odor Emissions	NA

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	30-0528059	**Firm Name:**	MarkWest Liberty Midstream & Resources, LLC
Plant Code:		**Plant Name:**	Harmon Creek Gas Plant

Applicable Requirement for: (please check only one box below)

☒ **The entire site**

☒ **A group of sources, Group ID:** Group #1 (Heaters, Source IDs 031, 037, 033, 034, 035, 036)

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: 25 Pa. Code § 123.11

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☐ **Reporting**

☒ **Record Keeping** ☐ **Work Practice Standard**

Section 2: Monitoring

1. Monitoring device type (stack test, CEM, etc.):

2. Monitoring device location:

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

3. How will data be reported:

Section 3: Testing

1. Reference Test Method Description:

2. Reference Test Method Citation:

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Keep records of gas combusted and use the AP-42 PM emission factor to demonstrate compliance with the limitation

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

1. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: 30-0528059 **Firm Name:** MarkWest Liberty Midstream & Resources, LLC

Plant Code: **Plant Name:** Harmon Creek Gas Plant

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** Group #1 (Heaters, Source IDs 031, 037, 033, 034, 035, 036)

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: 25 Pa. Code § 127.12b and GP5 Section L.1.(b)

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☒ **Testing** ☐ **Reporting**

☒ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

4. Monitoring device type (stack test, CEM, etc.):

5. Monitoring device location:

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

6. How will data be reported:

Section 3: Testing

3. Reference Test Method Description: 40 CFR Part 60 Appendix A testing requirements

4. Reference Test Method Citation:

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Keep records of gas combusted, test results and/or guaranteed emission factor to demonstrate compliance with the limitations

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

2. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Operate heater in accordance with manufacturers specifications to assure compliance

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: 30-0528059 **Firm Name:** MarkWest Liberty Midstream & Resources, LLC

Plant Code: **Plant Name:** Harmon Creek Gas Plant

Applicable Requirement for: (please check only one box below)

☒ **The entire site**

☒ **A group of sources, Group ID:** Group #1 (Heaters, Source IDs 031, 037, 033, 034, 035, 036)

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: 25 Pa. Code § 123.22

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☐ **Reporting**

☒ **Record Keeping** ☐ **Work Practice Standard**

Section 2: Monitoring

7. Monitoring device type (stack test, CEM, etc.):

8. Monitoring device location:

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

9. How will data be reported:

Section 3: Testing

5. Reference Test Method Description:

6. Reference Test Method Citation:

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Keep records of gas combusted and sulfur content to demonstrate compliance with the limitation

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

3. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

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BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	30-0528059	**Firm Name:**	MarkWest Liberty Midstream & Resources, LLC
Plant Code:		**Plant Name:**	Harmon Creek Gas Plant

Applicable Requirement for: (please check only one box below)

☒ **The entire site**

☒ **A group of sources, Group ID:** Group #1 (Heaters, Source IDs 031, 037, 033, 034, 035, 036)

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: 25 Pa. Code § 123.41

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☒ **Monitoring** ☐ **Testing** ☐ **Reporting**

☒ **Record Keeping** ☐ **Work Practice Standard**

Section 2: Monitoring

10. Monitoring device type (stack test, CEM, etc.): Observations using Method 9 or Method 22

11. Monitoring device location: NA

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

Opacity of emissions

12. How will data be reported: NA

Section 3: Testing

7. Reference Test Method Description:

8. Reference Test Method Citation:

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Maintain log of visible emissions observations

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

4. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

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BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	30-0528059	**Firm Name:**	MarkWest Liberty Midstream & Resources, LLC
Plant Code:		**Plant Name:**	Harmon Creek Gas Plant

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** Group #2 (Compressors installed after December 6, 2022, Source ID 601 and 602)

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: 40 CFR Part 60 Subpart OOOOb

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☒ **Monitoring** ☐ **Testing** ☒ **Reporting**

☐ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

13. Monitoring device type (stack test, CEM, etc.): Flow meter

14. Monitoring device location: Rod packing and dry seal vents

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

Annual flow rate

15. How will data be reported: OOOOb annual reports

Section 3: Testing

9. Reference Test Method Description:

10. Reference Test Method Citation:

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Maintain records of flow rates on rod packing and dry seal vents

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

Submit reports as required by Subpart OOOOb

5. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Maintain flow rates below the OOOOb compliance rates

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Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	30-0528059	**Firm Name:**	MarkWest Liberty Midstream & Resources, LLC
Plant Code:		**Plant Name:**	Harmon Creek Gas Plant

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** Group #3 (Compressors installed after September 18, 2015, Source ID 601)

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: 40 CFR Part 60 Subpart OOOOa

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☒ **Monitoring** ☐ **Testing** ☒ **Reporting**

☐ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

16. Monitoring device type (stack test, CEM, etc.): Hour meter

17. Monitoring device location: Rod packing

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

Hours of operation

18. How will data be reported: OOOOa annual reports

Section 3: Testing

11. Reference Test Method Description:

12. Reference Test Method Citation:

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Maintain records of hours of operation since last rod packing change date

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

Submit reports as required by Subpart OOOOa

6. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Replace rod packing on or before 26,000 hours of operation

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SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	30-0528059	**Firm Name:**	MarkWest Liberty Midstream & Resources, LLC
Plant Code:		**Plant Name:**	Harmon Creek Gas Plant

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** Group #4 (Fugitive Components, Source ID 701)

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: 40 CFR Part 60 Subpart OOOOb

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☒ **Monitoring** ☐ **Testing** ☒ **Reporting**

☐ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

19. Monitoring device type (stack test, CEM, etc.): LDAR program

20. Monitoring device location: Valves, pumps, connectors, etc

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

21. How will data be reported: Annual OOOOb reports

Section 3: Testing

13. Reference Test Method Description:

14. Reference Test Method Citation:

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Maintain records of LDAR program monitoring

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

Submit reports as required by Subpart OOOOb

7. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Make repairs in accordance with NSPS Subpart OOOOb

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SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: 30-0528059 **Firm Name:** MarkWest Liberty Midstream & Resources, LLC

Plant Code: **Plant Name:** Harmon Creek Gas Plant

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☐ **A group of sources, Group ID:**

☒ **A single source, Unit ID:** Closed Drain Tank

☐ **Alternative Scenario, Scenario Name:**

Citation #: 40 CFR Part 60 Subpart OOOOb

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☐ **Reporting**

☒ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

22. Monitoring device type (stack test, CEM, etc.):

23. Monitoring device location:

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

24. How will data be reported:

Section 3: Testing

15. Reference Test Method Description:

16. Reference Test Method Citation:

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Maintain records in accordance with OOOOb for CVS and storage tank information

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

8. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Route emissions via a CVS to a control device with a DRE of a minimum 95%

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SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	30-0528059	**Firm Name:**	MarkWest Liberty Midstream & Resources, LLC
Plant Code:		**Plant Name:**	Harmon Creek Gas Plant

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☐ **A group of sources, Group ID:**

☒ **A single source, Unit ID:** Process Flare

☐ **Alternative Scenario, Scenario Name:**

Citation #: 40 CFR Part 60 Subpart OOOOb

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☒ **Monitoring** ☐ **Testing** ☐ **Reporting**

☒ **Record Keeping** ☐ **Work Practice Standard**

Section 2: Monitoring

25. Monitoring device type (stack test, CEM, etc.): Flow meter, calorimeter, pilot monitoring

26. Monitoring device location: Flare inlet and pilot

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

Continuous

27. How will data be reported: Annual OOOOb reports

Section 3: Testing

17. Reference Test Method Description:

18. Reference Test Method Citation:

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Maintain records of flow, heating value, and when the flare pilot is absent

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

9. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

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Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: 30-0528059 **Firm Name:** MarkWest Liberty Midstream & Resources, LLC

Plant Code: **Plant Name:** Harmon Creek Gas Plant

Applicable Requirement for: (please check only one box below)

☒ **The entire site**

☐ **A group of sources, Group ID:**

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: 25 Pa. Code 123.1 (Prohibition of Fugitive Emissions)

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☒ **Monitoring** ☐ **Testing** ☐ **Reporting**

☒ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

28. Monitoring device type (stack test, CEM, etc.): Observations

29. Monitoring device location: Varies

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

Fugitive emissions

30. How will data be reported: NA

Section 3: Testing

19. Reference Test Method Description:

20. Reference Test Method Citation:

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Log of observations

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

10. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Take actions to minimize fugitive emissions

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Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	30-0528059	**Firm Name:**	MarkWest Liberty Midstream & Resources, LLC
Plant Code:		**Plant Name:**	Harmon Creek Gas Plant

Applicable Requirement for: (please check only one box below)

☒ **The entire site**

☐ **A group of sources, Group ID:**

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: 25 Pa. Code 123.2 (Fugitive PM Emissions Outside Property)

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☒ **Monitoring** ☐ **Testing** ☐ **Reporting**

☒ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

31. Monitoring device type (stack test, CEM, etc.): Observations

32. Monitoring device location: Varies

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

Fugitive emissions

33. How will data be reported: NA

Section 3: Testing

21. Reference Test Method Description:

22. Reference Test Method Citation:

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Log of observations

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

11. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Take actions to minimize fugitive emissions

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Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: 30-0528059 **Firm Name:** MarkWest Liberty Midstream & Resources, LLC

Plant Code: **Plant Name:** Harmon Creek Gas Plant

Applicable Requirement for: (please check only one box below)

☒ **The entire site**

☐ **A group of sources, Group ID:**

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: 25 Pa. Code 123.13 Process Particulate Emissions

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☐ **Reporting**

☐ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

34. Monitoring device type (stack test, CEM, etc.):

35. Monitoring device location:

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

36. How will data be reported:

Section 3: Testing

23. Reference Test Method Description:

24. Reference Test Method Citation:

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

Keep records of gas combusted and use the AP-42 PM emission factor to demonstrate compliance with the limitation

12. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Operate in accordance with manufacturers specifications to minimize particulate emissions

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BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: 30-0528059 **Firm Name:** MarkWest Liberty Midstream & Resources, LLC

Plant Code: **Plant Name:** Harmon Creek Gas Plant

Applicable Requirement for: (please check only one box below)

☒ **The entire site**

☐ **A group of sources, Group ID:**

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: 25 Pa. Code 123.14 Open Burning Requirements

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☐ **Reporting**

☐ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

37. Monitoring device type (stack test, CEM, etc.):

38. Monitoring device location:

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

39. How will data be reported:

Section 3: Testing

25. Reference Test Method Description:

26. Reference Test Method Citation:

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

13. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Open burning allowed only as approved (ex. - fire training exercises)

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Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: 30-0528059 **Firm Name:** MarkWest Liberty Midstream & Resources, LLC

Plant Code: **Plant Name:** Harmon Creek Gas Plant

Applicable Requirement for: (please check only one box below)

☒ **The entire site**

☐ **A group of sources, Group ID:**

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: 25 Pa. Code 123.21 Process SO_2 Emissions

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☐ **Reporting**

☒ **Record Keeping** ☐ **Work Practice Standard**

Section 2: Monitoring

40. Monitoring device type (stack test, CEM, etc.):

41. Monitoring device location:

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

42. How will data be reported:

Section 3: Testing

27. Reference Test Method Description:

28. Reference Test Method Citation:

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Keep records of sulfur content of gas

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

14. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	30-0528059	**Firm Name:**	MarkWest Liberty Midstream & Resources, LLC
Plant Code:		**Plant Name:**	Harmon Creek Gas Plant

Applicable Requirement for: (please check only one box below)

☒ **The entire site**

☐ **A group of sources, Group ID:**

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: 25 Pa. Code 123.31 Odor Emissions

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☒ **Monitoring** ☐ **Testing** ☐ **Reporting**

☒ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

43. Monitoring device type (stack test, CEM, etc.): Observations

44. Monitoring device location: Property line

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

Odors

45. How will data be reported: NA

Section 3: Testing

29. Reference Test Method Description:

30. Reference Test Method Citation:

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Keep logs of observations for malodors crossing the property line

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

15. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Operate in accordance with manufacturers specifications to minimize particulate emissions

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: 30-0528059 **Firm Name:** MarkWest Liberty Midstream & Resources, LLC

Plant Code: **Plant Name:** Harmon Creek Gas Plant

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☐ **A group of sources, Group ID:**

☒ **A single source, Unit ID:** 212 – Truck Loading Operations

☐ **Alternative Scenario, Scenario Name:**

Citation #: 25 Pa. Code § 123.12b

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☒ **Testing** ☒ **Reporting**

☒ **Record Keeping** ☐ **Work Practice Standard**

Section 2: Monitoring

46. Monitoring device type (stack test, CEM, etc.):

47. Monitoring device location:

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

48. How will data be reported:

Section 3: Testing

31. Reference Test Method Description: 40 CFR Part 60 Appendix A testing requirements

32. Reference Test Method Citation:

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Keep records of natural gas liquids shipped off-site by truck and records of natural gasoline that is vapor balanced through the plant's flare system

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

Report emissions based on truck loading operations of natural gas liquids and natural gasoline

16. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: 30-0528059 **Firm Name:** MarkWest Liberty Midstream & Resources, LLC

Plant Code: **Plant Name:** Harmon Creek Gas Plant

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☐ **A group of sources, Group ID:**

☒ **A single source, Unit ID:** 213 – Rail Loading Operations

☐ **Alternative Scenario, Scenario Name:**

Citation #: 25 Pa. Code § 123.12b

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☒ **Testing** ☒ **Reporting**

☒ **Record Keeping** ☐ **Work Practice Standard**

Section 2: Monitoring

49. Monitoring device type (stack test, CEM, etc.):

50. Monitoring device location:

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

51. How will data be reported:

Section 3: Testing

33. Reference Test Method Description: 40 CFR Part 60 Appendix A testing requirements

34. Reference Test Method Citation:

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Keep records of natural gas liquids shipped off-site by rail

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

Report emissions based on rail loading operations of natural gas and fugitives from leaks, etc.

17. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Section 8
Emission Estimates

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant

Summary of Potential Emissions

Criteria Pollutant Potential Emissions

Process/Facility	Source ID	Potential Emissions (lb/hr)					
		NOx	CO	VOC	SO_2	PM[1]	HAPs
Cryo Plant 1 Regen Heater (H-1711)	031	0.47	0.47	0.22	0.01	0.09	0.02
Cryo Plant 2 Regen Heater (H-2711)	037	0.20	0.71	0.34	0.01	0.23	0.03
De-Ethanizer HMO Heater 1 (H-1767)	033	1.93	1.93	0.91	0.03	0.36	0.09
De-Ethanizer HMO Heater 2 (H-1768)	034	1.93	1.93	0.91	0.03	0.36	0.09
Stabilization HMO Heater (H-1769)	036	0.48	0.48	0.23	0.01	0.09	0.02
De-Ethanizer Regen Heater (H-1775)	035	0.26	0.26	0.13	0.00	0.05	0.01
Generac SD015	102	0.26	0.14	0.08	0.10	0.02	0.00
Generac SD150	102	1.31	0.55	0.41	0.10	0.04	0.01
Fugitives Emissions	701	--	--	--	--	--	--
Process Flare	C601	1.21	5.53	3.05	0.01	0.11	0.05
Rod Packing	601	--	--	0.27	--	--	0.00
Residue Dry Seal Vents	602	--	--	0.31	--	--	0.00
Methanol Tanks	--	--	--	0.08	--	--	0.08
Measurement Devices	--	--	--	0.24	--	--	0.00
Future Site-Wide Emissions (lb/hr)		**8.05**	**12.01**	**7.18**	**0.30**	**1.35**	**0.42**

Process/Facility	Source ID	Potential Emissions (tpy)					
		NOx	CO	VOC	SO_2	PM[1]	HAPs
Cryo Plant 1 Regen Heater (H-1711)	031	2.07	2.07	0.98	0.03	0.39	0.10
Cryo Plant 2 Regen Heater (H-2711)	037	0.86	3.13	1.48	0.05	1.02	0.14
De-Ethanizer HMO Heater 1 (H-1767)	033	8.44	8.44	4.01	0.12	1.57	0.39
De-Ethanizer HMO Heater 2 (H-1768)	034	8.44	8.44	4.01	0.12	1.57	0.39
Stabilization HMO Heater (H-1769)	036	2.10	2.10	1.00	0.03	0.39	0.10
De-Ethanizer Regen Heater (H-1775)	035	1.16	1.16	0.55	0.02	0.22	0.05
Generac SD015	102	0.07	0.04	0.02	0.03	0.01	0.00
Generac SD150	102	0.33	0.14	0.10	0.03	0.01	0.00
Fugitives Emissions	701	--	--	10.75	--	--	0.34
Process Flare	C601	5.32	24.23	13.34	0.04	0.50	0.23
Rod Packing	601	--	--	1.18	--	--	0.01
Residue Dry Seal Vents	602	--	--	1.34	--	--	0.00
Methanol Tanks	--	--	--	0.35	--	--	0.35
Measurement Devices	--	--	--	1.03	--	--	0.02
Future Site-Wide Emissions (tpy)		**28.77**	**49.73**	**40.16**	**0.46**	**5.66**	**2.12**

[1] PM = PM_{10} = $PM_{2.5}$

* Blowdown, closed drain tank, amine closed drain tank, loadout, and pigging emissions are controlled by the flare and thus accounted for under the Process Flare Emissions. See the detailed emission tables for individual sources.

Hazardous Air Pollutant Potential Emissions

Process/Facility	Source ID	HAPs - Potential Emissions (lb/hr)								
		Acetaldehyde	Acrolein	Benzene	Ethylbenzene	Formaldehyde	Methanol	n-Hexane	Toluene	Xylenes
Cryo Plant 1 Regen Heater (H-1711)	031	--	--	2.44E-05	--	8.70E-04	--	0.02	3.95E-05	--
Cryo Plant 2 Regen Heater (H-2711)	037	--	--	3.67E-05	--	1.31E-03	--	0.03	5.95E-05	--
De-Ethanizer HMO Heater 1 (H-1767)	033	--	--	9.91E-05	--	3.54E-03	--	0.08	1.60E-04	--
De-Ethanizer HMO Heater 2 (H-1768)	034	--	--	9.91E-05	--	3.54E-03	--	0.08	1.60E-04	--
Stabilization HMO Heater (H-1769)	036	--	--	2.47E-05	--	8.82E-04	--	0.02	4.00E-05	--
De-Ethanizer Regen Heater (H-1775)	035	--	--	1.36E-05	--	4.85E-04	--	0.01	2.20E-05	--
Generac SD015	102	2.89E-04	3.48E-05	3.51E-04	--	4.44E-04	--	--	1.54E-04	1.07E-04
Generac SD150	102	1.42E-03	1.72E-04	1.73E-03	--	2.19E-03	--	--	7.59E-04	5.29E-04
Fugitives Emissions	701	--	--	--	--	--	--	--	--	--
Process Flare	C601	--	--	3.83E-03	3.83E-03	--	--	0.02	6.78E-03	1.30E-03
Rod Packing	601	--	--	0.00	0.00	--	--	0.00	0.00	0.00
Residue Dry Seal Vents	602	--	--	4.03E-04	4.03E-04	--	--	0.00	0.00	0.00
Methanol Tanks	--	--	--	--	--	--	8.04E-02	--	--	--
Measurement Devices	--	--	--	2.97E-04	2.97E-04	--	--	0.00	5.25E-04	1.01E-04
Future Site-Wide Emissions (lb/hr)		**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.08**	**0.29**	**0.01**	**0.00**

Process/Facility	Source ID	HAPs - Potential Emissions (tpy)								
		Acetaldehyde	Acrolein	Benzene	Ethylbenzene	Formaldehyde	Methanol	n-Hexane	Toluene	Xylenes
Cryo Plant 1 Regen Heater (H-1711)	031	--	--	1.07E-04	--	3.81E-03	--	0.09	1.73E-04	--
Cryo Plant 2 Regen Heater (H-2711)	037	--	--	1.61E-04	--	5.75E-03	--	0.14	2.60E-04	--
De-Ethanizer HMO Heater 1 (H-1767)	033	--	--	4.34E-04	--	1.55E-02	--	0.37	7.03E-04	--
De-Ethanizer HMO Heater 2 (H-1768)	034	--	--	4.34E-04	--	1.55E-02	--	0.37	7.03E-04	--
Stabilization HMO Heater (H-1769)	036	--	--	1.08E-04	--	3.86E-03	--	0.09	1.75E-04	--
De-Ethanizer Regen Heater (H-1775)	035	--	--	5.95E-05	--	2.13E-03	--	0.05	9.64E-05	--
Generac SD015	102	7.22E-05	8.70E-06	8.78E-05	--	1.11E-04	--	--	3.85E-05	2.68E-05
Generac SD150	102	3.56E-04	4.29E-05	4.33E-04	--	5.47E-04	--	--	1.90E-04	1.32E-04
Fugitives Emissions	701	--	--	--	--	--	--	--	--	--
Process Flare	C601	--	--	1.68E-02	1.68E-02	--	--	0.11	2.97E-02	5.70E-03
Rod Packing	601	--	--	0.00	0.00	--	--	0.01	0.00	0.00
Residue Dry Seal Vents	602	--	--	1.76E-03	1.76E-03	--	--	0.01	0.00	0.00
Methanol Tanks	--	--	--	--	--	--	3.52E-01	--	--	--
Measurement Devices	--	--	--	1.30E-03	1.30E-03	--	--	0.01	2.30E-03	4.42E-04
Future Site-Wide Emissions (tpy)		**0.00**	**0.00**	**0.02**	**0.02**	**0.05**	**0.35**	**1.25**	**0.04**	**0.01**

* Blowdown, closed drain tank, amine closed drain tank, loadout, and pigging emissions are controlled by the flare and thus accounted for under the Process Flare Emissions. See the detailed emission tables for individual sources.

Greenhouse Gas Potential Emissions

Process/Facility	Source ID	GHG (tpy)			
		CO_2	CH_4	N_2O	$CO_2(e)$
Cryo Plant 1 Regen Heater (H-1711)	031	6,850	0.129	0.013	6,857
Cryo Plant 2 Regen Heater (H-2711)	037	10,324	0.195	0.019	10,335
De-Ethanizer HMO Heater 1 (H-1767)	033	27,864	0.526	0.053	27,893
De-Ethanizer HMO Heater 2 (H-1768)	034	27,864	0.526	0.053	27,893
Stabilization HMO Heater (H-1769)	036	6,939	0.131	0.013	6,946
De-Ethanizer Regen Heater (H-1775)	035	3,820	0.072	0.007	3,824
Generac SD015	102	15.35	0.001	0.000	15
Generac SD150	102	75.65	0.003	0.001	76
Fugitives Emissions	701	0.37	12.467	-	349
Process Flare	C601	9158	53.562	0.017	10,662
Rod Packing	601	107	250.233	-	7,113
Residue Dry Seal Vents	602	1.43	402.903	-	11,283
Methanol Tanks	--	-	-	-	--
Measurement Devices	--	0.01	3.330	-	93
Future Site-Wide Emissions (tpy)					**113,340**

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant

Cryo Plant I Regen Heater
H-1711

Source Designation:	
Manufacturer:	Tulsa Heaters
Year Installed	2018
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,153
Rated Duty (mmbtu/hr)	8.67
Maximim Fired Heat Input (HHV) (mmbtu/hr)	11.84
Fuel Consumption (mmscf/hr):	1.03E-02
Potential Annual Hours of Operation (hr/yr):	8,760

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	**Emission Factor (lb/mmbtu) (lb/MMscf)[a,b]**	**Potential Emissions (lb/hr)[c]**	**(tons/yr)[d]**
NOx	0.04	0.473	2.074
CO	0.04	0.473	2.074
VOC	0.019	0.225	0.985
SO_2	0.68	0.0070	0.0305
PM Total	8.59	0.0882	0.3863
PM Condensable	6.44	0.066	0.290
PM_{10} (Filterable)	2.15	0.022	0.097
$PM_{2.5}$ (Filterable)	2.15	0.022	0.097
CO_2	59.9 kg/mmbtu	1,564	6,850
CH_4	0.001 kg/mmbtu	0.02950	0.129
N_2O	0.0001 kg/mmbtu	0.00295	0.013

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMscf)[a]	Potential Emissions	
		(lb/hr)[c]	(tons/yr)[d]
HAPs:			
3-Methylchloranthrene	2.03E-06	2.09E-08	9.15E-08
7,12-Dimethylbenz(a)anthracene	1.81E-05	1.86E-07	8.13E-07
Acenaphthene	2.03E-06	2.09E-08	9.15E-08
Acenaphthylene	2.03E-06	2.09E-08	9.15E-08
Anthracene	2.71E-06	2.78E-08	1.22E-07
Benz(a)anthracene	2.03E-06	2.09E-08	9.15E-08
Benzene	2.37E-03	2.44E-05	1.07E-04
Benzo(a)pyrene	1.36E-06	1.39E-08	6.10E-08
Benzo(b)fluoranthene	2.03E-06	2.09E-08	9.15E-08
Benzo(g,h,i)perylene	1.36E-06	1.39E-08	6.10E-08
Benzo(k)fluoranthene	2.03E-06	2.09E-08	9.15E-08
Chrysene	2.03E-06	2.09E-08	9.15E-08
Dibenzo(a,h) anthracene	1.36E-06	1.39E-08	6.10E-08
Dichlorobenzene	1.36E-03	1.39E-05	6.10E-05
Fluoranthene	3.39E-06	3.48E-08	1.52E-07
Fluorene	3.17E-06	3.25E-08	1.42E-07
Formaldehyde	8.48E-02	8.70E-04	3.81E-03
Hexane	2.03E+00	2.09E-02	9.15E-02
Indo(1,2,3-cd)pyrene	2.03E-06	2.09E-08	9.15E-08
Phenanthrene	1.92E-05	1.97E-07	8.64E-07
Pyrene	5.65E-06	5.80E-08	2.54E-07
Toluene	3.84E-03	3.95E-05	1.73E-04
Arsenic	2.26E-04	2.32E-06	1.02E-05
Beryllium	1.36E-05	1.39E-07	6.10E-07
Cadmium	1.24E-03	1.28E-05	5.59E-05
Chromium	1.58E-03	1.62E-05	7.12E-05
Cobalt	9.50E-05	9.75E-07	4.27E-06
Lead	5.65E-04	5.80E-06	2.54E-05
Manganese	4.30E-04	4.41E-06	1.93E-05
Mercury	2.94E-04	3.02E-06	1.32E-05
Nickel	2.37E-03	2.44E-05	1.07E-04
Selenium	2.71E-05	2.78E-07	1.22E-06
Polycyclic Organic Matter:			
Methylnaphthalene (2-)	2.71E-05	2.78E-07	1.22E-06
Naphthalene	6.90E-04	7.08E-06	3.10E-05
Total HAP		**2.19E-02**	**9.60E-02**

[a] Emission factors from manufacturers guarantees on VOC, NOx, and CO in lb/mmbtu. The remainder from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3 (07/98) for all criteria and HAP pollutants, corrected to site-specific gas heat content.

[b] Emission factors for GHG pollutants from 40 CFR Part 98, Subpart C and corrected to site-specific gas heat content.

[c] Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

[d] Annual Emissions $(\text{tons/yr})_{\text{Potential}} = (\text{lb/hr})_{\text{Emissions}} \times$ (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant

Cryo Plant II Regen Heater Equipped with FGR
H-2711

Source Designation:	
Manufacturer:	Tulsa Heaters
Year Installed	2023
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,153
Max Design Heat Release (mmbtu/hr)	17.84
Heat Release (LHV) (mmbtu/hr)	17.84
Fuel Consumption (mmscf/hr):	0.0155
Potential Annual Hours of Operation (hr/yr):	8,760

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	**Emission Factor (lb/mmbtu) (lb/MMscf)[a,b]**	**Potential Emissions (lb/hr)[c]**	**(tons/yr)[d]**
NOx	0.01	0.196	0.860
CO	0.04	0.714	3.126
VOC	0.019	0.339	1.485
SO_2	0.68	0.0105	0.0460
PM Total	0.013	0.232	1.016
PM Condensable	0.013	0.232	1.016
PM_{10} (Filterable)	0.013	0.232	1.016
$PM_{2.5}$ (Filterable)	0.013	0.232	1.016
CO_2	59.9 kg/mmbtu	2,357	10,324
CH_4	0.001 kg/mmbtu	0.04446	0.195
N_2O	0.0001 kg/mmbtu	0.00445	0.019

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMscf)[a]	Potential Emissions	
		(lb/hr)[c]	(tons/yr)[d]
HAPs:			
3-Methylchloranthrene	2.03E-06	3.15E-08	1.38E-07
7,12-Dimethylbenz(a)anthracene	1.81E-05	2.80E-07	1.23E-06
Acenaphthene	2.03E-06	3.15E-08	1.38E-07
Acenaphthylene	2.03E-06	3.15E-08	1.38E-07
Anthracene	2.71E-06	4.20E-08	1.84E-07
Benz(a)anthracene	2.03E-06	3.15E-08	1.38E-07
Benzene	2.37E-03	3.67E-05	1.61E-04
Benzo(a)pyrene	1.36E-06	2.10E-08	9.19E-08
Benzo(b)fluoranthene	2.03E-06	3.15E-08	1.38E-07
Benzo(g,h,i)perylene	1.36E-06	2.10E-08	9.19E-08
Benzo(k)fluoranthene	2.03E-06	3.15E-08	1.38E-07
Chrysene	2.03E-06	3.15E-08	1.38E-07
Dibenzo(a,h) anthracene	1.36E-06	2.10E-08	9.19E-08
Dichlorobenzene	1.36E-03	2.10E-05	9.19E-05
Fluoranthene	3.39E-06	5.25E-08	2.30E-07
Fluorene	3.17E-06	4.90E-08	2.14E-07
Formaldehyde	8.48E-02	1.31E-03	5.75E-03
Hexane	2.03E+00	3.15E-02	1.38E-01
Indo(1,2,3-cd)pyrene	2.03E-06	3.15E-08	1.38E-07
Phenanthrene	1.92E-05	2.97E-07	1.30E-06
Pyrene	5.65E-06	8.75E-08	3.83E-07
Toluene	3.84E-03	5.95E-05	2.60E-04
Arsenic	2.26E-04	3.50E-06	1.53E-05
Beryllium	1.36E-05	2.10E-07	9.19E-07
Cadmium	1.24E-03	1.92E-05	8.43E-05
Chromium	1.58E-03	2.45E-05	1.07E-04
Cobalt	9.50E-05	1.47E-06	6.43E-06
Lead	5.65E-04	8.75E-06	3.83E-05
Manganese	4.30E-04	6.65E-06	2.91E-05
Mercury	2.94E-04	4.55E-06	1.99E-05
Nickel	2.37E-03	3.67E-05	1.61E-04
Selenium	2.71E-05	4.20E-07	1.84E-06
Polycyclic Organic Matter:			
Methylnaphthalene (2-)	2.71E-05	4.20E-07	1.84E-06
Naphthalene	6.90E-04	1.07E-05	4.67E-05
Total HAP	**2.135**	**0.033**	**0.145**

[a] Emission factors from manufacturers guarantees on VOC, NOx, CO, PM in lb/mmbtu. The remainder from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3 (07/98) for all criteria and HAP pollutants, corrected to site-specific gas heat content.

[b] Emission factors for GHG pollutants from 40 CFR Part 98, Subpart C and corrected to site-specific gas heat content.

[c] Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

[d] Annual Emissions $(\text{tons/yr})_{\text{Potential}} = (\text{lb/hr})_{\text{Emissions}} \times$ (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant

DeEthanizer HMO Heaters
H-1767, H-1768

Source Designation:	
Manufacturer:	Scelerin Heaters LLC
Year Installed	2018
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,153
Rated Duty (mmbtu/hr)	34.38
Maximim Fired Heat Input (HHV) (mmbtu/hr)	48.15
Fuel Consumption (mmscf/hr):	4.18E-02
Potential Annual Hours of Operation (hr/yr):	8,760

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	**Emission Factor (lb/mmbtu) (lb/MMscf)[a,b]**	**Potential Emissions (lb/hr)[c]**	**(tons/yr)[d]**
NO_x	0.04	1.926	8.435
CO	0.04	1.926	8.435
VOC	0.019	0.915	4.007
SO_2	0.7	0.0283	0.1240
PM Total	8.6	0.3587	1.5713
PM Condensable	6.4	0.269	1.178
PM_{10} (Filterable)	2.1	0.090	0.393
$PM_{2.5}$ (Filterable)	2.1	0.090	0.393
CO_2	59.9 kg/mmbtu	6,362	27,864
CH_4	0.001 kg/mmbtu	0.11999	0.526
N_2O	0.0001 kg/mmbtu	0.01200	0.053

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMscf)[a]	Potential Emissions	
		(lb/hr)[c]	(tons/yr)[d]
HAPs:			
3-Methylchloranthrene	2.03E-06	8.50E-08	3.72E-07
7,12-Dimethylbenz(a)anthracene	1.81E-05	7.55E-07	3.31E-06
Acenaphthene	2.03E-06	8.50E-08	3.72E-07
Acenaphthylene	2.03E-06	8.50E-08	3.72E-07
Anthracene	2.71E-06	1.13E-07	4.96E-07
Benz(a)anthracene	2.03E-06	8.50E-08	3.72E-07
Benzene	2.37E-03	9.91E-05	4.34E-04
Benzo(a)pyrene	1.36E-06	5.66E-08	2.48E-07
Benzo(b)fluoranthene	2.03E-06	8.50E-08	3.72E-07
Benzo(g,h,i)perylene	1.36E-06	5.66E-08	2.48E-07
Benzo(k)fluoranthene	2.03E-06	8.50E-08	3.72E-07
Chrysene	2.03E-06	8.50E-08	3.72E-07
Dibenzo(a,h) anthracene	1.36E-06	5.66E-08	2.48E-07
Dichlorobenzene	1.36E-03	5.66E-05	2.48E-04
Fluoranthene	3.39E-06	1.42E-07	6.20E-07
Fluorene	3.17E-06	1.32E-07	5.79E-07
Formaldehyde	8.48E-02	3.54E-03	1.55E-02
Hexane	2.03E+00	8.50E-02	3.72E-01
Indo(1,2,3-cd)pyrene	2.03E-06	8.50E-08	3.72E-07
Phenanthrene	1.92E-05	8.02E-07	3.51E-06
Pyrene	5.65E-06	2.36E-07	1.03E-06
Toluene	3.84E-03	1.60E-04	7.03E-04
Arsenic	2.26E-04	9.44E-06	4.13E-05
Beryllium	1.36E-05	5.66E-07	2.48E-06
Cadmium	1.24E-03	5.19E-05	2.27E-04
Chromium	1.58E-03	6.61E-05	2.89E-04
Cobalt	9.50E-05	3.97E-06	1.74E-05
Lead	5.65E-04	2.36E-05	1.03E-04
Manganese	4.30E-04	1.79E-05	7.86E-05
Mercury	2.94E-04	1.23E-05	5.38E-05
Nickel	2.37E-03	9.91E-05	4.34E-04
Selenium	2.71E-05	1.13E-06	4.96E-06
Polycyclic Organic Matter:			
Methylnaphthalene (2-)	2.71E-05	1.13E-06	4.96E-06
Naphthalene	6.90E-04	2.88E-05	1.26E-04
Total HAP		**8.91E-02**	**3.90E-01**

[a] Emission factors from manufacturers guarantees on VOC, NOx, and CO in lb/mmbtu. The remainder from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3 (07/98) for all criteria and HAP pollutants, corrected to site-specific gas heat content.

[b] Emission factors for GHG pollutants from 40 CFR Part 98, Subpart C and corrected to site-specific gas heat content.

[c] Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

[d] Annual Emissions $(\text{tons/yr})_{\text{Potential}} = (\text{lb/hr})_{\text{Emissions}} \times$ (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant

Stabilization HMO Heater
H-1769

Source Designation:	
Manufacturer:	Tulsa Heaters
Year Installed	2018
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,153
Rated Duty (mmbtu/hr)	8.92
Maximim Fired Heat Input (HHV) (mmbtu/hr)	11.99
Fuel Consumption (mmscf/hr):	1.04E-02
Potential Annual Hours of Operation (hr/yr):	8,760

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	**Emission Factor (lb/mmbtu) (lb/MMscf)[a,b]**	**Potential Emissions (lb/hr)[c]**	**(tons/yr)[d]**
NO_x	0.04	0.480	2.101
CO	0.04	0.480	2.101
VOC	0.019	0.228	0.998
SO_2	0.7	0.0071	0.0309
PM Total	8.6	0.0893	0.3913
PM Condensable	6.4	0.067	0.293
PM_{10} (Filterable)	2.1	0.022	0.098
$PM_{2.5}$ (Filterable)	2.1	0.022	0.098
CO_2	59.9 kg/mmbtu	1,584	6,939
CH_4	0.001 kg/mmbtu	0.02988	0.131
N_2O	0.0001 kg/mmbtu	0.00299	0.013

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMscf)[a]	Potential Emissions	
		(lb/hr)[c]	(tons/yr)[d]
HAPs:			
3-Methylchloranthrene	2.03E-06	2.12E-08	9.27E-08
7,12-Dimethylbenz(a)anthracene	1.81E-05	1.88E-07	8.24E-07
Acenaphthene	2.03E-06	2.12E-08	9.27E-08
Acenaphthylene	2.03E-06	2.12E-08	9.27E-08
Anthracene	2.71E-06	2.82E-08	1.24E-07
Benz(a)anthracene	2.03E-06	2.12E-08	9.27E-08
Benzene	2.37E-03	2.47E-05	1.08E-04
Benzo(a)pyrene	1.36E-06	1.41E-08	6.18E-08
Benzo(b)fluoranthene	2.03E-06	2.12E-08	9.27E-08
Benzo(g,h,i)perylene	1.36E-06	1.41E-08	6.18E-08
Benzo(k)fluoranthene	2.03E-06	2.12E-08	9.27E-08
Chrysene	2.03E-06	2.12E-08	9.27E-08
Dibenzo(a,h) anthracene	1.36E-06	1.41E-08	6.18E-08
Dichlorobenzene	1.36E-03	1.41E-05	6.18E-05
Fluoranthene	3.39E-06	3.53E-08	1.54E-07
Fluorene	3.17E-06	3.29E-08	1.44E-07
Formaldehyde	8.48E-02	8.82E-04	3.86E-03
Hexane	2.03E+00	2.12E-02	9.27E-02
Indo(1,2,3-cd)pyrene	2.03E-06	2.12E-08	9.27E-08
Phenanthrene	1.92E-05	2.00E-07	8.75E-07
Pyrene	5.65E-06	5.88E-08	2.57E-07
Toluene	3.84E-03	4.00E-05	1.75E-04
Arsenic	2.26E-04	2.35E-06	1.03E-05
Beryllium	1.36E-05	1.41E-07	6.18E-07
Cadmium	1.24E-03	1.29E-05	5.66E-05
Chromium	1.58E-03	1.65E-05	7.21E-05
Cobalt	9.50E-05	9.87E-07	4.32E-06
Lead	5.65E-04	5.88E-06	2.57E-05
Manganese	4.30E-04	4.47E-06	1.96E-05
Mercury	2.94E-04	3.06E-06	1.34E-05
Nickel	2.37E-03	2.47E-05	1.08E-04
Selenium	2.71E-05	2.82E-07	1.24E-06
Polycyclic Organic Matter:			
Methylnaphthalene (2-)	2.71E-05	2.82E-07	1.24E-06
Naphthalene	6.90E-04	7.17E-06	3.14E-05
Total HAP		**2.22E-02**	**9.72E-02**

[a] Emission factors from manufacturers guarantees on VOC, NOx, and CO in lb/mmbtu. The remainder from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3 (07/98) for all criteria and HAP pollutants, corrected to site-specific gas heat content.

[b] Emission factors for GHG pollutants from 40 CFR Part 98, Subpart C and corrected to site-specific gas heat content.

[c] Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

[d] Annual Emissions $(\text{tons/yr})_{\text{Potential}} = (\text{lb/hr})_{\text{Emissions}} \times$ (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant

DeEthanization Regen Heater
H-1775

Source Designation:	
Manufacturer:	Tulsa Heaters
Year Installed	2018
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,153
Rated Duty (mmbtu/hr)	4.82
Maximim Fired Heat Input (HHV) (mmbtu/hr)	6.60
Fuel Consumption (mmscf/hr):	5.72E-03
Potential Annual Hours of Operation (hr/yr):	8,760

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	**Emission Factor (lb/mmbtu) (lb/MMscf)[a,b]**	**Potential Emissions (lb/hr)[c]**	**(tons/yr)[d]**
NO_x	0.04	0.264	1.156
CO	0.04	0.264	1.156
VOC	0.019	0.125	0.549
SO_2	0.7	0.0039	0.0170
PM Total	8.6	0.0492	0.2154
PM Condensable	6.4	0.037	0.162
PM_{10} (Filterable)	2.1	0.012	0.054
$PM_{2.5}$ (Filterable)	2.1	0.012	0.054
CO_2	59.9 kg/mmbtu	872	3,820
CH_4	0.001 kg/mmbtu	0.01645	0.072
N_2O	0.0001 kg/mmbtu	0.00164	0.007

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMscf)[a]	Potential Emissions	
		(lb/hr)[c]	(tons/yr)[d]
HAPs:			
3-Methylchloranthrene	2.03E-06	1.16E-08	5.10E-08
7,12-Dimethylbenz(a)anthracene	1.81E-05	1.04E-07	4.53E-07
Acenaphthene	2.03E-06	1.16E-08	5.10E-08
Acenaphthylene	2.03E-06	1.16E-08	5.10E-08
Anthracene	2.71E-06	1.55E-08	6.80E-08
Benz(a)anthracene	2.03E-06	1.16E-08	5.10E-08
Benzene	2.37E-03	1.36E-05	5.95E-05
Benzo(a)pyrene	1.36E-06	7.76E-09	3.40E-08
Benzo(b)fluoranthene	2.03E-06	1.16E-08	5.10E-08
Benzo(g,h,i)perylene	1.36E-06	7.76E-09	3.40E-08
Benzo(k)fluoranthene	2.03E-06	1.16E-08	5.10E-08
Chrysene	2.03E-06	1.16E-08	5.10E-08
Dibenzo(a,h) anthracene	1.36E-06	7.76E-09	3.40E-08
Dichlorobenzene	1.36E-03	7.76E-06	3.40E-05
Fluoranthene	3.39E-06	1.94E-08	8.50E-08
Fluorene	3.17E-06	1.81E-08	7.94E-08
Formaldehyde	8.48E-02	4.85E-04	2.13E-03
Hexane	2.03E+00	1.16E-02	5.10E-02
Indo(1,2,3-cd)pyrene	2.03E-06	1.16E-08	5.10E-08
Phenanthrene	1.92E-05	1.10E-07	4.82E-07
Pyrene	5.65E-06	3.24E-08	1.42E-07
Toluene	3.84E-03	2.20E-05	9.64E-05
Arsenic	2.26E-04	1.29E-06	5.67E-06
Beryllium	1.36E-05	7.76E-08	3.40E-07
Cadmium	1.24E-03	7.12E-06	3.12E-05
Chromium	1.58E-03	9.06E-06	3.97E-05
Cobalt	9.50E-05	5.44E-07	2.38E-06
Lead	5.65E-04	3.24E-06	1.42E-05
Manganese	4.30E-04	2.46E-06	1.08E-05
Mercury	2.94E-04	1.68E-06	7.37E-06
Nickel	2.37E-03	1.36E-05	5.95E-05
Selenium	2.71E-05	1.55E-07	6.80E-07
Polycyclic Organic Matter:			
Methylnaphthalene (2-)	2.71E-05	1.55E-07	6.80E-07
Naphthalene	6.90E-04	3.95E-06	1.73E-05
Total HAP		**0.01**	**0.05**

[a] Emission factors from manufacturers guarantees on VOC, NOx, and CO in lb/mmbtu. The remainder from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3 (07/98) for all criteria and HAP pollutants, corrected to site-specific gas heat content.

[b] Emission factors for GHG pollutants from 40 CFR Part 98, Subpart C and corrected to site-specific gas heat content.

[c] Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

[d] Annual Emissions $(\text{tons/yr})_{\text{Potential}} = (\text{lb/hr})_{\text{Emissions}} \times$ (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant

Flare

Source Designation:	
Manufacturer:	John Zink
Operating Hours: (hr/yr)	8,760
Pilot + Purge Gas Heat Input (MMBtu/hr)	3.205
Pilot + Purge Gas Annual Fuel Use (mmscf/yr)	26.518
Pilot Fuel Consumption (mmscf/hr):	2.00E-04
Purge Fuel Consumption (mmscf/hr):	2.83E-03
Fuel HHV (Btu/scf)	1,059

Combustion of Hydrocarbons

Source Designation:	
Annual Gas Flow (mmscf/yr)	100.00
Heating value (btu/scf)	1,282.67
Maximum Heat Release of Flare (mmbtu/yr)	128,267

Total Emissions

Pollutant	**Emission Factor (lb/MMBtu)**	**lb/hr**	**tpy**
VOC	--	3.05	13.34
NO_X	0.068	1.21	5.32
CO	0.31	5.53	24.23
SO_2	0.0005	0.01	0.04
PM Total	0.0064	0.11	0.50
PM Condensable	0.0048	0.09	0.37
PM_{10} (Filterable)	0.0016	0.03	0.12
$PM_{2.5}$ (Filterable)	0.0016	0.03	0.12
Hazardous Air Pollutants		**lb/hr**	**tpy**
HAP	--	0.05	0.23
n-Hexane	--	0.02	0.11
Benzene	--	0.00	0.02
Toluene	--	0.01	0.03
Ethylbenzene	--	0.00	0.02
Xylene	--	0.00	0.01
Greenhouse Gases	**Emission Factor (lb/MMBtu)**	**lb/hr**	**tpy**
CO_2	117.05	2090.78	9157.61
CH_4	0.002	12.23	53.56
N_2O	0.0002	0.00	0.02

[a] The NOx and CO emission factors are from AP-42 Section 13.5 "Industrial Flares" Table 13.5-1.

[b] Emission factors for GHG pollutants from 40 CFR Part 98, Subpart C. Tables C-1 and C-2.

[c] The remaining factors are from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1 and 1.4-2.

[d] VOC and HAP emissions are based on mass balance.

[e] The flare calculations assume the composition to the flare is inlet gas.

[f] The open flare controls existing sources and will control the proposed sources during infrequent periods (no more than 5% of the year) when the VRU is down for maintenance.

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant

Pigging Emissions (Controlled by Flare or VRU)

Description	Gas Source Basis	Pressure Type	High to Low Pressure Jumper	Control Device	L/R	Size	Max Events/Yr	Pressure (PSIG)[a]	Temp (deg F)	Vessel Volume (acf)	Z Factor[a]	R Factor[b]	MW of Gas[a]	Maximum Volume		VOC			HAP		
								Pre-Jump			Pre-Jump			Per Event (scf)	Annually (scf/yr)	Wt%[a]	Pre-Control tpy[c]	Controlled tpy[c]	Wt%[a]	Pre-Control tpy[c]	Controlled tpy[c]
Houston Plant HP NGL Launcher	Harmon Creek Plant	HP	N	Flare	Launcher	12	1	1100	85	19.04	0.956	1,545	20.8	1,509.8	1,510	23.9%	0.012	0.000	0.41%	0.00	0.0000
Mariner West HP Ethane Launcher	Harmon Creek Plant	HP	N	Flare	Launcher	10	1	1100	85	15.95	0.956	1,545	20.8	1,264.8	1,265	23.9%	0.010	0.000	0.41%	0.00	0.0000
National Fuel Line N HP Residue Launcher	Harmon Creek Plant	HP	N	Flare	Launcher	20	1	1300	85	55.07	0.956	1,545	20.8	5,150.3	5,150	23.9%	0.040	0.001	0.41%	0.00	0.0000
Rover HP Interconnect Launcher	Harmon Creek Plant	HP	N	Flare	Launcher	24	1	1300	85	108.94	0.758	1,545	20.8	12,852.0	12,852	23.9%	0.101	0.002	0.41%	0.00	0.0000
Smith CS to Harmon Creek Plant HP Receiver	Harmon Creek Plant	HP	N	Flare	Receiver	20	365	1060	54.2	26.50	0.956	1,545	21.0	2,025.9	739,460	20.2%	4.945	0.099	1.67%	0.41	0.0082
Total															**760,236**			**0.102**			**0.008**

*

Pigging emissions are controlled by the flare and emission associated with pigging events are accounted for in the Flare Emissions section. While potential emissions are included in this section, they are captured under the flaring emissions in the Facility Summary.

[a] Actual factors for PSIG, Z-factor, MW of gas, VOC wt% of gas and LHV of gas have been calculated but the numbers in the spreadsheet are provided to be very conservative in the event that the composition of the gas field changes over time.

[b] R Factor = (psfa*ft3* lbmol/(lb*R))

[c] Per the Consent Decree filed in April 2018, the mass of VOC emissions from pigging operations are multiplied by a factor of: 1.2

CO_2 wt%	0.21%	
CH_4 wt%	77.0%	
CO_2 emissions	**0.001**	**tpy**
CH_4 emissions	**0.33**	**tpy**

MarkWest Liberty Midstream & Resources, L.L.C.

Harmon Creek Gas Plant

Estimated Potential Blowdowns (Controlled by Flare)

Compressor	Location	Description	Rated HP[a]	Blowdown frequency per year	Est. Elapsed Time (mins)[f]	Mass Emission Rate (lb/hr)	Volumetric Flowrate (scfm)	Operating pressure (PSIG)	Volume Gas or Liquid (ft^3)	Product	Z-factor	MW	Volume Routed to Flare (scf)	Mass Routed to Flare (lb)	VOC Wt%	VOC Emissions (lbs)	HAP wt%	HAP Emissions (lbs)	Methane wt%	Methane Emissions (lbs)	CO2 wt%	CO2 Emissions (lbs)	Blowdowns to Flare or Atmosphere	Compressor Packing or Dry Seal Vents
C-1111	Cryo-1	Regen Centrifugal	150	6	15	162.8	48.6	1,100.00	20	Inlet	0.71	21.17	730	41	23.886%	9.724	0.409%	0.166	77.010%	31.352	0.212%	8.626%	Flare	Flare
C-2111	Cryo-2	Regen Centrifugal	150	6	15	162.8	48.6	1,100.00	20	Inlet	0.71	21.17	730	41	23.886%	9.724	0.409%	0.166	77.010%	31.352	0.212%	8.626%	Flare	Flare
C-1121	Cryo-1	Centrifugal w/ no drive	19700	6	30	1856.9	714.9	400.00	2681	Residue	0.95	17.04	21446	928	0.109%	1.013	0.000%	0.000	95.123%	883.156	0.528%	489.990%	Flare	No Vents
C-2121	Cryo-2	Centrifugal w/ no drive	19700	6	30	1856.9	714.9	400.00	2681	Residue	0.95	17.04	21446	928	0.109%	1.013	0.000%	0.000	95.123%	0.000	0.528%	0.000%	Flare	No Vents
C-1151	Cryo-1	Recip	5000	6	20	125.7	48.4	385.00	125.5	Residue	0.95	17.04	968	42	0.109%	0.046	0.000%	0.000	95.123%	39.848	0.528%	22.108%	Flare	Atmosphere
				6	20	305.5	117.6	705.00	162.3	Residue	0.91	17.04	2352	102	0.109%	0.111	0.000%	0.000	95.123%	96.868	0.528%	53.744%	Flare	Atmosphere
				6	20	206.1	79.3	1,210.00	60.8	Residue	0.86	17.04	1587	69	0.109%	0.075	0.000%	0.000	95.123%	96.868	0.528%	53.744%	Flare	Atmosphere
C-1152	Cryo-1	Recip	5000	6	20	125.7	48.4	385.00	125.5	Residue	0.95	17.04	968	42	0.109%	0.046	0.000%	0.000	95.123%	96.868	0.528%	53.744%	Flare	Atmosphere
				6	20	305.5	117.6	705.00	162.3	Residue	0.91	17.04	2352	102	0.109%	0.111	0.000%	0.000	95.123%	96.868	0.528%	53.744%	Flare	Atmosphere
				6	20	206.1	79.3	1,210.00	60.8	Residue	0.86	17.04	1587	69	0.109%	0.075	0.000%	0.000	95.123%	96.868	0.528%	53.744%	Flare	Atmosphere
C-1153	Cryo-1	Recip	5000	6	20	125.7	48.4	385.00	125.5	Residue	0.95	17.04	968	42	0.109%	0.046	0.000%	0.000	95.123%	96.868	0.528%	53.744%	Flare	Atmosphere
				6	20	305.5	117.6	705.00	162.3	Residue	0.91	17.04	2352	102	0.109%	0.111	0.000%	0.000	95.123%	96.868	0.528%	53.744%	Flare	Atmosphere
				6	20	206.1	79.3	1,210.00	60.8	Residue	0.86	17.04	1587	69	0.109%	0.075	0.000%	0.000	95.123%	96.868	0.528%	53.744%	Flare	Atmosphere
C-1154	Cryo-1	Recip	5000	6	20	125.7	48.4	385.00	125.5	Residue	0.95	17.04	968	42	0.109%	0.046	0.000%	0.000	95.123%	96.868	0.528%	53.744%	Flare	Atmosphere
				6	20	305.5	117.6	705.00	162.3	Residue	0.91	17.04	2352	102	0.109%	0.111	0.000%	0.000	95.123%	96.868	0.528%	53.744%	Flare	Atmosphere
				6	20	206.1	79.3	1,210.00	60.8	Residue	0.86	17.04	1587	69	0.109%	0.075	0.000%	0.000	95.123%	96.868	0.528%	53.744%	Flare	Atmosphere
C-2151	Cryo-2	Recip	5000	6	20	125.7	48.4	385.00	125.5	Residue	0.95	17.04	968	42	0.109%	0.046	0.000%	0.000	95.123%	39.848	0.528%	22.108%	Flare	Atmosphere
				6	20	305.5	117.6	705.00	162.3	Residue	0.91	17.04	2352	102	0.109%	0.111	0.000%	0.000	95.123%	96.868	0.528%	53.744%	Flare	Atmosphere
				6	20	206.1	79.3	1,210.00	60.8	Residue	0.86	17.04	1587	69	0.109%	0.075	0.000%	0.000	95.123%	96.868	0.528%	53.744%	Flare	Atmosphere
C-2152	Cryo-2	Recip	5000	6	20	125.7	48.4	385.00	125.5	Residue	0.95	17.04	968	42	0.109%	0.046	0.000%	0.000	95.123%	39.848	0.528%	22.108%	Flare	Atmosphere
				6	20	305.5	117.6	705.00	162.3	Residue	0.91	17.04	2352	102	0.109%	0.111	0.000%	0.000	95.123%	96.868	0.528%	53.744%	Flare	Atmosphere
				6	20	206.1	79.3	1,210.00	60.8	Residue	0.86	17.04	1587	69	0.109%	0.075	0.000%	0.000	95.123%	96.868	0.528%	53.744%	Flare	Atmosphere
C-2153	Cryo-2	Recip	5000	6	20	125.7	48.4	385.00	125.5	Residue	0.95	17.04	968	42	0.109%	0.046	0.000%	0.000	95.123%	39.848	0.528%	22.108%	Flare	Atmosphere
				6	20	305.5	117.6	705.00	162.3	Residue	0.91	17.04	2352	102	0.109%	0.111	0.000%	0.000	95.123%	96.868	0.528%	53.744%	Flare	Atmosphere
				6	20	206.1	79.3	1,210.00	60.8	Residue	0.86	17.04	1587	69	0.109%	0.075	0.000%	0.000	95.123%	96.868	0.528%	53.744%	Flare	Atmosphere
C-1179	Deeth-1	Centirfugal	100	6	15	121.2	26.2	495.00	14	Ethane	0.57	30.07	394	30	0.001%	0.000	0.001%	0.000	0.000%	0.000	0.001%	0.030%	Flare	Flare
C-1140	Cro-1	Screw	1500	6	20	446.9	65.3	297.00	204	Propane	0.84	16.04	1307	149	100.000%	148.971	0.001%	0.001	0.000%	0.000	0.000%	0.000%	Flare	No Vents
C-1141	Cro-1	Screw	1500	6	20	446.9	65.3	297.00	204	Propane	0.84	16.04	1307	149	100.000%	148.971	0.001%	0.001	0.000%	0.000	0.000%	0.000%	Flare	No Vents
C-1142	Cro-1	Screw	1500	6	20	446.9	65.3	297.00	204	Propane	0.84	16.04	1307	149	100.000%	148.971	0.001%	0.001	0.000%	0.000	0.000%	0.000%	Flare	No Vents
C-1155	Deeth-1	Screw	1500	6	20	446.9	65.3	297.00	204	Propane	0.84	16.04	1307	149	100.000%	148.971	0.001%	0.001	0.000%	0.000	0.000%	0.000%	Flare	No Vents
C-1156	Deeth-1	Screw	1500	6	20	446.9	65.3	297.00	204	Propane	0.84	16.04	1307	149	100.000%	148.971	0.001%	0.001	0.000%	0.000	0.000%	0.000%	Flare	No Vents
C-1157	Deeth-1	Screw	1500	6	20	446.9	65.3	297.00	204	Propane	0.84	16.04	1307	149	100.000%	148.971	0.001%	0.001	0.000%	0.000	0.000%	0.000%	Flare	No Vents
C-2141	Cro-2	Screw	1500	6	20	446.9	65.3	297.00	204	Propane	0.84	16.04	1307	149	100.000%	148.971	0.001%	0.001	0.000%	0.000	0.000%	0.000%	Flare	No Vents
C-2142	Cro-2	Screw	1500	6	20	446.9	65.3	297.00	204	Propane	0.84	16.04	1307	149	100.000%	148.971	0.001%	0.001	0.000%	0.000	0.000%	0.000%	Flare	No Vents
C-2140	Cro-2	Screw	1500	6	20	446.9	65.3	297.00	204	Propane	0.84	16.04	1307	149	100.000%	148.971	0.001%	0.001	0.000%	0.000	0.000%	0.000%	Flare	No Vents
C-1191	Stabilzer	Recip	900	6	20	197.0	58.9	285.00	122	Inlet	0.71	21.17	1177	66	23.886%	15.687	0.409%	0.268	77.010%	50.577	0.212%	13.915%	Flare	Atmosphere
				6	20	741.1	221.4	1,117.00	122	Inlet	0.71	21.17	4428	247	23.886%	59.006	0.409%	0.268	77.010%	50.577	0.212%	13.915%	Flare	Atmosphere
C-1192	Stabilzer	Recip	900	6	20	196.3	58.6	285.00	122	Inlet	0.71	21.17	1173	65	23.886%	15.626	0.409%	0.268	77.010%	50.577	0.212%	13.915%	Flare	Atmosphere
				6	20	741.1	221.4	1,117.00	122	Inlet	0.71	21.17	4428	247	23.886%	59.006	0.409%	0.268	77.010%	50.577	0.212%	13.915%	Flare	Atmosphere
C-0501	OSBL	Recip	75	6	15	9.3	1.3	25.00	10	CO2	0.94	43.57	20	2	0.001%	0.000	0.001%	0.000	0.000%	0.000	100.00%	231.876%	Flare	Atmosphere
				6	15	12.5	1.8	40.00	10	CO2	0.94	43.57	27	3	0.001%	0.000	0.001%	0.000	0.000%	0.000	100.00%	231.876%	Flare	Atmosphere
				6	15	51.4	7.5	210.00	10	CO2	0.94	43.57	112	13	0.001%	0.000	0.001%	0.000	0.000%	0.000	100.00%	231.876%	Flare	Atmosphere
				6	15	99.5	14.4	420.00	10	CO2	0.94	43.57	217	25	0.001%	0.000	0.001%	0.000	0.000%	0.000	100.00%	231.876%	Flare	Atmosphere
--	Various	Misc. Maintenance Activities	--	64	Varies	--	--	1,200.00	500	Inlet	0.71	21.17	207761	11591	23.886%	2768.661	0.409%	47.387	77.010%	8926.448	0.212%	2455.953%	VRU/Flare	--
--	Plant	Plant Shutdown	--	1	120-480	80,343-321,372	24,001-96,004	--	--	Inlet	0.71	21.17	7680320	428496	23.886%	102349.318	0.409%	1751.749	77.010%	329984.729	0.212%	90789.419%	Flare	--
											Total Volume to Flare		15,981,031			Total (lbs)		3,601		683,731		1,915	
															Potential	Controlled (lbs)		72.02		13674.62		38.30	
																Controlled (tpy)		0.04		6.84		0.02	

[a] Maintenance blowdown frequencies and volumes listed are estimates and may vary. Maintenance blowdown emissions are controlled by the flare and accounted for in the flare emissions section.

[b] Volumes of compressors based on engineering estimates or calculated using CATG3612 at 483.1 acf and scaled to horsepower from 3550.

[c] Miscellaneous maintenance activities, such as filter change outs, are included for conservatism.

[d] The plant shutdown volume is based on estimates from actual flare meter data and a conservative factor of 3 is applied to the volume to account for HC2 and HC3.

[e] A factor of 2.0 is applied to the total blowdown volume to flare for conservatism.

[f] The elapsed time for each blowdown will vary based on equipment size and operating parameters.The elapsed times and mass and volumetric flowrates provided are estimates based on typical blowdown times for each unit.

Calculation Methodology

Emissions (lbs) = ((Operating P (PSIG) + Standard P (14.7 PSIG)) x Volume x MW) / (R (1545 ft lb/lb-mol R) x Standard Temp (60 F) x Z-Factor) x Pollutant wt% x # Events x Control Efficiency (1-98%)

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant
Closed Drain Tank Estimates

Closed Drain Tank Emission Estimates

Closed Drain Tank Estimates

Emission Rate	11.81	(mmscf/yr)
Density	0.056	(lb/scf)
Total Emissions	658,746	(lb/yr)
Flare DRE	98%	
Total Emissions	13,175	(lb/yr)

Pollutant	Mass %	Pre-Control	Controlled
		tpy	tpy
VOC	23.89%	78.67	1.573
Methane	77.01%	253.65	5.073
Carbon Dioxide	0.21%	0.70	0.014
n-Hexane	0.19%	0.63	0.013
Benzene	0.030%	0.10	0.002
Toluene	0.053%	0.18	0.004
Ethylbenzene	0.030%	0.10	0.002
Xylene	0.010%	0.03	0.001
Total HAPs	0.41%	1.35	0.027

[1] The emission estimates provided under this section have been estimated using the best information available. The closed drain tank emissions are included in the facility-wide summary under the Flare Emissions.

[2] The emission rate was calculated using AP-42 Chapter 7 Section 7.1.3.1.1 Standing and Section 7.1.3.1.2 Working Losses

[3] The tank loss emissions assume inlet composition. Fractional compositions are not available for tank liquids.

[4] The tank volume is based on engineering calculations of 550 acf.

[5] The throughput is based on 220,000 gal/year, which is conservatively 3x the current actual.

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant
Amine Closed Drain Tank Estimates

Amine Closed Drain Tank Emission Estimates

Amine Closed Drain Tank Estimates

Emission Rate	0.82	(mmscf/yr)
Density	0.110	(lb/scf)
Total Emissions	90,338	(lb/yr)
Flare DRE	98%	
Total Emissions	1,807	(lb/yr)

Pollutant	Mass %	Pre-Control	Controlled
		tpy	tpy
VOC	0.04%	0.02	0.000
Methane	0.23%	0.10	0.002
Carbon Dioxide	88.98%	40.19	0.804
n-Hexane	0.00%	0.00	0.000
Benzene	0.000%	0.00	0.000
Toluene	0.00%	0.00	0.000
Ethylbenzene	0.00%	0.00	0.000
Xylene	0.00%	0.00	0.000
Total HAPs	0.00%	0.00	0.000

[1] The emission estimates provided under this section have been estimated using the best information available. The amine drain tank emissions are included in the facility-wide summary under the Flare Emissions.

[2] The emission rate was calculated using AP-42 Chapter 7 Section 7.1.3.1.1 Standing and Section 7.1.3.1.2 Working Losses

[3] The tank loss emissions assume the composition with the highest HC content anticipated to be routed to the amine closed drain tank. Fractional compositions are not available for tank liquids.

[4] The tank volume is based on engineering calculations of 193 acf.

[5] The throughput is based on 10,080 gal/year, which is conservatively 2x the current actual with a 20% factor.

MarkWest Liberty Midstream and Resources, L.L.C.
Harmon Creek Gas Plant

Condensate Truck Loadout Emissions

Source	Volume Loaded (gal/yr)	Saturation Factor[1]	Vapor Pressure[2] (psia)	Vapor Molecular Weight[2] (lb/lb-mol)	Liquid Temp[3] (°F)	Liquid Temp (°R)	Loading Loss[4] (lb VOC/1000 gal)	Loading Loss (lb/yr)	(tpy)
Harmon Creek Closed Drain Tank	220,000	0.6	8.1621	60	58.5	518.2	7.1	1,554.44	0.78

[1] From AP-42 Table 5.2-1, for tank trucks in submerged loading: dedicated normal service

[2] From AP42 Table 7.1-2, Gasoline (RVP 15), 60 deg

[3] Daily average liquid surface temperature (TANKS 4.09d)

[4] Loading Loss (lb VOC/1000 gal) = (12.46*S*P*M)/T [AP42 Section 5.2 (1/95)]

[5] Loading losses are controlled by the existing open flare. Thus, emissions associated with the condensate truck loadout are captured under theFlare Emissions sections.

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant

Admin Room Emergency Generator
(G-1)

Source Designation:	
Generator Manufacturer	Generac
Generator Model No:	SD015
Engine Manufacturer:	Generac
Engine Model No.:	A2400T-Gen1
EPA Tier Designation	Tier 4 Interim
Stroke Cycle:	4-stroke
Type of Burn:	Diesel
Year Installed	2019
Fuel Used:	Diesel
Fuel High Heating Value (HHV) (Btu/gal):	137,380
Rated Horsepower (bhp):	49.0
Maximum Fuel Consumption at 100% Load (gal/hr):	2.7
Heat Input (MMBtu/hr)	0.38

Operational Details:

Potential Annual Hours of Operation (hr/yr):	500
Potential Fuel Consumption (gal/yr):	1,370

Criteria and Manufacturer Specific Pollutant Emission Factors:

Pollutant	**Emission Factors[b,c]**	**Units**
NOx	2.44	g/bhp-hr
CO	1.34	g/bhp-hr
SO_2	9.30E-01	g/bhp-hr
PM_{10} (Filterable)	1.90E-01	g/bhp-hr
$PM_{2.5}$ (Filterable)	1.90E-01	g/bhp-hr
PM Condensable	1.90E-01	g/bhp-hr
PM Total	1.90E-01	g/bhp-hr
VOC	0.77	g/bhp-hr
CO2	73.96	kg/mmbtu
CH4	3E-03	kg/mmbtu
N2O	6E-04	kg/mmbtu

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant

Admin Room Emergency Generator
(G-1)

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	Potential Emissions (lb/hr)[d]	Potential Emissions (tons/yr)[e]
NO_x	0.26	0.07
CO	0.14	0.04
SO_2	0.10	0.03
PM_{10} (Filterable)	0.02	0.01
$PM_{2.5}$ (Filterable)	0.02	0.01
PM Condensable	0.02	0.01
PM Total	0.02	0.01
VOC	0.08	0.02
CO2	61.42	15.35
CH4	0.00	0.0006
N2O	0.00	0.0001

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMBtu)[a]	Potential Emissions (lb/hr)[d]	Potential Emissions (tons/yr)[e]
HAPs:			
Acetaldehyde	7.67E-04	2.89E-04	7.22E-05
Acrolein	9.25E-05	3.48E-05	8.70E-06
Benzene	9.33E-04	3.51E-04	8.78E-05
1,3-Butadiene	3.91E-05	1.47E-05	3.68E-06
Formaldehyde	1.18E-03	4.44E-04	1.11E-04
Toluene	4.09E-04	1.54E-04	3.85E-05
Xylene	2.85E-04	1.07E-04	2.68E-05
Polycyclic Organic Matter:			
Naphthalene	8.48E-05	3.19E-05	7.98E-06
Total HAP		**1.43E-03**	**3.57E-04**

[a] HAP emission factors from AP-42 Section 3.2, Table 3.3-2 "Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines,"

[b] Criteria pollutant emission factors are based on Manufacturer Data for NOx, CO, PM and VOC. The NOx + NMHC factor is assumed to be 76% NOx and 24% VOC. SO2 is from AP-42 Table 3.3-1.

[c] GHG pollutant emission factors are from Part 98 Tables C-1 and C-2 for Distillate Fuel No. 2.

[d] Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr or bhp) × Emission Factor (lb/MMBtu or lb/bhp-hr).

[e] Annual Emissions $(tons/yr)_{Potential}$ = $(lb/hr)_{Emissions}$ × (Maximum Allowable Operating Hours/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream and Resources, L.L.C.
Harmon Creek Gas Plant

Control Room Emergency Generator
(G-2)

Source Designation:	
Generator Manufacturer	Generac
Generator Model No:	SD150
Engine Manufacturer:	Generac
Engine Model No.:	4BT3.3-G5
EPA Tier Designation:	Tier 3
Stroke Cycle:	4-stroke
Type of Burn:	Diesel
Year Installed	2019
Fuel Used:	Diesel
Fuel High Heating Value (HHV) (Btu/gal):	137,380
Nameplate Horsepower (bhp):	279.0
Maximum Fuel Consumption at 100% Load (gal/hr):	13.5
Heat Input (MMBtu/hr)	1.85

Operational Details:

Potential Annual Hours of Operation (hr/yr):	500
Potential Fuel Consumption (gal/yr):	6,750

Criteria and Manufacturer Specific Pollutant Emission Factors:

Pollutant	**Emission Factors[b,c]**	**Units**
NOx	2.13	g/bhp-hr
CO	0.90	g/bhp-hr
SO_2	1.70E-01	g/bhp-hr
PM_{10} (Filterable)	6.00E-02	g/bhp-hr
$PM_{2.5}$ (Filterable)	6.00E-02	g/bhp-hr
PM Condensable	6.00E-02	g/bhp-hr
PM Total	6.00E-02	g/bhp-hr
VOC	0.67	g/bhp-hr
CO2	73.96	kg/mmbtu
CH4	3E-03	kg/mmbtu
N2O	6E-04	kg/mmbtu

MarkWest Liberty Midstream and Resources, L.L.C.
Harmon Creek Gas Plant

Control Room Emergency Generator (G-2)

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	Potential Emissions (lb/hr)[d]	Potential Emissions (tons/yr)[e]
Nox	1.31	0.33
CO	0.55	0.14
SO_2	0.10	0.03
PM_{10} (Filterable)	0.04	0.01
$PM_{2.5}$ (Filterable)	0.04	0.01
PM Condensable	0.04	0.01
PM Total	0.04	0.01
VOC	0.41	0.10
CO2	302.59	75.65
CH4	0.01	0.00
N2O	0.00	0.00

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMBtu)[a]	Potential Emissions (lb/hr)[d]	Potential Emissions (tons/yr)[e]
HAPs:			
Acetaldehyde	7.67E-04	0.0014	0.0004
Acrolein	9.25E-05	0.0002	0.0000
Benzene	9.33E-04	0.0017	0.0004
1,3-Butadiene	3.91E-05	0.0001	0.0000
Formaldehyde	1.18E-03	0.0022	0.0005
Toluene	4.09E-04	0.0008	0.0002
Xylene	2.85E-04	0.0005	0.0001
Polycyclic Organic Matter:			
Naphthalene	8.48E-05	0.0002	0.0000
Total HAP		**0.01**	**0.00**

[a] HAP emission factors from AP-42 Section 3.2, Table 3.3-2 "Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines," Supplement F, October 1996.

[b] Criteria pollutant emission factors are based on Manufacturer Data for NOx, CO, PM and VOC. The NOx + NMHC factor is assumed to be 76% NOx and 24% VOC. SO2 is from AP-42 Table 3.3-1.

[c] GHG pollutant emission factors are from Part 98 Tables C-1 and C-2 for Distillate Fuel No. 2.

[d] Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr or bhp) × Emission Factor (lb/MMBtu or lb/bhp-hr).

[e] Annual Emissions $(tons/yr)_{Potential} = (lb/hr)_{Emissions} \times$ (Maximum Allowable Operating Hours/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant

Fugitive Emissions

Component Type	Stream Type (Gas Vapor, Light Liquid, Heavy Liquid)	Gas Type	From LeakDAS	Number of Components[a]	AP-42 Leak Emission Factors kg/hr/component[b]	Reduction Factors[c]	Final Leak Factor lb/hr/component	Weight Percent[c]				Total Emissions (tpy)	Potential VOC Emissions		Potential HAP Emissions		Potential CH4 Emissions		Potential CO2 Emissions	
								VOC	HAP	CH4	CO2		(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Compressor	GV	INLET	7	11	8.80E-03	80%	3.88E-03	23.9%	0.4%	77.0%	0.2%	0.190	0.01	0.05	0.00	0.00	0.03	0.15	0.00	0.00
Compressor	GV	RESIDUE	12	19	8.80E-03	0%	1.94E-02	0.1%	0.0%	87.5%	0.3%	1.633	0.00	0.00	0.00	0.00	0.33	1.43	0.00	0.01
Compressor	GV	ETHAN	3	5	8.80E-03	0%	1.94E-02	0.5%	0.1%	0.0%	0.0%	0.408	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compressor	GV	CO2	2	3	8.80E-03	0%	1.94E-02	0.5%	0.1%	0.0%	100.0%	0.272	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.27
Compressor	GV	PROPANE	11	18	8.80E-03	80%	3.88E-03	100.0%	0.0%	0.0%	0.0%	0.299	0.07	0.30	0.00	0.00	0.00	0.00	0.00	0.00
Compressor	LL	INLET	4	6	7.50E-03	80%	3.31E-03	23.9%	0.4%	77.0%	0.2%	0.093	0.01	0.02	0.00	0.00	0.02	0.07	0.00	0.00
Connector	GV	INLET GAS	19	30	2.00E-04	75%	1.10E-04	23.9%	0.4%	77.0%	0.2%	0.015	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Connector	GV	C3+	424	678	2.00E-04	75%	1.10E-04	100.0%	0.0%	0.0%	0.0%	0.328	0.07	0.33	0.00	0.00	0.00	0.00	0.00	0.00
Connector	GV	REFRIG C3	42	67	2.00E-04	75%	1.10E-04	100.0%	0.0%	0.0%	0.0%	0.032	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Connector	GV	REGEN De-Eth	10	16	2.00E-04	75%	1.10E-04	0.5%	0.1%	0.0%	0.0%	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Connector	GV	FLARE GAS	1254	2006	2.00E-04	75%	1.10E-04	23.9%	0.4%	77.0%	0.2%	0.969	0.05	0.23	0.00	0.00	0.17	0.75	0.00	0.00
Connector	GV	C3+	1	2	2.00E-04	75%	1.10E-04	100.0%	0.0%	0.0%	0.0%	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Connector	GV	INLET	69	110	2.00E-04	75%	1.10E-04	23.9%	0.4%	77.0%	0.2%	0.053	0.00	0.01	0.00	0.00	0.01	0.04	0.00	0.00
Connector	GV	REGEN GAS De-Eth	13	21	2.00E-04	75%	1.10E-04	0.5%	0.1%	0.0%	0.0%	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Connector	GV	C2+	112	179	2.00E-04	75%	1.10E-04	51.4%	5.3%	0.1%	0.1%	0.087	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Connector	GV	INLET	252	403	2.00E-04	75%	1.10E-04	23.9%	0.4%	77.0%	0.2%	0.195	0.01	0.05	0.00	0.00	0.03	0.15	0.00	0.00
Connector	GV	REGEN De-Eth	1	2	2.00E-04	75%	1.10E-04	0.5%	0.1%	0.0%	0.0%	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Connector	GV	C3+	3	5	2.00E-04	75%	1.10E-04	100.0%	0.0%	0.0%	0.0%	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Connector	LL	FLARE GAS	1	2	2.10E-04	75%	1.16E-04	23.9%	0.4%	77.0%	0.2%	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Connector	LL	METHANOL	102	163	2.10E-04	75%	1.16E-04	100.0%	100.0%	0.0%	0.0%	0.083	0.02	0.08	0.02	0.08	0.00	0.00	0.00	0.00
Connector	LL	REGEN GAS De-Eth	108	173	2.10E-04	75%	1.16E-04	0.5%	0.1%	0.0%	0.0%	0.088	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Connector	LL	ETHAN	47	75	2.10E-04	75%	1.16E-04	0.5%	0.1%	0.0%	0.0%	0.038	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Connector	LL	ETHAN	20	32	2.10E-04	75%	1.16E-04	0.5%	0.1%	0.0%	0.0%	0.016	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Connector	LL	C3+	857	1371	2.10E-04	75%	1.16E-04	100.0%	0.0%	0.0%	0.0%	0.696	0.16	0.70	0.00	0.00	0.00	0.00	0.00	0.00
Connector	LL	METHANOL	25	40	2.10E-04	75%	1.16E-04	100.0%	100.0%	0.0%	0.0%	0.020	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00
Connector	LL	INLET GAS	238	381	2.10E-04	75%	1.16E-04	23.9%	0.4%	77.0%	0.2%	0.193	0.01	0.05	0.00	0.00	0.03	0.15	0.00	0.00
Connector	LL	C3+	310	496	2.10E-04	75%	1.16E-04	100.0%	0.0%	0.0%	0.0%	0.252	0.06	0.25	0.00	0.00	0.00	0.00	0.00	0.00
Connector	LL	INLET GAS	100	160	2.10E-04	75%	1.16E-04	23.9%	0.4%	77.0%	0.2%	0.081	0.00	0.02	0.00	0.00	0.01	0.06	0.00	0.00
Pressure Relief	GV	REGEN De-Eth	28	45	8.80E-03	97%	5.82E-04	0.5%	0.1%	0.0%	0.0%	0.114	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pressure Relief	GV	FLARE	467	747	8.80E-03	97%	5.82E-04	23.9%	0.4%	77.0%	0.2%	1.906	0.10	0.46	0.00	0.01	0.34	1.47	0.00	0.00
Pressure Relief	GV	FLARE GAS	344	550	8.80E-03	97%	5.82E-04	23.9%	0.4%	77.0%	0.2%	1.404	0.08	0.34	0.00	0.01	0.25	1.08	0.00	0.00
Pressure Relief	LL	C3	148	237	7.50E-03	97%	4.96E-04	100.0%	0.0%	0.0%	0.0%	0.515	0.12	0.51	0.00	0.00	0.00	0.00	0.00	0.00
Pressure Relief	LL	C2+	782	1251	7.50E-03	97%	4.96E-04	51.4%	5.3%	0.1%	0.1%	2.720	0.32	1.40	0.03	0.14	0.00	0.00	0.00	0.00
Pressure Relief	LL	REGEN GAS De-Eth	337	539	7.50E-03	97%	4.96E-04	0.5%	0.1%	0.0%	0.0%	1.172	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Pressure Relief	LL	FLARE	79	126	7.50E-03	97%	4.96E-04	23.9%	0.4%	77.0%	0.2%	0.275	0.01	0.07	0.00	0.00	0.05	0.21	0.00	0.00
Pressure Relief	LL	C3+	4	6	7.50E-03	97%	4.96E-04	100.0%	0.0%	0.0%	0.0%	0.014	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Pressure Relief	LL	REGEN GAS	26	42	7.50E-03	97%	4.96E-04	23.9%	0.4%	77.0%	0.2%	0.090	0.00	0.02	0.00	0.00	0.02	0.07	0.00	0.00
Pressure Relief	LL	REGEN GAS	80	128	7.50E-03	97%	4.96E-04	23.9%	0.4%	77.0%	0.2%	0.278	0.02	0.07	0.00	0.00	0.05	0.21	0.00	0.00
Pressure Relief	LL	C3	403	645	7.50E-03	97%	4.96E-04	100.0%	0.0%	0.0%	0.0%	1.402	0.32	1.40	0.00	0.00	0.00	0.00	0.00	0.00
Pump	GV	FLARE	5	8	2.40E-03	0%	5.29E-03	23.9%	0.4%	77.0%	0.2%	0.186	0.01	0.04	0.00	0.00	0.03	0.14	0.00	0.00
Pump	GV	FLARE	129	206	2.40E-03	0%	5.29E-03	23.9%	0.4%	77.0%	0.2%	4.786	0.26	1.14	0.00	0.02	0.84	3.69	0.00	0.01
Pump	LL	C2+	6	10	1.30E-02	85%	4.30E-03	51.4%	5.3%	0.1%	0.1%	0.181	0.02	0.09	0.00	0.01	0.00	0.00	0.00	0.00

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant

Fugitive Emissions

Component Type	Stream Type (Gas Vapor, Light Liquid, Heavy Liquid)	Gas Type	From LeakDAS	Number of Components[a]	AP-42 Leak Emission Factors kg/hr/component[b]	Reduction Factors[c]	Final Leak Factor lb/hr/component	Weight Percent[e]				Total	Potential VOC Emissions		Potential HAP Emissions		Potential CH4 Emissions		Potential CO2 Emissions	
								VOC	HAP	CH4	CO2	Emissions (tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Valve	GV	REGEN GAS De-Eth	63	101	4.50E-03	97%	2.98E-04	0.5%	0.1%	0.0%	0.0%	0.131	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valve	GV	C2+	44	70	4.50E-03	97%	2.98E-04	51.4%	5.3%	0.1%	0.1%	0.092	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Valve	GV	C3	3	5	4.50E-03	97%	2.98E-04	100.0%	0.0%	0.0%	0.0%	0.006	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Valve	GV	INLET GAS	44	70	4.50E-03	97%	2.98E-04	23.9%	0.4%	77.0%	0.2%	0.092	0.01	0.02	0.00	0.00	0.02	0.07	0.00	0.00
Valve	GV	C3+	113	181	4.50E-03	97%	2.98E-04	100.0%	0.0%	0.0%	0.0%	0.236	0.05	0.24	0.00	0.00	0.00	0.00	0.00	0.00
Valve	GV	C3	489	782	4.50E-03	97%	2.98E-04	100.0%	0.0%	0.0%	0.0%	1.021	0.23	1.02	0.00	0.00	0.00	0.00	0.00	0.00
Valve	GV	REFRIG C3	154	246	4.50E-03	97%	2.98E-04	100.0%	0.0%	0.0%	0.0%	0.321	0.07	0.32	0.00	0.00	0.00	0.00	0.00	0.00
Valve	GV	INLET	12	19	4.50E-03	97%	2.98E-04	23.9%	0.4%	77.0%	0.2%	0.025	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00
Valve	GV	REFRIG C3	2	3	4.50E-03	97%	2.98E-04	100.0%	0.0%	0.0%	0.0%	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valve	GV	C3	140	224	4.50E-03	97%	2.98E-04	100.0%	0.0%	0.0%	0.0%	0.292	0.07	0.29	0.00	0.00	0.00	0.00	0.00	0.00
Valve	LL	C2+	290	464	2.50E-03	97%	1.65E-04	51.4%	5.3%	0.1%	0.1%	0.336	0.04	0.17	0.00	0.02	0.00	0.00	0.00	0.00
Valve	LL	INLET	935	1496	2.50E-03	97%	1.65E-04	23.9%	0.4%	77.0%	0.2%	1.084	0.06	0.26	0.00	0.00	0.19	0.83	0.00	0.00
Valve	LL	REGEN GAS	2	3	2.50E-03	97%	1.65E-04	23.9%	0.4%	77.0%	0.2%	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valve	LL	METHANOL	2	3	2.50E-03	97%	1.65E-04	100.0%	100.0%	0.0%	0.0%	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valve	LL	INLET	390	624	2.50E-03	97%	1.65E-04	23.9%	0.4%	77.0%	0.2%	0.452	0.02	0.11	0.00	0.00	0.08	0.35	0.00	0.00
Valve	LL	C3+	2	3	2.50E-03	97%	1.65E-04	100.0%	0.0%	0.0%	0.0%	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valve	LL	METHANOL	1	2	2.50E-03	97%	1.65E-04	100.0%	100.0%	0.0%	0.0%	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valve	LL	REFRIG C3	181	290	2.50E-03	97%	1.65E-04	100.0%	0.0%	0.0%	0.0%	0.210	0.05	0.21	0.00	0.00	0.00	0.00	0.00	0.00
Valve	LL	REFRIG C3	92	147	2.50E-03	97%	1.65E-04	100.0%	0.0%	0.0%	0.0%	0.107	0.02	0.11	0.00	0.00	0.00	0.00	0.00	0.00
Valve	LL	FLARE	19	30	2.50E-03	97%	1.65E-04	23.9%	0.4%	77.0%	0.2%	0.022	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00
Valve	LL	FLARE	3	5	2.50E-03	97%	1.65E-04	23.9%	0.4%	77.0%	0.2%	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Connector	HL	HMO		1708	7.50E-06	0%	1.65E-05	100.0%	0.0%	0.0%	0.0%	0.124	0.03	0.12	0.00	0.00	0.00	0.00	0.00	0.00
Valve	HL	HMO		569	8.40E-06	0%	1.85E-05	100.0%	0.0%	0.0%	0.0%	0.046	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Pressure Relief	HL	HMO		16	3.20E-05	0%	7.06E-05	100.0%	0.0%	0.0%	0.0%	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Connector	HL	CO2		569	7.50E-06	0%	1.65E-05	0.5%	0.1%	0.0%	100.0%	0.041	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.04
Valve	HL	CO2		190	8.40E-06	0%	1.85E-05	0.5%	0.1%	0.0%	100.0%	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Pressure Relief	HL	CO2		5	3.20E-05	0%	7.06E-05	0.5%	0.1%	0.0%	100.0%	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Connector	GV	Residue		1900	2.00E-04	75%	1.10E-04	0.1%	0.0%	87.5%	0.3%	0.918	0.00	0.00	0.00	0.00	0.18	0.80	0.00	0.00
Valve	GV	Residue		600	4.50E-03	97%	2.98E-04	0.1%	0.0%	87.5%	0.3%	0.783	0.00	0.00	0.00	0.00	0.16	0.69	0.00	0.00
			9,866	**21,343**								**Total**	**2.46**	**10.75**	**0.08**	**0.34**	**2.85**	**12.47**	**0.08**	**0.37**

Notes:

[a] Component counts are based on a combination of counts from LeakDas and PIDs and estimates based on studies at similar facilities.

[b] Table 2-4. Oil & Gas Production Operations Average Emission Factors, Protocol for Equipment Leak Emission Estimates, EPA 453/R-95-017, November 1995. Emission factors based on average measured TOC from component types indicated in gas or light oil service at O&G Production Operations.

[c] Table V: Control Efficiencies for LDAR for 28VHP programs, Air Permit Technical Guidance for Chemical Sources Fugitive Guidance, TCEQ (APDG 6422v2, Revised 06/2018). Compressors are monitored quarterly via OGI.

[d] Table 5-1. Summary of Equipment Modifications, Protocol for Equipment Leak Emission Estimates, EPA 453/R-95-017, November 1995.

[e] CO2 and C2 service are estimated at 0.5 VOC wt% to be conservative.

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant
Rod Packing Emissions

Reciprocating Compressors
Rod Packing Venting

Total Rod Packing Emissions

Pollutant	Emissions	
	lb/hr	tpy
VOC	0.27	1.18
Methane	57.13	250.23
Carbon Dioxide	24.35	106.65
n-Hexane	0.00	0.01
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
Xylene	0.00	0.00
Total HAPs	0.00	0.01

Existing Residue Compressors

Emission Rate[a]	215.0	(scf/hr)
Density	0.043	(lb/scf)
Number of Compressors	7	
Total Emissions	65.153	(lb/hr)

[a]Based on residue compressor monitoring data.

Pollutant	Mass %	Emissions	
		lb/hr	tpy
VOC	0.15%	0.096	0.421
Methane	87.54%	57.037	249.822
Carbon Dioxide	0.31%	0.203	0.891
n-Hexane	0.00%	0.000	0.000
Benzene	0.00%	0.000	0.000
Toluene	0.00%	0.000	0.000
Ethylbenzene	0.00%	0.000	0.000
Xylene	0.00%	0.000	0.000
Total HAPs	0.00%	0.000	0.000

Existing Stabilization Compressors

Emission Factor[a]	0.018	(scf CH_4/min)
Mole fraction Methane	0.440	
Total Emission Factor	0.041	(scf/min)
MW	29.162	(lb/lbmole)
Number of Compressors	2	
Total Emissions	0.378	(lb/hr)

[a]Based on 40 CFR Part 98 Subpart W Section 233 Emissions Factors

Pollutant	Mass %	Emissions	
		lb/hr	tpy
VOC	44.89%	0.170	0.743
Methane	24.26%	0.092	0.402
Carbon Dioxide	0.24%	0.001	0.004
n-Hexane	0.60%	0.002	0.010
Benzene	0.00%	0.000	0.000
Toluene	0.00%	0.000	0.000
Ethylbenzene	0.00%	0.000	0.000
Xylene	0.00%	0.000	0.000
Total HAPs	0.60%	0.002	0.010

Existing CO2 Compressor

Emission Rate[a]	215.0	(scf/hr)
MW	0.115	(lb/scf)
Number of Compressors	1	
Total Emissions	24.684	(lb/hr)

[a]Based on residue compressor monitoring data.

Pollutant	Mass %	Emissions	
		lb/hr	tpy
VOC	0.02%	0.004	0.018
Methane	0.01%	0.002	0.010
Carbon Dioxide	97.82%	24.146	105.760
n-Hexane	0.00%	0.000	0.000
Benzene	0.00%	0.000	0.000
Toluene	0.00%	0.000	0.000
Ethylbenzene	0.00%	0.000	0.000
Xylene	0.00%	0.000	0.000
Total HAPs	0.00%	0.000	0.000

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant
Dry Seal Vent Emissions

Centrifugal Compressor
Dry Seal Vents

Total Dry Seal Vent Emissions

Pollutant	Controlled Emissions	
	lb/hr	tpy
VOC	0.47	2.07
Methane	91.99	402.90
Carbon Dioxide	0.33	1.43
n-Hexane	0.00	0.01
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
Xylene	0.00	0.00
Total HAPs	0.01	0.02

Existing Residue Centrifugal Compressors

Emission Rate[a]	600.0	(scf/hr)
Density	0.043	(lb/scf)
Number of Compressors	2	
Seals per Compressor	2	
Total Emissions	103.899	(lb/hr)

[a]Based on max allowable level under NSPS OOOOb

Pollutant	Mass %	Uncontrolled Emissions		Controlled Emissions	
		lb/hr	tpy	lb/hr	tpy
VOC	0.15%	0.153	0.671	0.153	0.671
Methane	87.54%	90.956	398.386	90.956	398.386
Carbon Dioxide	0.31%	0.324	1.420	0.324	1.420
n-Hexane	0.00%	0.000	0.000	0.000	0.000
Benzene	0.00%	0.000	0.000	0.000	0.000
Toluene	0.00%	0.000	0.000	0.000	0.000
Ethylbenzene	0.00%	0.000	0.000	0.000	0.000
Xylene	0.00%	0.000	0.000	0.000	0.000
Total HAPs	0.00%	0.000	0.000	0.000	0.000

Existing Regen Centrifugal Compressors

Emission Rate[a]	600.0	(scf/hr)
Density	0.056	(lb/scf)
Number of Compressors	2	
Seals per Compressor	1	
Uncontrolled Emissions	66.950	
Destruction Efficiency	98%	
Controlled Emissions	1.339	(lb/hr)

[a]Based on max allowable level under NSPS OOOOb and controlled by the process flare.

Pollutant	Mass %	Uncontrolled Emissions		Controlled Emissions	
		lb/hr	tpy	lb/hr	tpy
VOC	23.89%	15.991	70.042	0.320	1.401
Methane	77.01%	51.558	225.824	1.031	4.516
Carbon Dioxide	0.21%	0.142	0.621	0.003	0.012
n-Hexane	0.19%	0.128	0.560	0.003	0.011
Benzene	0.03%	0.020	0.088	0.000	0.002
Toluene	0.05%	0.036	0.156	0.001	0.003
Ethylbenzene	0.03%	0.020	0.088	0.000	0.002
Xylene	0.01%	0.007	0.030	0.000	0.001
Total HAPs	0.41%	0.274	1.199	0.005	0.024

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant

Methanol Emission Estimates

Source Information:	
Contents:	Methanol
Quantity:	2
Tank Orientation/Geometry:	Horizontal Cylinder
Approx. Height (ft):	5.0
Approx. Diameter (ft):	4.2
Volume (gal):	500
Turnovers per year:	0.10
Maximum Fill Level:	90%
Insulation:	None
Tank Color:	Red
Control Percentage:	0
Site-Wide Throughput (gal/yr)	100
Site-Wide Throughput (bbl/day)	0.007

Total Methanol Emissions (Sum of Tank Emissions + Process Emissions below):

Pollutant	**Conservative Losses**	
	lb/hr	**tpy**
Total VOC	**0.080**	**0.352**
Total HAP	**0.080**	**0.352**

Tank Emissions:

Pollutant	Tank Losses	
	lb/hr	tpy
Total VOC	0.003	0.013
Total HAP	0.003	0.013

Methanol tank losses are conservatively based on 50 gallons of use annually and modeled using ProMax 5.0. Please note, MarkWest uses no more than five (5) gallons of methanol per year.

Process Emissions:

Pollutant	Conservative Losses	
	lb/hr	tpy
Total VOC	0.077	0.339
Total HAP	0.077	0.339

Methanol losses from the process conservatively assumes all methanol injected into the system is emitted to the atmosphere, however, only a portion of the injected methanol will be emitted.
Additionally, MarkWest uses no more than five (5) gallons of methanol per year, however, emission estimates are based on 10 times that quantity.
Sample Calculation:
Methanol emissions (tpy) = Methanol usage (gal/yr) * Density (lb/gal) / 2000 (ton/lbs)

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant

Measurement Devices

Exempt under Section 127.14(a) #7

Source Information:	
Analyzer Vent Rate (scf/hr)	2.12
Spectra Analyzers	8
GC Vent Rate (scf/hr)	0.04
GC Streams	21
Total Number of Measurement Vents to Atm	29.0
Potential Annual Hours of Operation (hr/yr)	8,760
Potential Volume Emitted (scf/yr)	18,871

Pollutant	**Per Analyzer**		**Per GC Stream**		**Total**	
	lb/hr	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**
Carbon Dioxide	0.000	0.001	0.000	0.000	0.00	0.009
Methane	0.09	0.399	0.00	0.007	0.76	3.330
VOC	0.03	0.124	0.00	0.002	0.24	1.033
n-Hexane	2.26E-04	0.001	3.76E-06	0.000	0.00	0.008
Benzene	3.56E-05	0.000	5.93E-07	0.000	0.00	0.001
Toluene	6.29E-05	0.000	1.05E-06	0.000	0.00	0.002
Ethylbenzene	3.56E-05	0.000	5.93E-07	0.000	0.00	0.001
Xylene	1.21E-05	0.000	2.01E-07	0.000	0.00	0.000
Total HAPs	4.83E-04	0.002	8.05E-06	0.000	0.00	0.018

MarkWest Liberty Midstream & Resources, L.L.C.
Harmon Creek Gas Plant

Harmon Creek Gas Analysis

Component	MW	Unit	Inlet Gas	Residue Gas - Recovery	Residue Gas	Stabilizer Overhead	CO2	C2+
Nitrogen	28.0135	mole %	0.41	0.51	0.48	0.10	0.00	0.00
CO2	44.01	mole %	0.10	0.20	0.12	0.16	96.84	0.06
H2S	34.1	mole %	0.00	0.00	0.00	0.00	0.00	0.00
Methane	16.042	mole %	77.01	97.41	92.99	44.04	0.03	0.10
Ethane	30.069	mole %	14.79	1.84	6.35	29.62	3.12	59.23
Propane	44.096	mole %	5.15	0.04	0.06	17.14	0.02	23.38
i-Butane	58.122	mole %	0.54	0.00	0.00	1.86	0.00	2.95
n-Butane	58.122	mole %	1.26	0.00	0.00	4.96	0.00	7.05
i-Pentane	72.149	mole %	0.25	0.00	0.00	0.79	0.00	1.69
n-Pentane	72.149	mole %	0.29	0.00	0.00	1.06	0.00	2.18
n-Hexane	86.175	mole %	0.05	0.00	0.00	0.20	0.00	3.46
n-Heptane	100.202	mole %	0.04	0.00	0.00	0.05	0.00	0.00
n-Octane	114.229	mole %	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	78.122	mole %	0.008	0.00	0.00	0.00	0.00	0.00
Toluene	92.138	mole %	0.012	0.00	0.00	0.00	0.00	0.00
Ethylbenzene	106.167	mole %	0.001	0.00	0.00	0.00	0.00	0.00
Xylene	106.16	mole %	0.002	0.00	0.00	0.00	0.00	0.00
Nonanes	128.255	mole %	0.002	0.00	0.00	0.00	0.00	0.00
Decanes Plus	142.282	mole %	0.021	0.00	0.00	0.00	0.00	0.00

	Component	MW	Unit	Inlet Gas	Residue Gas - Recovery	Residue Gas	Stabilizer Overhead	CO2	C2+
23	Nitrogen	28.0135	wt%	0.5530	0.8738	0.7852	0.0965	0.0000	0.0000
24	CO2	44.01	wt%	0.2119	0.5278	0.3121	0.2440	97.8220	0.1187
25	H2S	34.1	wt%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
26	Methane	16.042	wt%	77.0100	95.1232	87.5426	24.2604	0.0092	0.0736
27	Ethane	30.069	wt%	21.4104	3.3662	11.2128	30.5465	2.1522	48.5233
28	Propane	44.096	wt%	10.9331	0.1031	0.1442	25.9200	0.0166	27.2355
29	i-Butane	58.122	wt%	1.5110	0.0025	0.0011	3.7135	0.0000	3.8104
30	n-Butane	58.122	wt%	3.5257	0.0035	0.0013	9.8881	0.0000	9.4580
31	i-Pentane	72.149	wt%	0.8684	0.0000	0.0002	1.9617	0.0000	2.4280
32	n-Pentane	72.149	wt%	1.0073	0.0000	0.0005	2.6260	0.0000	3.1565
33	n-Hexane	86.175	wt%	0.1908	0.0000	0.0001	0.5960	0.0000	5.3212
34	n-Heptane	100.202	wt%	0.2026	0.0000	0.0000	0.1622	0.0000	0.0000
35	n-Octane	114.229	wt%	0.0110	0.0000	0.0000	0.0192	0.0000	0.0000
36	Benzene	78.122	wt%	0.0301	0.0000	0.0000	0.0000	0.0000	0.0000
37	Toluene	92.138	wt%	0.0532	0.0000	0.0000	0.0000	0.0000	0.0000
38	Ethylbenzene	106.167	wt%	0.0301	0.0000	0.0000	0.0000	0.0000	0.0000
39	Xylene	106.16	wt%	0.0102	0.0000	0.0000	0.0000	0.0000	0.0000
40	Nonanes	128.255	wt%	0.0123	0.0000	0.0000	0.0000	0.0000	0.0000
41	Decanes Plus	142.282	wt%	0.1438	0.0000	0.0000	0.0000	0.0000	0.0000
	*Dry Basis		VOC wt %	23.89	0.11	0.15	44.89	0.02	51.41
			LHV =	1158.81	916.57	949.85	1562.36	51.09	
			HHV =	1282.67	1022.94	1058.62	1715.11	61.37	
			Density (lb	0.0558	0.0433	0.0449	0.0768	0.1148	
			Gas MW=	20.77	16.43	17.04	29.16	43.57	
			HAP wt%=	0.4088	0.0000	0.0001	0.5960	0.0000	5.3212

Notes:

[a] The inlet gas composition is based on a sample collected on 8/1/2023 from the Harmon Creek plant feed inlet and a 30% factor is applied for conservatism. The residue gas and C2+ gas compositions are the annual average from GC readings.

[b] Stabilizer Overhead and CO2 compositions are modeled.

Section 9
Supporting Documentation

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

AIR QUALITY FEES FOR STATE-ONLY OPERATING PERMIT (NON-TITLE V)

Company Information	
Federal Tax ID: 30-0528059	Firm Name: MarkWest Liberty Midstream and Resources, L.L.C.
Permit # (If any): 63-01011	Facility Name: Harmon Creek Gas Plant
Municipality: Smith	County: Washington
Contact Person Name: Nathan Wheldon	Telephone Number: (970) 631-6127
E-mail: nmwheldon@marathonpetroleum.com	

State-Only Operating Permit

Line #	Check the appropriate box below	Type of Authorization	Fee 2021 - 2025	Total Fees
1	☒	New Application, Subchapter F	$2,500	$2,500
2	☐	Renewal	$2,100	
3	☐	Minor Modification	$1,500	
4	☐	Significant Modification	$2,000	
5	☐	Administrative Amendment / Change of Ownership	$1,500	

Pay maximum amount of fee when one or more authorizations are requested. For example, when a renewal application and a change of ownership forms are submitted, please pay only the highest amount of fee ($2,100).

Standard Questions Pertaining to Methanol Use

1. Will your facility use methanol for de-icing or as an antifreeze in the natural gas conveyance and/or treatment process? [25 Pa. Code §127.12(a)(2)]
   Yes.
2. Will your facility receive any natural gas that will have methanol in it? [25 Pa. Code §127.12(a)(2)]
   Based on the gas analysis provided to the Department on 6/16/2021, methanol was not present in detectable quantities in the facility inlet stream.

If "no" to 1 and 2, disregard remaining questions. If "yes" to either 1 or 2, please answer the remaining questions.

3. What will be the total volume of methanol used per calendar year at the facility? [25 Pa. Code §127.12(a)(2)]
   No greater than 100 gallons of methanol is used per year.
4. What will be the total volume of methanol used per calendar year for each well that will send gas to the facility? [25 Pa. Code §127.12(a)(2)]
   Based upon analytical data, methanol was non-detect in the inlet stream in 2021.
5. Is the methanol used continuously throughout the year or seasonally? Please explain. [25 Pa. Code §127.12(a)(2)]
   Methanol is used periodically throughout the year as needed.
6. Where is the methanol injected into the system? If at the facility, please identify each injection point in your process flow diagram. [25 Pa. Code §127.12(a)(2)]
   Methanol will continue to be injected from the injection pump upstream of the DeMethanizer, thus incorporating methanol into the plant process.
7. Please account for the final disposition of the methanol at your facility. Examples would include methanol contained in collected wastewater (produced water, or "slop tank"), remaining in the dried natural gas, contained in the rich glycol, and contained in the glycol sent to the reboiler. [25 Pa. Code §127.12(a)(2)]
   The final disposition of the methanol at the facility is in the amine closed drain or Y-grade product pipeline.
8. Please quantify your facility's annual methanol emissions including any fugitive emissions and stack emissions, e.g., flash tank and reboiler vents. Be sure to include the calculations and supporting documentation. [25 Pa. Code §127.12(a)(2)]
   Please see Detailed Emission Estimates provided in the Plan Approval application.

Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number

1Z2E23250192423055

Service

UPS Next Day Air®

Shipped / Billed On

01/02/2025

Delivered On

01/06/2025 1:29 P.M.

Delivered To

WASHINGTON, PA, US
Received By

GRIFFEN

Please print for your records as photo and details are only available for a limited time.

Sincerely,

UPS

Tracking results provided by UPS: 01/06/2025 6:55 P.M. EST

Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number

1Z2E23250198718968

Service

UPS Next Day Air®

Shipped / Billed On

01/02/2025

Delivered On

01/06/2025 9:54 A.M.

Delivered To

SLOVAN, PA, US
Received By

KRENZLAK

Please print for your records as photo and details are only available for a limited time.

Sincerely,

UPS

Tracking results provided by UPS: 01/06/2025 6:22 P.M. EST