ENERGY TRANSFER

July 28, 2019

Reference: Application for Plan Approval

Mr. George Eckert
Facilities Permitting Section
Pennsylvania Department of Environmental Protection
Bureau of Air Quality
2 East Main Street
Norristown, PA 19401

Dear Mr. Eckert:

Enclosed please find an application for Plan Approval for the Sunoco Partners Marketing and Terminals, L.P. (SPMT), Marcus Hook Industrial Complex. The Marcus Hook Industrial Complex is proposing to add process equipment to the Marcus Hook Industrial Complex to receive, process, and store ethane. A detailed report of the project is provided.

The application package includes the following:

Appendix A – PADEP Forms including: General Information Form (GIF), Compliance Review Form (CRF), and Pennsylvania Plan Approval application forms including Addendum A.
Appendix B – Plot Plan and Process Flow Diagram;
Appendix C – Flare Connection List (CONFIDENTIAL);
Appendix D – Back-up Emissions Calculations;
Appendix E – Contemporaneous Tables
Appendix F – Flare Vendor Specification; and
Appendix G – County and Municipal Notifications.

In accordance with the adjudication decision by Judge Bernard A. Labuskes, Jr. of the Commonwealth of Pennsylvania Environmental Hearing Board, EHB Docket No. 2016-073-L, this project will be evaluated as part of a single aggregated project. Subsequently, the resubmittal of Plan Approval 23-0119E has been referenced in this application for applicability determinations. The resubmittal includes the following Plan Approvals and RFDs:

- Plan Approval 23-0119;
- Plan Approval 23-0119A;
- Plan Approval 23-0119B;
- Plan Approval 23-0119C;
- Plan Approval 23-0119D;
- Plan Approval 23-0119E;
- RFD 5236 (Spheres Project);
- RFD 5340 (Tank 609 Vapor Pressure);

- RFD 5918 (Propane Railcar Offloading);
- RFD 5944 (Portable Flare for Metering Maintenance);
- RFD 6484 (Methanol Tank); and
- RFD 7548 (H-5 Unloading Area Upgrade).

Additionally, this Plan Approval 23-0119J application will account for emission increases for the storage tank sources in Plan Approval 23-0119F that were also affected by Plan Approval 23-0119B.

SPMT maintains the assertion that the permitting actions listed do not constitute a single project. Each project aggregated as part of the adjudication decision was evaluated at the time of the plan approval applications by both SPMT and the Department and the Department took final actions on each of these applications. These final actions by the Department were not appealed. Aggregation of the permitting actions will not result in additional regulatory triggers or the need for additional emissions controls.

Additionally, certain information attached to this response and any other similar information that may be provided by SPMT in the future related to the foregoing are being submitted subject to SPMT's contention and request that such information be treated as confidential, proprietary and/or trade secrets pursuant to Pennsylvania Law and Pennsylvania Administrative Code Title 25, Section 127.512 and any other appropriate sections in state and, if applicable, federal law and regulation.

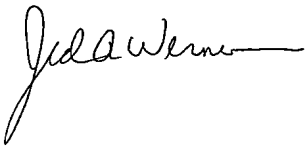
Pursuant to the Air Pollution Control Act of 1959, P.L. 2119, No. 787, Section 13.2, in particular and without limitation, SPMT claims confidentiality for the Flare Connection List (Appendix C) in the attached on the basis that, if such information was acquired by a competitor of SPMT, such competitors would be capable of determining individual throughput and/or proprietary design information and would be likely to cause substantial harm to SPMT's competitive position.

This letter is based on knowledge, information and reasonable belief that SPMT has spent significant effort to develop the information and the attached information is not known to have been disclosed or become available outside SPMT or related entities in the format or to the extent provided in the attached except, at most, where such has been subject to confidentiality agreements/provisions. As such, reasonable measures to protect the confidentiality of the information have been undertaken by SPMT and SPMT intends to do so in the future with respect to this information.

Further, the information is not known to be, and is not known to have been, reasonably obtainable by other persons (other than perhaps governmental bodies) by use of means (other than court enforced order) without prior consent from SPMT. SPMT is also unaware of any statute or regulation that specifically requires disclosure of the attached information which is claimed to be confidential. Accordingly, SPMT has watermarked the attached materials "Confidential" in bold font in the attached and will follow a similar procedure going forward, where it is deemed appropriate.

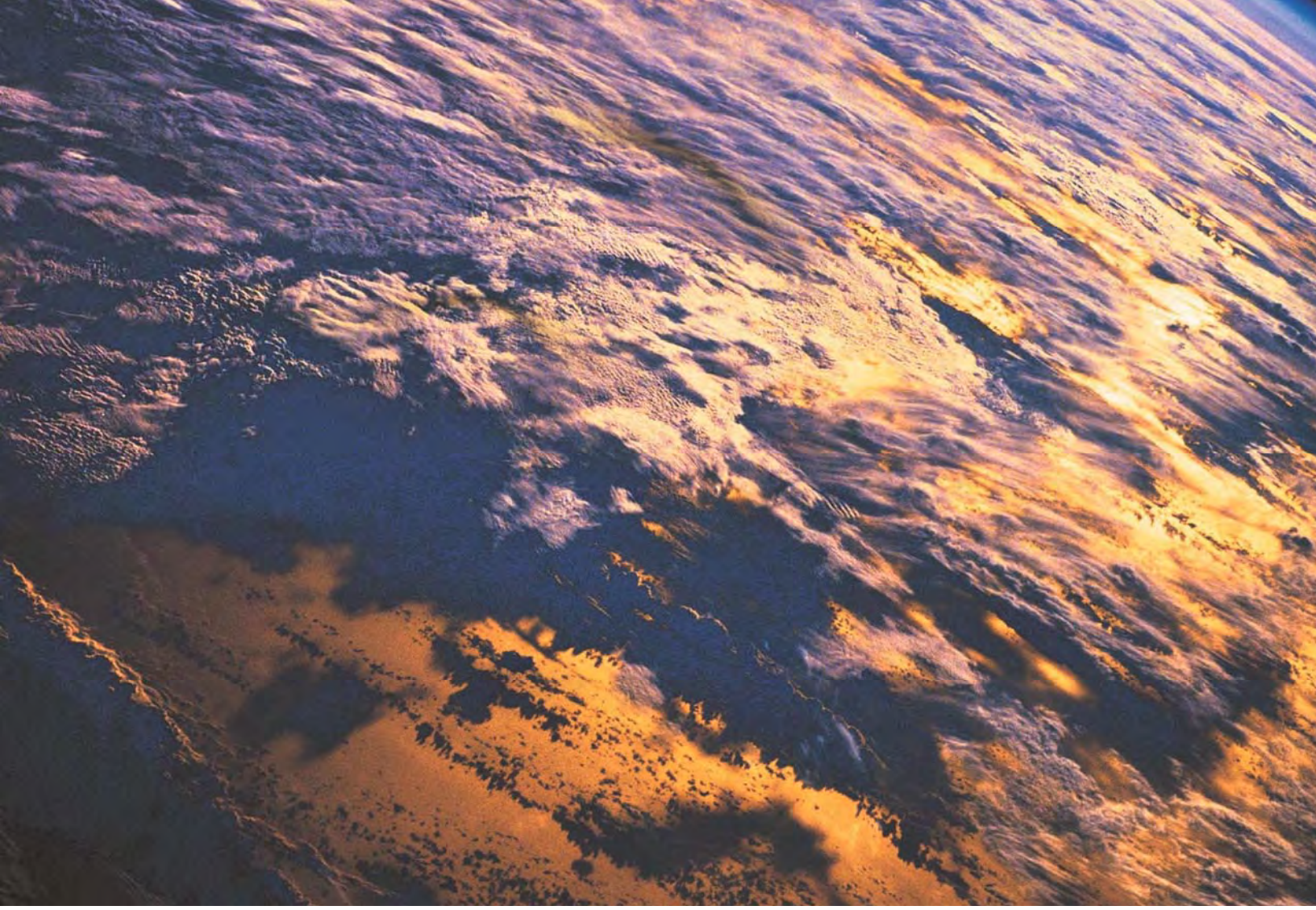
Please do not hesitate to call me at 610-670-3297 with any comments or questions regarding this plan approval application.

Sincerely,



Jed A. Werner,
Air Permitting Manager
Energy Transfer, L.P.

Enclosures: Three copies of SPMT Plan Approval Application
Check in the amount of $7,000.00



ENERGY TRANSFER

Sunoco Partners Marketing & Terminals L.P.

Project Phoenix (Plan Approval 23-0119J)

Original: December 2017

Update: July 2019

Project No.: 0364735

The business of sustainability

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1. INTRODUCTION

Sunoco Partners Marketing & Terminals L.P. (SPMT), a subsidiary of Energy Transfer L.P., is proposing to add process equipment to the Marcus Hook Industrial Complex (MHIC) to receive approximately 140,000 standard barrels per day (BPD) of ethane by installing equipment to upgrade the ethane to meet the applicable specifications; chill and store the ethane; and transfer the product from the MHIC. For the purposes of this application, the project will be referred to as “Project Phoenix” or “the Project”.

Only ethane feedstock is planned to be sent to the proposed new equipment associated with this Project. While other equipment associated with past projects at the MHIC process, chill, and store ethane; Project Phoenix involves a specific process design for the planned ethane feedstock[1]. Project Phoenix will utilize the available capacity of existing utilities at the site including electricity, steam, the West Warm Flare header system, potable water, instrument air, nitrogen, and natural gas. Further discussion of the Project scope can be found in **Section 2** below.

In accordance with the adjudication decision by Judge Bernard A. Labuskes, Jr. of the Commonwealth of Pennsylvania Environmental Hearing Board, EHB Docket No. 2016-073-L, this project will be evaluated as part of a single aggregated project. Subsequently, the resubmittal of Plan Approval 23-0119E has been referenced in this application for applicability determinations. The resubmittal includes the following Plan Approvals and RFDs along with copies of their respective authorizations:

- Plan Approval 23-0119 (Issued February 2, 2013);
- Plan Approval 23-0119A (Issued September 5, 2013 and Revised March 2, 2015);
- Plan Approval 23-0119B (Issued January 30, 2014);
- Plan Approval 23-0119C (Issued November 19, 2014);
- Plan Approval 23-0119D (Issued February 26, 2015);
- Plan Approval 23-0119E (Issued April 1, 2016 and Revised March 28, 2017);
- RFD 5236 (Spheres Project);
- RFD 5340 (Tank 609 Vapor Pressure);
- RFD 5918 (Propane Railcar Offloading);
- RFD 5944 (Portable Flare for Metering Maintenance);
- RFD 6484 (Methanol Tank); and
- RFD 7548 (H-5 Unloading Area Upgrade).

Additionally, this Plan Approval 23-0119J application will account for emission increases for the storage tank sources[2] in Plan Approval 23-0119F that were also affected by Plan Approval 23-0119B.

SPMT maintains the assertion that the permitting actions listed do not constitute a single project. Each project aggregated as part of the adjudication decision was evaluated at the time of the plan approval applications by both SPMT and the Pennsylvania Department of Environmental Protection (“PADEP” or “Department”) and the Department took final actions on each of these applications. These final actions by the Department were not appealed. Furthermore, aggregation of the permitting actions will not result in additional regulatory triggers or the need for additional emissions controls than what was previously determined in the past plan approval applications.

[1] Ethane feedstock contains 95.9 weight percent (wt%) Ethane, 0.5 wt% Methane, and 3.6 wt% Propane.

[2] Storage Tank 607 (Source ID 188), Storage Tank 609 (Source ID 190), and Storage Tank 611 (Source ID 192).

The Project is fully described in this permit application submitted to PADEP by SPMT. SPMT has evaluated the emission changes associated with the Project and the facility and determined that the requirements of Prevention of Significant Deterioration (PSD) are not triggered by the Project. Further, SPMT has found through its evaluation of the expected emission changes from the Project that Nonattainment New Source Review (NANSR) is triggered for VOC and NO_x.

1.1 Project Phoenix

SPMT is proposing the new equipment to allow for processing and storage of refrigerated ethane to be transferred offsite.

The Project will:

- Install two (2) new 600,000 barrel (bbl) refrigerated ethane storage tanks;
- Install one (1) new cold flare (Project Phoenix Cold Flare), equipped with low pressure and high-pressure flare tips;
- Install the necessary piping for the refrigerated ethane process;
- Install two (2) identical trains each containing one (1) new dehydration train system;
- Install two (2) new closed-loop refrigeration systems utilizing propane as the working fluid;
- Install two (2) new open-loop refrigeration systems for final chilling of ethane;
- Install two (2) new demethanizers; and
- Install two (2) new identical wet surface air cooling systems.

1.2 Proposed Project Permitting

This plan approval application describes the proposed installation and regulatory analysis related to the Project. A detailed description of the Project and the related air emissions, along with the relevant regulatory analyses, are provided in **Sections 2 through 7**. Additional Project-related information is provided in the appendices as follows:

- PADEP Plan Approval Forms (Appendix A);
- Plot Plan and Process Flow Diagram (Appendix B);
- Flare Connection List - CONFIDENTIAL (Appendix C);
- Detailed Emission Calculations (Appendix D);
- Contemporaneous Tables (Appendix E);
- Flare Vendor Specification (Appendix F); and
- Municipal and County Notifications (Appendix G).

1.3 Preliminary Project Schedule

SPMT requests issuance by the Department of the Plan Approval to allow commencement of construction as soon as possible. The preliminary Project schedule is as follows:

- Begin construction of the Project in December 2019; and
- Complete construction for all sources in 4th quarter 2022.

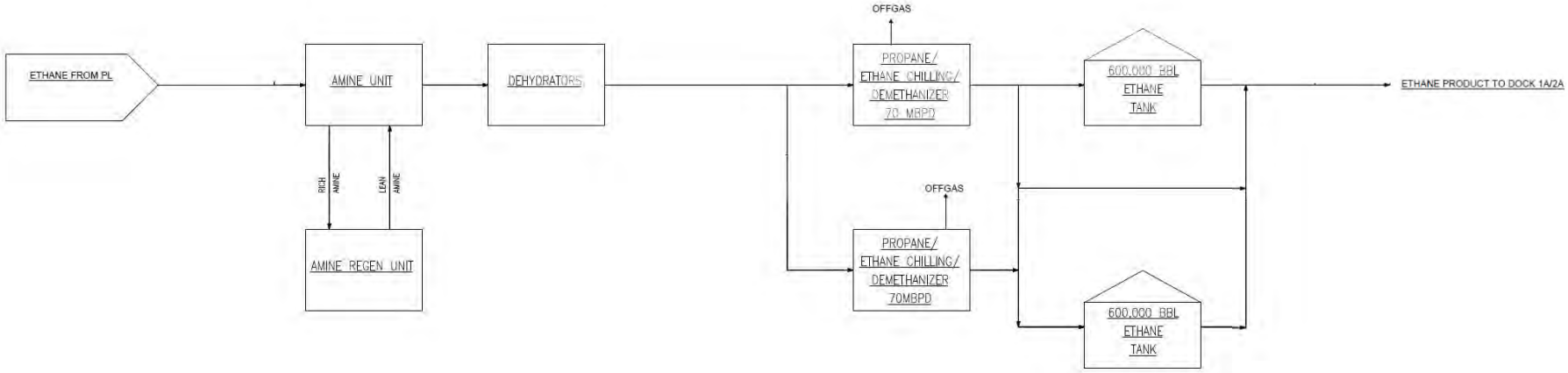
Based on construction timelines and due to the long lead time of certain equipment, it is possible that existing refrigerated ethane storage tanks will need to be temporarily utilized to store and/or transfer ethane while the proposed new refrigerated ethane storage tanks are being constructed.

SPMT recognizes that the preliminary Project construction schedule is projected to last more than 18 months, which is the normal permit term for Plan Approvals under 25 PA Code §127. The extended construction period is due to long-lead time materials that are needed for the construction of the refrigerated ethane storage tanks. Under 25 PA Code §127.13, SPMT is requesting that the Plan Approval be extended by 18 months from Plan Approval issuance (expiration date that is 36 months from issuance) to facilitate the continued construction and shakedown of the sources.

2. PROJECT OVERVIEW

This Project will provide for the storage of liquefied ethane products received through a pipeline that is planned to be dedicated to ethane transport. There will be two trains which will process approximately 70,000 barrels per day of ethane each. After exiting the pipeline, ethane will be treated to remove carbon dioxide via an amine treating system, and water via a dehydration system. Furthermore, methane impurities will be separated from the treated ethane feedstock by a demethanizer and will be recovered. Treated, dry ethane will be refrigerated before being routed to refrigerated product storage tanks and ultimately transferred offsite. The sections below discuss the associated process equipment and **Figure 2-1** below shows an overall process flow diagram for Project Phoenix.

Figure 2-1: Project Phoenix Simplified Process Flow Diagram



2.1 Project Phoenix Amine Treatment System

Ethane feedstock received by SPMT is expected to contain carbon dioxide (CO_2) at varying concentrations (up to 1,000 parts per million [ppm]). Feedstock which does not meet the product specifications will be treated to remove excess CO_2. SPMT Plans to install a new Project Phoenix Amine Treatment System. The new system will have the ability to connect to existing amine equipment for reliability. Ethane feedstock which meets the product specification for CO_2 (<100 ppm) prior to treatment may bypass the Project Phoenix Amine Treatment System and be routed to the Dehydration System (**Section 2.2**).

Additional piping, discussed in **Section 2.6.1** below, will be installed to allow the installation of the new amine treatment system which will include fugitive components that will result in additional volatile organic compound (VOC) emissions. Components in amine service will be 90% water and 10% Diethanolamine (DEA) by weight. Since DEA is considered a VOC, fugitive VOC emissions expected from the components in amine service have been captured in **Section 3.1**.

As a result of the potential incremental increase in the CO_2 absorbed in the amine, an incremental increase in steam used in the Project Phoenix Amine Treatment System (amine stripper tower reboiler) is accounted for. Emissions associated with the incremental increase in steam demand by the Project Phoenix Amine Treatment System are discussed in **Section 2.7.1**.

The Project Phoenix Amine Treatment System will include maintenance and emergency connections to the Project Phoenix Cold Flare discussed in **Section 2.6.2**. Emissions resulting from these connections are accounted for at the flare.

Additionally, the Project Phoenix Amine Treatment System will include an operational connection to the West Warm Flare header, which will require additional sweep gas. Emissions associated with the incremental West Warm Flare connections are discussed in **Section 2.7.2**.

2.2 Dehydration Train Systems

SPMT will remove water from ethane feedstock using one new molecular sieve desiccant dehydration train system. Wet ethane feedstock will enter dehydration beds which contain a molecular sieve desiccant which adsorbs any water contained in the hydrocarbon stream. Periodically, the beds will be regenerated to remove the water from the desiccant using dry ethane. During regeneration, superheated, dry ethane will be run through the system causing water contained in the desiccant to desorb and exit the vessel with the wet regenerant ethane gas stream. Water is then condensed out of the regenerant ethane gas stream, degassed (flashed gas is sent to the West Warm Flare), and sent to the process sewer.

The Dehydration System (dehydrator regeneration vaporizer) will utilize incremental steam to vaporize the dry ethane regenerant gas. Emissions associated with the incremental increase in steam demand by the Dehydration Systems are discussed in **Section 2.7.1**.

The Dehydration Systems will include maintenance and emergency connections to the Project Phoenix Cold Flare discussed in **Section 2.6.2**. Additionally, operational connections to the West Warm Flare are included, discussed in **Section 2.7.2**. Emissions resulting from these connections are accounted for as part of the overall project emissions.

Components in ethane service will contain up to approximately 3.6% by weight of propane (VOC) and approximately 0.5% by weight of methane (greenhouse gas [GHG]). Therefore, fugitive VOC and GHG emissions expected from the piping, pumps, or other components in ethane service and have been captured in **Section 3.1.**

2.3 Demethanizer and Refrigeration System

Following removal of CO_2 and moisture, the ethane will be cooled using a proprietary refrigeration system consisting of a closed loop propane system followed by an open loop ethane system. The chilling system is closely integrated with the Demethanizer to remove methane from the dry ethane. Methane and other hydrocarbons separated from the ethane feedstock will be recovered to the MHIC fuel gas system and product sales.

The Demethanizer will include maintenance and emergency connections to the Project Phoenix Cold Flare discussed in **Section 2.6.2**. Emissions resulting from these connections are accounted for as part of the overall project emissions.

Propane will be used as the refrigerant for the Refrigeration System. Propane is compressed then cooled and condensed using Wet Surface Air Cooler (WSAC) System (**Section 2.6.3**). Propane refrigerant is then used to cool the ethane before reentering the propane compression cycle.

Similar to propane, ethane vapors are compressed then condensed using the WSAC System (**Section 2.6.3**) and through heat exchange with propane refrigerant. Methane-rich off-gases will be sent to the Demethanizer (**Section 2.3**). Refrigerated ethane product can be routed from the transfer pumps to the existing ethane storage tanks, TK-401 and TK-402 (Title V Operating Permit #23-00119, Source IDs 101 and 117) or the proposed new Project Phoenix Ethane Product Storage Tanks (**Section 2.4**) via a bi-directional transfer line.

The Refrigeration System will include operational, maintenance, and emergency connections to the Project Phoenix Cold Flare discussed in **Section 2.6.2**. Emissions resulting from these connections are accounted for as part of the overall project emissions.

Components in ethane service will contain up to approximately 3.6% by weight of propane (VOC) and approximately 0.5% by weight of methane (GHG). Therefore, fugitive VOC and GHG emissions are expected from the piping, pumps, compressors, or other components in ethane service. Fugitive VOC emissions are expected from the piping, pumps, compressors, or other components in propane service. These components in VOC service will be incorporated into the leak detection and repair (LDAR) program (See **Section 2.6.1**).

2.4 Ethane Product Storage Tanks

Two (2) new 600,000 barrel Ethane Product Storage Tanks, 130-TK-403 and 135-TK-404, are planned as part of Project Phoenix. The new refrigerated storage tanks will be double-walled tanks that employ boil-off gas management systems, consisting of a series of compressors that return vapors into the ethane refrigeration compression system. The Ethane Product Storage Tanks will be kept at a vapor pressure of approximately 1.0 pounds per square inch gauge (psig) and between approximately -135 and -125 degrees Fahrenheit (°F).

The ethane product storage tanks will include operational and maintenance connections to the Project Phoenix Cold Flare discussed in **Section 2.6.2**. Emissions resulting from these connections are accounted for as part of the overall project emissions.

Components in ethane service will contain up to approximately 3.6% by weight of propane (VOC) and approximately 0.5% by weight of methane (GHG). Therefore, fugitive VOC and GHG emissions are expected from the piping, pumps, or other components in ethane service.

2.5 Product Loading Operations

SPMT plans to transfer ethane via the existing loading docks, which will not be modified in any way. Each dock includes two identical loading arms and one vapor return line. The loading operation is a

closed loop system, where all boil-off gasses generated during product loading are collected. These collected vapors are subsequently chilled, condensed and returned to the product storage tanks. At the completion of each loading event, each loading arm will be purged with nitrogen to complete the transfer of liquid products into the marine vessels. Fugitive VOC and GHG emissions are expected from the piping, pumps, or other components in ethane service.

2.6 New Emission Sources

New emission sources included with the Project include fugitive VOC piping components, a new air-assisted Cold Flare with low-pressure and high pressure flare tips, and the WSAC System.

2.6.1 *Fugitive Emissions—Piping Components*

Detailed engineering of this Project is on-going; however, for permitting purposes, SPMT has conservatively estimated the number of new piping components in VOC service expected for this Project, including additional components in the Project Phoenix Amine Treatment System and in the Refrigeration System.

All new components in VOC service[3] (having greater than 10% by weight total VOC) will be incorporated into the leak detection and repair (LDAR) program (see **Section 3.1** for details).

2.6.2 *Project Phoenix Cold Flare*

Project Phoenix will involve the installation of one new air-assisted cold flare with both high-pressure (HP) and low-pressure (LP) flare tips to be used for flaring refrigerated streams that do not contain water. For the purposes of this narrative, the new flare will be referred to as the “Project Phoenix Cold Flare”. For safety purposes, any flaring streams containing water must be directed to the West Warm Flare header system (**Section 2.7.2**).

2.6.2.1 Project Phoenix Cold Flare Continuous Flows

The Project Phoenix Cold Flare will have purge gas and pilot gas flowing to it on a regular basis to ensure safe and reliable operation. These flows are assumed to be on a continuous basis and are necessary for the safe operation of the flare. The pilot and purge gas will be introduced directly into the flare system. SPMT will also introduce sweep gas (natural gas) into the cold flare header system upstream of the flare to prevent explosive conditions within the piping. See **Table 2-1** below for the pilot, purge and sweep gas flow rates in standard cubic feet per hour (scfh) for the planned new Project Phoenix Cold Flare.

[3] 40 Code of Federal Regulations §60.481a – “in VOC service” means that the piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight.

Table 2-1: Project Phoenix Cold Flare Purge, Pilot and Sweep Gas Flow Rates

Parameter	Project Phoenix Cold Flare Flow (scfh)
HP Pilot gas flow rate	500
HP Purge gas flow rate	0
HP Sweep gas flow rate	6,875
LP Pilot gas flow rate	500
LP Purge gas flow rate	0
LP Sweep gas flow rate	1,576
Total Continuous Flow Rate	**9,452**

2.6.2.2 Project Phoenix Cold Flare Operational & Maintenance Connections

Processes included with this Project will be connected to the Project Phoenix Cold Flare and will send material to the flare on an operational and/or maintenance basis as part of normal operation to prevent atmospheric releases and/or control process vessel pressure during abnormal high pressure. Operational flows are assumed to occur on a regular, routine, or continuous basis[4]. Maintenance flows occur at varying intervals depending upon the maintenance schedule, operational schedule, and condition of the equipment. The expected Project Phoenix Cold Flare connections for operational and maintenance flows are shown in **Table 2-2** below.

[4] There are operational flows that are listed in the Project Phoenix Cold Flare overview that are conservatively assumed to occur annually. However, in practice, these flows may not occur annually because they can be influenced by feedstock characteristics, non-routine process conditions, and weather conditions.

Table 2-2: Project Phoenix Cold Flare Operational & Maintenance Connections

Project Phoenix Process Area	Connection Type	Source Category
Project Phoenix Amine Treatment System	Maintenance	Exchanger
		Filter
Dehydration System	Operational	Pump Seal
	Maintenance	Exchanger
		Filter
		Pump
		Vessel
Refrigeration System	Operational	Compressor Seal
		Pump Seal
	Maintenance	Compressor
		Exchanger
		Pump
		Vessel
Demethanizer	Maintenance	Exchanger
		Vessel
Ethane Product Storage Tanks	Operational—LP	Compressor Seal
		Pump Seal
	Maintenance—LP	Compressor
		Pump
		Tank

2.6.2.3 Project Phoenix Cold Flare Emergency Connections

A purpose of the new Project Phoenix Cold Flare is to provide safe and reliable control and destruction of process gases during emergency situations and the design capacity of this flare is based on the worst case emergency relief scenarios. The planned flare header connections for emergency purposes are shown in **Table 2-3** below.

Emergency releases are not expected during normal operations nor can these conditions be reasonably predicted. Therefore, the exact emergency flow rates and associated emissions to the Project Phoenix Cold Flare are not included in the source's potential to emit.

Table 2-3: Project Phoenix Cold Flare Emergency Connections

Project Phoenix Process Area	Source Category
Project Phoenix Amine Treatment System	Exchanger
	Filter
Dehydration System	Pump Seals
	Vessel
	Exchanger
	Filter
Refrigeration System	Vessel
	Compressor Seals
	Exchanger
	Pump Seals
Demethanizer	Exchanger
	Vessel
Ethane Product Storage Tanks	Boil-off Gas Compressor Seal

2.6.2.4 Project Phoenix Cold Flare Flow Overview

SPMT performed an engineering analysis of the proposed Project Phoenix Cold Flare system, which included a line by line review of piping and instrumentation diagrams (P&IDs) to identify connections to the flare header system. The confidential Project Phoenix Cold Flare connection list can be found in **Appendix C (Confidential)**.

Through this engineering analysis, each Project Phoenix Cold Flare connection has been identified including its location, conservatively estimated composition, expected frequency of venting material into the flare system, expected duration of venting to the flare system, the estimated quantity (mass) of material vented to the flare system, and type of operation (sweep, operational, maintenance, or emergency as described previously). **Appendix C (Confidential)** also includes a confidential summary of expected flare flow, flow type, composition, and area of origin for material sent to the new flare.

Table 2-4 below shows the expected overall flare flow, flow type, and composition for materials anticipated to be sent to the Project Phoenix Cold Flare.

Table 2-4: Project Phoenix Cold Flare Flows Overview

Flare	Flow Type	Flow Quantity (lb/year) and Composition					
		Ethane	Methane	Fuel Gas	Amine	Propane	Total
HP Cold	Emergency	—	—	—	—	—	—
	Maintenance	37,967	0	1	0	12,197	**50,165**
	Operational	82,913	51,100	0	0	114,488	**248,501**
	Sweep	0	2,838,240	0	0	0	**2,838,240**
LP Cold	Emergency	—	—	—	—	—	—
	Maintenance	488,204	0	0	0	25,695	**513,899**
	Operational	3,196,750	7,300	0	0	168,250	**3,372,300**
	Sweep	0	798,912	0	0	0	**798,912**
Total		**3,805,834**	**3,695,552**	**1**	**0**	**320,630**	**7,822,017**

2.6.3 *Wet Surface Air Cooler Systems*

Two new WSAC Systems that are designed to process 21,000 gallons per minute (gpm) of cooling water each will be required for the ethane and propane refrigeration systems. The WSAC Systems will be equipped with high efficiency drift eliminators. Cooling water make-up will be a mixture of potable water and low pressure steam condensate.

The WSAC Systems rely on evaporative cooling to transfer heat from process fluids. Since this evaporative cooling approach requires an open design of the heat exchange system, similar to an air-cooled fin fan type heat exchange system, VOCs from the process will not accumulate in each unit's water basin. Due the high volatility and low water solubility of ethane and propane, these process fluids are directly transferred to the air if a leak occurs. Subsequently, only VOC emissions which result from fugitive leak components were estimated, as discussed in **Section 2.6.1**.

2.7 Existing Utility Sources

Incremental impacts on existing utility sources by Project Phoenix include the Auxiliary Boilers and the West Warm Flare.

2.7.1 *Incremental Steam Demand from the Auxiliary Boilers*

Project Phoenix will require low pressure steam for the dehydration regeneration vaporizer and amine stripper tower reboiler, with the Project Phoenix Cold Flare now being air-assisted instead of steam assisted. The steam will be generated by the three existing Auxiliary Boilers at the MHIC. The steam demand from each of the proposed processes associated with Project Phoenix is outlined below in **Table 2-5**.

Table 2-5: Steam Demand from Project Phoenix Sources

Project Phoenix Processes	Steam Demand (lb/hr)
Amine Stripper Tower Reboiler	9,300
Dehydrator Regeneration Vaporizer	27,000
Total Steam Demand	**36,300**

2.7.2 *Incremental Flows to the West Warm Flare*

For safety reasons due to potential water content, the Project Phoenix Amine Treatment System will include connections to the West Warm Flare header. Due to the distance to the West Warm Flare header, incremental sweep gas flow (natural gas) will be used.

Emergency releases are not expected during normal operations nor can these conditions be reasonably predicted. Therefore, the exact emergency flow rates and associated emissions to the West Warm Flare are not included in the incremental emissions.

Table 2-6 below shows the expected overall flare flow, flow type, and composition for materials anticipated to be sent to the West Warm Flare.

Table 2-6: Project Phoenix Flows to West Warm Flare

Flow Type	Flow Quantity (lb/year) and Composition		
	Amine	**Ethane**	**Methane**
Emergency	—	—	—
Operational	—	0	—
Maintenance	159	—	
Sweep	—	—	136,656

3. DETAILED PROJECT EMISSIONS ANALYSIS

This section describes the calculations and assumptions associated with the estimated emissions from Project Phoenix. The emissions from each source identified in **Section 2** including nitrogen oxides (NOx), sulfur dioxide (SO_2), sulfuric acid mist (H_2SO_4), carbon monoxide (CO), VOC, particulate matter (PM), particulate matter less than 10 microns (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$), hazardous air pollutants (HAPs), and greenhouse gas emissions (carbon dioxide equivalents [CO_2e]) are detailed below. **Table 3-7** at the end of this section shows the total Project Phoenix emissions. Detailed calculations are presented in **Appendix D**.

3.1 Fugitive Emissions—Piping Components

This Project includes the installation of new piping equipment, associated valves, pressure relief valves, and flanges. SPMT has conservatively estimated a component count, including valves, flanges, and relief valves, based on preliminary engineering design[5]. All fugitive emissions were estimated using methodologies presented in United States Environmental Protection Agency's (USEPA) Protocol for Equipment Leak Emission Estimates, EPA 453/R-95-017. For components that are not in VOC service, potential fugitive emissions are based on the average emission factor approach (emission factors from Table 2-1 of the USEPA Protocol) in conjunction with component counts for Project Phoenix. No control efficiency was applied for fugitive emissions for components that are not in VOC service, as they will not be inspected as part of the facility's LDAR program. For those components in VOC service (specifically those within the Propane Refrigeration and Amine Treatment Systems), screening methodology was used, which utilizes an average leak concentration for each component type, a Screening Value Emission Factor (Tables 2-10, 2-12, and 2-14 of the USEPA Protocol), and component count to determine VOC and CO_2e emissions. Over two-years of leak concentration data from the facility's LDAR program were used to determine the average leak concentrations per component type. As this method uses data pertaining to facility-specific leak rates, the methodology is more refined and accurate as stated in Section 2.2.1 of the referenced USEPA protocol (EPA 453/R-95-017).

The fugitive components in VOC service associated with Project Phoenix will be subject to the requirements of 40 CFR 60 Subpart VVa for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry. For all new components in VOC service, an actual leak rate estimate gathered from the facility's LeakDAS® inspection database on existing fugitive components was used in conjunction with component counts for Project Phoenix to estimate VOC emissions using EPA's screening ranges approach. These two emission estimates were combined to determine an overall fugitive emissions total for the project which can be found below.

Potential fugitive CO_2e emissions are based on methodologies presented in United States Environmental Protection Agency's (USEPA) Protocol for Equipment Leak Emission Estimates, EPA 453/R-95-017 (emission factors from Table 2-4).

Estimated fugitive VOC and CO_2e emissions in tons per year (TPY) from potential leaks from new equipment are presented below in **Tables 3-1**.

[5] The component count is conservative because a margin of 20% has been added.

Table 3-1: Potential Fugitive VOC and CO_2e Emissions

Project Phoenix Units	New Fugitive Components	Number of Components	VOC Emissions[1] (TPY)	CO_2e Emissions (TPY)
Refrigeration System Components	Valves	2,071	3.25	0.00
	Pump Seals	2	0.02	0.00
	Compressor Seals	12	0.04	0.00
	Pressure Relief Valves	77	0.04	0.00
	Flanges/Connectors	6,745	3.15	0.00
Amine Treatment System Components	Valves	1,397	0.22	0.00
	Pump Seals	6	0.01	0.00
	Pressure Relief Valves	30	0.00	0.00
	Flanges/Connectors	3,862	0.18	0.00
Ethane System Components	Valves	5,375	9.30	32.28
	Pump Seals	10	0.07	0.23
	Compressor Seals	14	1.14	3.96
	Pressure Relief Valves	212	7.68	26.66
	Flanges/Connectors	17,410	11.08	38.47
Methane/Ethane System Components	Valves	1,322	0	952.92
	Pressure Relief Valves	38	0	482.04
	Flanges/Connectors	3,198	0	706.40
Natural Gas System Components	Valves	445	0	577.46
	Others	10	0	216.92
	Flanges/Connectors	1,134	0	450.87
Flare Sweep System Components	Valves	815	0	1,044.88
	Flanges/Connectors	2,484	0	987.63
Acid Gas System Components	Valves	40	0	0.55
	Flanges/Connectors	48	0	0.20
Total Fugitive Emissions			**36.17**	**5,521**

[1] *Potential fugitive emissions are estimated based on USEPA guidance correlations ("Protocol for Equipment Leak Emission Estimates", EPA-453/R-95-017).*

3.2 Project Phoenix Cold Flare Emissions

Project Phoenix will involve the installation of one (1) new air-assisted cold flare to be used for flaring streams that are less than -20°F. As described above, there are pilot, purge, sweep, operational, maintenance, and emergency flows to the Project Phoenix Cold Flare. A purpose of the Project Phoenix Cold Flare is to provide safe and reliable control and destruction of process gases during emergency situations.

These pilot, purge, sweep, operational, maintenance, and emergency flows, which vary in composition and VOC concentration, will contain methane, ethane, propane, and natural gas. An engineering analysis was conducted to determine the flow, composition, frequency, and origin of the expected flare flows at the planned flare. **Table 2-4** details the flow (lb/year) of various materials expected to be sent to the flare. The HHV for each material was used to convert the flow (lb/yr) to heating duty (MMBtu/yr) for each material. SPMT then added the heating duty from each material to obtain the total heating duty sent to the flare due to operational and maintenance flows. That annual heating duty was then multiplied by industry accepted flare emission factors from AP-42 Chapters 1.4 and 13.5 and 40 CFR Part 98 for Mandatory Greenhouse Gas Reporting to calculate potential emissions from operational and maintenance flows.

To calculate VOC emission rates, SPMT used a conservative flare VOC destruction efficiency of 98% (i.e., compliance with 40 CFR §60.18) and the measured VOC content of the flare gas (based on composition data) in place of the standard emission factors from AP-42. This methodology more accurately represents the VOC emissions from the flare flows.

The Project Phoenix Cold Flare will be designed to comply with 40 CFR §60.18(c)(1) for visible emissions; therefore, no particulate matter (PM) emissions are expected during normal flare operation.

The Project Phoenix Cold Flare emissions, detailed by flow in **Table 3-2** below, are based on the expected purge and pilot gas flows, expected sweep flows, expected operational and maintenance flows, AP-42 Chapter 13.5 emission factors, and 40 CFR 98 Subpart W emission methodologies for greenhouse gasses (GHG).

Table 3-2: Potential Emissions from the Project Phoenix Cold Flare

Parameter	Source			Total
	Pilot/Purge Flow	Sweep Continuous Flow	Operational / Maintenance Flow	
Heat Duty (MMBtu/hr) (annual average)	1.03	8.35	10.59	**19.97**
NO_x Emissions (TPY)	0.31	2.49	3.15	**5.95**
VOC Emissions (TPY)	0.04	0.33	3.21	**3.57**
CO Emissions (TPY)	1.39	11.34	14.38	**27.12**
SO_2 Emissions (TPY)	0.003	0.02	0	**0.02**
CO_2e Emissions (TPY)	591	4,992	5,698	**11,281**

3.3 Wet Surface Air Cooler System Emissions

The two (2) new 21,000 gpm WSAC Systems each have the potential to emit trace amounts of particulates from solids in the cooling water. Cooling water will be a combination of steam condensate generated from Project Phoenix users and potable water.

The emissions calculations assume two systems each with a recirculation rate of 21,000 gpm, dissolved solids concentration of approximately 200 parts per million (ppm), and drift eliminator performance of 0.0005%. Emissions for PM, PM10, and PM2.5 are estimated based on the Reisman/Frisbie methodology. **Table 3-3** below shows the potential emissions in TPY from the new WSAC Systems.

Table 3-3: Potential Emissions from the WSAC Systems

Pollutant	Potential Emissions (TPY)
PM	0.55
PM_{10}	0.43
$PM_{2.5}$	0.001

3.4 Incremental Steam Demand Emissions

The total future expected annual average steam demand for the MHIC, including Project Phoenix, is approximately 619,292 pounds per hour of steam (lb/hr) as shown in **Tables 2-5** above and **Appendix D**. The Auxiliary Boilers will not be modified in any way to produce the incremental steam required for this Project. As shown in **Table 3-4** below, the total future expected annual average steam demand is below the combined steam production capacity of the Auxiliary Boilers (approximately 801,000 lb/hr) and this steam demand can be accommodated within the existing Title V Operating Permit emissions limits[6]. Therefore, the incremental steam demand emissions for this Project from the Auxiliary Boilers have already been previously permitted.

[6] The emission limits were originally established for four Auxiliary Boilers with Plan Approval 23 0119B. The emissions limits for the remaining three Auxiliary Boilers were revised with the removal of Auxiliary Boiler 2 (Source ID 032) as part of the major operating permit modification to TVOP 23-00119 in December 2016.

Table 3-4: Auxiliary Boilers Operational Demand and Limits

Parameter	Title V Operating Permit Limits for Auxiliary Boilers (TPY)[1]
NO_x	92.71
SO_2	41.10
VOC	5.49
CO (current)	107.61
CO (proposed)[1]	27.23
$PM/PM_{10}/PM_{2.5}$	21.94
H_2SO_4	3.15
Combined Steam Production Capacity (lb/hr steam)[2]	801,000 lb/hr steam

[1] The CO emissions limit is proposed to be reduced through the July 2019 minor operating permit modification of TVOP 23-00119.
[2] Auxiliary Boilers 1 (Source ID 031), 3 (Source ID 033), and 4 (Source ID 034) each have a steam production capacity of 267,000 lb/hr each.

3.5 West Warm Flare—Incremental Emissions

As discussed in **Section 2.7.2**, operational and emergency flows will be sent to the West Warm Flare as part of normal operation to prevent atmospheric releases and/or control process vessel pressure. **Table 3-5** below shows the potential emissions from operational and maintenance flows at the West Warm Flare.

Table 3-5: Incremental Emissions to West Warm Flare

Parameter	Source		Total
	Sweep Flow	**Operational/Maintenance Flow**	
Heat Duty (MMBtu/hr) (annual average)	0.35	3.03E-04	**0.35**
NO_x Emissions (TPY)	0.10	9.01E-05	**0.10**
VOC Emissions (TPY)	0.01	0	**0.01**
CO Emissions (TPY)	0.48	4.11E-04	**0.48**
SO_2 Emissions (TPY)	0.001	0	**0.001**
CO_2e Emissions (TPY)	210	0.14	**210**

3.6 Aggregated Project Emissions

In accordance with the adjudication decision by the Commonwealth of Pennsylvania Environmental Hearing Board, EHB Docket No. 2016-073-L, SPMT has evaluated the applicability of the Project as aggregated with prior permitting actions list below in **Table 3-6**. Emissions shown in the table reflect final

PADEP actions as represented in the review memorandums filed at the time of permit issuance, except as otherwise noted.

Table 3-6: Aggregated Project Emissions Summary

Emissions	Pollutant (TPY)									
	VOC	**NO_x**	**CO**	**PM**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**H_2SO_4**	**Lead**	**CO_2e**
23-0119	8.78	--	0.09	--	--	--	0.0001	—	—	48
23-0119A	3.04	0.02	--	--	--	--	--	—	—	13
23-0119B[1]	10.19	24.40	19.02	8.13	8.13	8.13	39.4	—	—	74,400
23-0119C	5.52	--	--	0.25	0.23	0.01	--	—	—	--
23-0119D[2]	54.98	10.38	47.34	0.40	0.38	0.06	0.06	—	—	21,325
23-0119E	18.24	0.30	--	0.20	0.20	0.20	--	—	—	--
23-0119F	13.67	--	--	--	--	--	--	—	—	--
RFD 5236 (Spheres Project)	0.87	--	--	--	--	--	--	—	—	--
RFD 5340 (Tank 609 Vapor Pressure)	2.69	--	--	--	--	--	--	—	—	--
RFD 5918 (Propane Railcar Offloading)	2.19	--	--	--	--	--	--	—	—	--
RFD 5944 (Portable Flare for Metering Maintenance)	0.002	0.0002	--	--	--	--	--	—	—	0
RFD 6484 (Methanol Tank)	0.65	--	--	--	--	--	--	—	—	--
RFD 7548 (H-5 Unloading Area Upgrade)	0.21	0.02	0.07	--	--	--	--	—	—	--
Total	**121.03**	**35.12**	**66.51**	**8.98**	**8.94**	**8.40**	**39.46**	**—**	**—**	**95,786**

[1] Note that the project CO emissions for Plan Approval 23-0119B are not the authorized permit limits. The CO emissions have been adjusted due to the establishment of a new CO emission limit for the Auxiliary Boilers. Details on the new emission limit can be found in the Title V Operating Permit 23-00119 Minor Modification Application.
[2] Note that the project emissions for Plan Approval 23-0119D, are not the authorized permit limits. The project emissions associated with Plan Approval 23-0119D for all pollutants have been adjusted due to increased flows and connections to the existing flares associated with that plan approval. Details on the updated emissions can be found in the resubmittal of Plan Approval 23-0119E.

3.7 Project Emissions Summary

Table 3-7 summarizes the total Project Phoenix emissions broken down by source. Additional information can be found in **Appendix D**.

Table 3-7: Project Phoenix Emissions Summary

Emissions	Pollutant (TPY)									
	VOC	**NO_x**	**CO**	**PM**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**H_2SO_4**	**Lead**	**CO_2e**
Fugitive Components	36.17	—	—	—	—	—	—	—	—	5,521
Project Phoenix Cold Flare	3.57	5.95	27.12	—	—	—	0.02	—	—	11,281
Wet Surface Air Cooler Systems	—	—	—	0.55	0.43	0.001	—	—	—	—
Incremental West Warm Flare Flows	0.01	0.10	0.48	—	—	—	0.001	—	—	210
Aggregated Projects	121.03	35.12	66.51	8.98	8.94	8.40	39.46	—	—	95786
Total	**160.79**	**41.17**	**94.11**	**9.53**	**9.37**	**8.40**	**39.48**	**0.00**	**0.00**	**112,799**

4. PSD & NANSR REGULATORY REVIEW

SPMT must comply with all federal and state requirements applicable to this proposed Project. The existing facility is a major stationary source for all criteria pollutants; therefore, the new sources in this plan approval must undergo a new source review analysis.

The MHIC is located in an area treated as severe nonattainment for ozone and nonattainment for $PM_{2.5}$. It is designated as attainment for other pollutants. Because of the above designations, SPMT must evaluate the project related activities for the applicability of the NANSR program for VOC and NO_x as ozone precursors along with $PM_{2.5}$ emissions, and the applicability of the PSD program for NO_2, SO_2, CO, PM, PM_{10}, H_2SO_4, lead, and CO_2e. Under the NANSR program, the project is considered a major modification for ozone if the VOC or NO_x emissions exceed 25 TPY for the project alone or by aggregating with increases and decreases over the contemporaneous time period. For $PM_{2.5}$, the modification is considered major if the project emissions exceed 10 TPY (or when NO_2 or SO_2 emissions exceed 40 TPY [as they are both $PM_{2.5}$ precursors]). Under PSD, a major modification occurs when NO_2 or SO_2 emissions exceed 40 TPY, CO emissions exceed 100 TPY, PM emissions exceed 25 TPY, PM_{10} emissions exceed 15 TPY, sulfuric acid mist emissions exceed 7 TPY, CO_2e emissions exceed 75,000 TPY, or lead emissions exceed 0.6 TPY.

4.1 Prevention of Significant Deterioration Analysis

The Prevention of Significant Deterioration regulations (40 CFR §52.21) are Federal regulations that apply to new major sources or “major modifications” of existing “major stationary sources” located in attainment or unclassifiable areas for a given pollutant. The SPMT Marcus Hook facility is a major stationary source, and adding a new source to the facility source that would result in a “significant net emissions increase” would trigger PSD applicability.

As indicated in **Table 4-1** below, NO_2 and CO_2e emissions for the Project exceed the PSD thresholds; therefore, a netting analysis over the contemporaneous period must be performed.

Table 4-1: PSD Emissions Analysis (Step 1)

Emissions	Pollutant (TPY)							
	NO_2	SO_2	CO	PM	PM_{10}	H_2SO_4	Lead	CO_2e[1]
Aggregated Project	41.17	39.48	94.11	9.53	9.37	0	0	112,799
PSD Significant Level	40	40	100	25	15	7	0.6	75,000
PSD Triggered (Before Netting Analysis)	Yes	No	No	No	No	No	No	Yes

[1] Based on the Supreme Court’s decision on June 23, 2014 in Utility Air Regulatory Group v. EPA, a project’s GHG emissions can only trigger PSD if a conventional pollutant is triggered PSD first. For the CO_2e emissions, the thresholds are 75,000 TPY for modified facilities and 100,000 TPY for new facilities.

4.2 Prevention of Significant Netting Analysis

PSD regulations allow the use of a netting analysis to determine if a “significant net emission increase” will occur as a result of a project. SPMT has performed the netting analysis consistent with PSD regulations in 40 CFR §52.21. A six-step procedure is used for determining the net emissions change and is summarized below.

1. Emission Increases from the Proposed Project - Determine the emission increases from the proposed project. If increases are significant, proceed; if not, the project is not subject to PSD review.
2. Contemporaneous Period - Determine the beginning and ending dates of the contemporaneous period as it relates to the proposed project.
3. Emissions Increases and Decreases during the Contemporaneous Period - Determine which emissions units at the facility experienced (or will experience, including any proposed decreases resulting from the proposed project) a creditable increase or decrease in emissions during the contemporaneous period.
4. Creditable Emissions Changes - Determine which contemporaneous emissions changes are creditable.
5. Amount of the Emissions Increase and Decrease - Determine, on a pollutant-by-pollutant basis, the amount of each contemporaneous and creditable emissions increase and decrease.
6. PSD Review - Sum all contemporaneous and creditable increases and decreases with the emissions changes from the proposed project to determine if a significant net emissions increase will occur.

In order to perform a netting analysis, the contemporaneous periods must be determined. The term "contemporaneous period" is defined in the PSD regulation as the period that includes the five (5) years prior to initiating construction on a proposed modification, and the period between the initiation of construction and the initiation of operation of the new or altered equipment. The construction of the sources requested in this Plan Approval 23-0119J application is planned to begin in 2019 and continue through 4th quarter 2022. The five (5) year period for the Aggregated Project starts on April 1, 2011 based on the Plan Approval 23-0119E issuance date of April 1, 2016. Therefore, the contemporaneous period for this project runs from April 1, 2011 through 4th quarter 2022.

Contemporaneous and creditable emissions increases included in the PSD netting analysis are based on current facility permits. **Table 4-2** summarizes the contemporaneous and creditable emissions increase/decrease included in the Aggregated Project PSD netting analysis. Detailed emissions estimates and netting analysis are provided in **Appendix D** and **Appendix E**.

Table 4-2: PSD Contemporaneous Netting Analysis (Step 2)

Emissions	Pollutant (TPY)	
	NO_2	**CO_2e[1]**
Aggregated Project	41.17	112,799
Contemporaneous Increases/Decreases	-19.75	-4,848
Total	**21.42**	**107,951**
PSD Significant Level	40	75,000
PSD Review Required	**No**	**No**

[1] Further PSD review (BACT analysis) would only be required for CO_2e if PSD is triggered for a conventional pollutant first.

As shown in **Table 4-2**, there are no significant net emissions increases associated with pollutants subject to PSD for the Aggregated Project; therefore, no further PSD review is required.

4.3 Nonattainment New Source Review Analysis—Ozone

Facilities located in nonattainment areas that plan construction or modification of a source must evaluate the applicability of nonattainment NSR. The requirements are defined in 25 PA Code §127.201 through §127.217. Sources located in a nonattainment area, ozone transport region, or attainment or unclassifiable area impacting a nonattainment area are subject to permit requirements defined in 25 PA Code §127.203. In Pennsylvania, facilities located in the five county area including Delaware County are subject to the special permit requirements codified at §127.203. Under the special permit requirements, proposed new sources are subject to the NANSR requirements if the cumulative emissions calculated using either one of the two scenarios below equals or exceeds 25 tons per year of NO_x or VOC:

- Increases or decreases in emissions from the project are aggregated with other net emissions increases over the consecutive 5-calendar year period including the year in which the project is constructed; or
- Increases or decreases in emissions from the project are aggregated with other net emission increases or decreases over the previous 10-year period. In this case, the facility is subject only to the emissions offset requirements codified at §127.205.

Contemporaneous and creditable emissions increases included in the netting analysis are based on current facility permits. Detailed emissions estimates and netting analysis are provided in **Appendices D and E**, respectively.

SPMT has evaluated the applicability of NANSR for ozone to the proposed Project. **Table 4-3** below presents a summary of Project emissions for NO_x and VOC aggregated with other net emissions increases over the consecutive 5-calendar year period including the year in which the Project construction is planned (calendar years 2012 through 2022)[7].

Table 4-3: NANSR Netting Analysis for NO_x and VOC Emissions (5-calendar year)

Project	VOC Emissions (TPY)	NO_x Emissions (TPY)
Aggregated Project	160.79	41.17
Previous Contemporaneous Projects	82.05	9.54
Net Emissions Increase	**242.84**	**50.71**
NANSR Significance Level	**25**	**25**
NANSR Review Required	**Yes**	**Yes**

As shown in **Table 4-3**, the net emissions increases of both NO_x and VOC are greater than the NANSR regulatory threshold of 25 tons per year. Therefore, the proposed project is subject to the special permit requirements for both VOC and NO_x emissions in 25 PA Code §127.203 including a LAER analysis. See **Section 5.1** below for the VOC LAER Analysis and **Section 5.2** below for the NO_x LAER Analysis.

[7] The construction of the sources requested in this Plan Approval 23-0119J application is planned to begin in 2019 and continue through 2022. The 5-calendar year period is limited to 2012 based on the Plan Approval 23-0119E issuance date of April 1, 2016. Therefore, the 5-calendar year period including the year the Project construction is planned is 2012 through 2022.

4.4 Nonattainment New Source Review Analysis—$PM_{2.5}$

As of December 2007, Delaware County was designated as nonattainment for $PM_{2.5}$. 25 PA Code §127.201 through §127.217 provide the framework for reviewing NANSR applicability for $PM_{2.5}$. These regulations require NANSR review both for direct $PM_{2.5}$ emissions, as well as emissions of SO_2 and NO_x as a $PM_{2.5}$ precursor.

Table 4-4 provides a summary of the Project emissions for $PM_{2.5}$, SO_2, and NO_x as precursors. It can be seen that the NO_x emissions from the Project exceed the NANSR regulatory threshold as a precursor to $PM_{2.5}$; therefore, as per 25 PA Code §127.203a(a)(1)(i)(A), a netting analysis over the contemporaneous period must be performed.

Table 4-4: NANSR Analysis for SO_2, NO_x, and $PM_{2.5}$ Emissions

Project	SO_2 Emissions (TPY)	NO_x Emissions (TPY)	$PM_{2.5}$ Emissions (TPY)
Aggregated Project	39.48	41.17	8.40
NANSR Significance Level	**40**	**40**	**10**
NANSR Review Required	**No**	**Yes**	**No**

As shown in **Table 4-5** below, the NO_x netting analysis over the contemporaneous period shows that the emissions from the Project are not greater than the NANSR $PM_{2.5}$ precursor threshold for NO_x. Therefore, nonattainment new source review is not triggered for $PM_{2.5}$ or its precursors.

Table 4-5: NANSR $PM_{2.5}$ Precursor Netting Analysis for NO_x Emissions

Project	NO_x Emissions (as a $PM_{2.5}$ precursor) (TPY)
Aggregated Project	41.17
Contemporaneous Increase/Decrease	-19.75
Net Emissions Increase	**21.42**
NANSR Significance Level	40
NANSR Review Required	**No**

5. LAER ANALYSIS

SPMT Project Phoenix exceeds the NANSR regulatory threshold for VOC and NO_x and in accordance with 25 PA Code §127.205, SPMT must:

- Implement LAER level of pollution control;
- Obtain emissions reductions (offsets), prior to commencement of operation of the affected source, from other sources that impact a nonattainment area in the same or lower nonattainment classification area than the one in which they were generated;
- Certify that all other sources in Pennsylvania owned by SPMT are complying with all applicable requirements of the CAA; and
- Demonstrate through an analysis of alternative sites, sizes, production processes, and environmental control techniques that benefits of the proposed source significantly outweigh the environmental and social costs imposed as a result of its location, construction, or modification.

5.1 VOC LAER

SPMT's LAER evaluation of the Project was conducted in accordance with USEPA's guidance in the draft New Source Review Workshop Manual (USEPA 1990) and applicable State and federal regulations. In accordance with 25 PA Code §127.205(1), only sources which are new or which are modified shall be required to implement VOC LAER, specifically the new fugitive piping and equipment components and the new cold flare system.

5.1.1 *VOC LAER Review*

5.1.1.1 Fugitive Components

Fugitive emissions, by definition, are those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening. According to the New Source Review Workshop Manual (EPA 1990), it is "unreasonable to expect that relatively small quantities of VOC emissions, caused by leaking valves at outside storage tanks…could be captured and vented to a stack." Therefore, the only control technology for fugitive emissions is leak detection and repair program (LDAR).

5.1.1.2 Project Phoenix Cold Flare

The Pennsylvania Code defines LAER as a rate of emissions based on the following, whichever is more stringent: the most stringent emission limitation which is contained in the implementation plan of a state for the class or category of source unless the owner or operator of the proposed source demonstrates that the limitations are not achievable; or the most stringent emission limitation which is achieved in practice by the class or category of source.

To identify applicable VOC limitations and regulations, a state-by-state search of potentially applicable regulations was conducted. In addition, 40 CFR Parts 60, 61, and 63 were evaluated to determine whether SPMT Project Phoenix would be subject to any New Source Performance Standard (NSPS) or National Emission Standards for Hazardous Air Pollutant (NESHAP).

To identify the VOC limits "achieved in practice" or that have been established for similar source types, a series of searches of USEPA's RACT/BACT/LAER Clearinghouse (RBLC) database, individual state RBLC databases, and general literature was conducted. The majority of the items identified in the RBLC search were labeled as either "BACT" or "LAER" determinations.

Table 5-1 below shows the results of an RBLC search as well as recent and ongoing permitting actions for elevated flare systems or other similar facilities/sources. Note that several of the determinations are in draft applications (denoted with a "*" in front of the RBLC ID in **Table 5-1**) and have not yet commenced operation. Therefore, the emissions limits proposed in the determinations have not been achieved in practice.

Table 5-1: Summary of VOC LAER Precedents for Elevated Flare Systems

RBLC ID/ Permit	Facility Name	Permit Issuance	Process Description	Control Description	Control Efficiency	Control Efficiency Verified
TX-0793	Bayport polypropylene plant	04/04/16	Polypropylene Production Units	Vent streams from routine and maintenance, start-up, and shutdown (MSS) activities are controlled by the air-assisted LOG Flare (EPN 30) or the steam-assisted Elevated Flare (EPN 34). The flares are expected to achieve a volatile organic compound (VOC) destruction efficiency of at least 99 percent (as previously permitted - raw materials have three or fewer carbons). Flares are approved as control devices due to the VOC concentration, together with the variability in flow rate and composition.	99% (for C3 or less)	No
TX-0774	Bishop facility	11/12/15	Reformer Start up and Shutdown	Flare shall meet 40 CFR §60.18 minimum Btu and maximum tip velocity requirements. 99% DRE for VOC molecules with three compounds or less, including methanol and CO (high hydrogen). 98% DRE for all other compounds.	99% (98% for C3+)	Unknown
TX-0754	Propane dehydrogenation unit	07/10/15	Propane Dehydrogenation-Feed Treating and Product Recovery Process	Flare System. Facility will use the following three types of Flare: 1) Multipoint Ground Flare, 2) Merox Flare, 3) Low Pressure Flare. Multipoint flare will operate in accordance with an Alternative Method of Control (AMOC) authorization from EPA. Merox and Low pressure flare will meet 40 CFR §60.18 requirements.	98%	Unknown
*TX-0812	Crude oil processing facility	10/31/16	Refinery Flares	The flare must conform to 40 CFR §60.18 requirements. Vent stream composition and flow must be continuously monitored to demonstrate compliance.	98%	Unknown

RBLC ID/ Permit	Facility Name	Permit Issuance	Process Description	Control Description	Control Efficiency	Control Efficiency Verified
*TX-0813	Odessa petrochemical plant	11/22/16	Polypropylene Process Vents	Emissions minimized by limited venting, and waste stream controlled by flare. The flare must conform to 40 CFR §60.18 requirements. Vent stream composition and flow must be continuously monitored to demonstrate compliance.	98%	Unknown
Shell Petrochemicals Complex Plan Approval Application	Shell petrochemicals complex	6/18/2015	Ethylene/ Polyethylene Production	Shell uses a flare system to control VOCs. Flare operated to meet minimum net heating value requirements for gas streams combusted in the flares, as set forth at 40 CFR §60.18 & §63.11. Flare designed to meet limitations on maximum exit velocity, as set forth in the general provisions at 40 CFR §60.18 & §63.11.	98% (based on §60.18)	Unknown
PA-0317 (SPMT Flare Replacement Project)	SPMT Marcus Hook	4/13/18	Natural Gas Liquids Processing	SPMT uses a flare system to control VOCs. Flare operated to meet minimum net heating value requirements for gas streams combusted in the flares, as set forth at 40 CFR §60.18. Flare designed to meet limitations on maximum exit velocity, as set forth in the general provisions at 40 CFR §60.18. See PA 23-0119H for more detail.	98% (based on §60.18)	To be determined
Bay Area AQMD BACT/TBACT Workbook Guidance[1]	BACT Guidance; Section 3 petroleum Industry	Not Applicable	Refinery Flare	Achieved in Practice: Elevated flare, steam- or air- assisted, w/staged combustion; POC destruction efficiency ≥98%: use of natural gas or LPG as pilot fuel. Flare to be operated only during periods of emergency plant upset or breakdown; routine venting of process gases to be routed to fuel gas recovery system.	98%	Not Applicable

RBLC ID/ Permit	Facility Name	Permit Issuance	Process Description	Control Description	Control Efficiency	Control Efficiency Verified
Bay Area AQMD BACT/TBACT Workbook Guidance[2]	BACT Guidance; Section 3 Petroleum Industry	Not Applicable	Pressure Relief Valves, Emergency – Process Units	Achieved in Practice: Vent to fuel gas recovery system, furnace, or flare with a recovery/destruction efficiency ≥98%.	98%	Not Applicable
South Coast AQMD[3] App No. 353730	Van Waters & Rogers	10/1999	Fixed Roof Storage tank	The applicant is planning to install 18 organic liquid storage tanks at this facility. All tanks will be vented to the thermal oxidizer included in application number 353767. The assumed overall efficiency of the thermal oxidizer is 95% VOC control. A temperature of not less than 1400 degrees Fahrenheit will be maintained in the thermal oxidizer when the equipment it serves is in operation, and no liquid wastes will be burned in the thermal oxidizer.	95%	Not Applicable

[1] *Bay Area AQMD. "Section 3: Flare—Refinery" http://www.baaqmd.gov/permits/permitting-manuals/bact-tbact-workbook.*
[2] *Bay Area AQMD. "Section 3: Pressure Relief Valves, Emergency—Process Units. http://www.baaqmd.gov/permits/permitting-manuals/bact-tbact-workbook.*
[3] *South Coast AQMD BACT Guidelines. http://www.aqmd.gov/home/permits/bact/guidelines.*

5.1.2 *VOC LAER Determination*

5.1.2.1 Fugitive Components

SPMT is proposing that the leak levels and LDAR requirements of 40 CFR 60 Subpart VVa for Equipment Leaks of VOC in the Synthetic Organic Chemical Manufacturing Industry (SOCMI) constitute LAER for the proposed new valves, flanges, and relief valves components in VOC service. This is consistent with other facilities utilizing an LDAR program for control of VOC from fugitive equipment.

5.1.2.2 Project Phoenix Cold Flare

As shown by the VOC precedents shown in **Table 5-1** above, LAER for an elevated flare is 98% destruction removal efficiency (DRE) together with compliance with the design and operating requirements of 40 CFR §60.18. The highest DRE shown in **Table 5-1** is listed at the Bishop Facility and Bayport Propylene Plant sites where each flare is permitted with a 99% DRE for hydrocarbons with three carbons or less and 98% DRE for all other hydrocarbons. The remaining flares listed in **Table 5-1** are permitted with a 98% DRE. The flows to the Project Phoenix Cold Flare will always contain trace amounts of hydrocarbons with three carbons or more; therefore, a 98% DRE would apply. Two entries in **Table 5-1** above from the Bay Area AQMD BACT Guidance propose the use of fuel gas recovery, where available. The use of fuel gas recovery is feasible where flows are continuous to allow for collection, treatment, and use in combustion equipment. For the Project Phoenix Cold Flare, the operational and maintenance flows are continuous to allow which makes the use of fuel gas recovery infeasible. Furthermore, even if a fuel gas recovery system where utilized, the facility also does not have the available capacity in combustion equipment to combust all of the fuel that would be generated by the recovery system.

SPMT believes that the most analogous source in **Table 5-1** to the Cold Flare is the West Warm Flare Replacement Project. SPMT submitted a plan approval permit application to PADEP in October 2017 for the installation and operation of a new elevated flare (West Warm Flare). SPMT previously conducted a LAER analysis and proposed that the design and operating requirements from 40 CFR §60.18 and a VOC destruction efficiency of 98% was LAER. PADEP agreed with the determination and Plan Approval 23-0119H for construction of the West Warm Flare was issued in April 2018.

Based on the RBLC Search, recent permit applications/permits, and a technical feasibility analysis, SPMT determined that compliance with the design and operating requirements of 40 CFR §60.18 satisfy LAER for the Cold Flare associated with Project Phoenix. Specifically, the Project Phoenix Cold Flare shall be:

- Designed to meet maximum exit velocity and visible emissions requirements defined in the general provisions of 40 CFR §60.18; and
- Operated to meet minimum net heating value requirements for gas streams combusted in flares set forth in 40 CFR §60.18.

5.2 NO_x LAER

In accordance with 25 PA Code §127.205(1), only sources which are new or which are modified are required to implement LAER. The only new or modified source of NO_x emissions associated with the Project is the new Project Phoenix Cold Flare.

5.2.1 *NO_x LAER Review for Project Phoenix Cold Flare*

SPMT's LAER evaluation of the Project was conducted in accordance with USEPA's guidance in the draft New Source Review Workshop Manual (USEPA 1990) and applicable State and federal regulations. The Project Phoenix Cold Flare is a control device which results in emissions of NO_x as a result of

combustion. The Pennsylvania Code defines LAER as a rate of emissions based on the following, whichever is more stringent: the most stringent emission limitation which is contained in the implementation plan of a state for the class or category of source unless the owner or operator of the proposed source demonstrates that the limitations are not achievable; or the most stringent emission limitation which is achieved in practice by the class or category of source.

To identify applicable NO_x limitations and regulations, a state-by-state search of potentially applicable regulations was conducted. In addition, 40 CFR Parts 60, 61, and 63 were evaluated to determine whether SPMT Project Phoenix would be subject to any New Source Performance Standard (NSPS) or National Emission Standards for Hazardous Air Pollutant (NESHAP).

To identify the NO_x limits "achieved in practice" or that have been established for similar source types, a series of searches of USEPA's RACT/BACT/LAER Clearinghouse (RBLC) database, individual state RBLC databases, and general literature was conducted with results in **Table 5-2** below.

Table 5-2: Summary of NO_x LAER Precedents for Elevated Flare Systems

RBLC ID/ Permit	Facility Name	Permit Issuance	Process Description	Emission Rate[1]
AK-0083	Kinai Nitrogen Operations	01/06/2015	Three (3) flares at a nitrogenous fertilizer manufacturing facility. Control method includes work practice requirements and limited use.	0.068 lb/MMBtu
IN-0173	Midwest Fertilizer Corporation	06/04/2014	A front end, back end, and ammonia storage flare for a stationary nitrogen fertilizer manufacturing facility. Control methods include flare minimization practices.	0.068 lb/MMBtu
IN-0179	Ohio Valley Resources, LLC	09/25/2013	A front end process, back end ammonia, ammonia storage, and UAN Plant Vent flare system at a nitrogenous fertilizer production plant. Control methods include flare minimization practices.	0.068 lb/MMBtu
LA-0314	Indorama Lake Charles Facility	08/03/2016	Three (3) flares at a previously mothballed ethylene manufacturing facility. Control methods include complying with NSPS and NESHAP regulations for flaring (40 CFR §60.18 and §63.11) and good combustion practices (including the establishment of flare minimization practices)	0.068 lb/MMBtu
LA-0331	Calcasieu Pass LNG Project	09/21/2018	Warm, Cold, LP, and Marine flares at a new Liquefied Natural Gas (LNG) production, storage, and export terminal. Control methods include proper equipment design, proper operation, and good combustion practices.	0.068 lb/MMBtu

[1] Open flares cannot be source tested due to the open flame and absence of a stack (USEPA AP-42 Chapter 13-5, Industrial Flares, Table 13.5-1). Emission rates provided line up with USEPA AP-42 Compilation of Air Pollutant Emission Factors for NO_x emissions for a flare.

5.2.2 *NO_x LAER Determination for Project Phoenix Cold Flare*

Open Flares cannot be source tested due to the open flame and absence of a stack. Consequently, the default emission factor of 0.068 pounds (lb) per million British thermal units (MMBtu) from USEPA's AP-42 Compilation of Air Pollutant Emission Factors is used to calculate NO_x emissions from the flare. This is the lowest NO_x limit achieved in practice for open flares.

5.3 Offsets

In addition to meeting LAER requirements for NO_x and VOC, SPMT is required to obtain emissions reduction credits (offsets) for these pollutants from other sources that impact the same non-attainment area. For NO_x and VOCs, the SPMT MHIC is located in an area that is treated as severe nonattainment for ozone. Accordingly, the offset ratio of 1.3 to 1 would be applied to this Project.

Therefore, in accordance with 25 PA Code §§127.205 and 127.210, SPMT plans to surrender 65.92 tons of NO_x offsets (50.71 tons of NO_x emissions at a 1.3:1 ratio) and 315.69 tons of VOC offsets (242.84 tons of VOC emissions at a 1.3:1 ratio). Per 25 PA Code §127.206(d)(1), SPMT must demonstrate that the proposed facility either has or will secure the appropriate ERCs which are suitable for use at the specific facility. SPMT has already surrendered 215.35 tons of VOC offsets from April 7, 2016 to November 2, 2018; therefore, an additional 100.34 tons of VOC offsets[8] will be surrendered prior to commencement of operation of the sources associated with this Project. SPMT currently holds sufficient VOC offsets to satisfy this requirement, but SPMT may also choose to secure additional certified VOC offsets suitable for use at the MHIC. Furthermore, SPMT has already surrendered 32.8 tons of NO_x offsets on March 6, 2017; therefore, an additional 33.12 tons of NO_x offsets[9] will be surrendered prior to commencement of operation of the sources associated with this Project. SPMT will secure additional certified NO_x offsets suitable for use at the MHIC to satisfy this requirement.

5.4 SPMT Sources in Pennsylvania

To SPMT's knowledge, all existing sources in Pennsylvania owned or controlled by SPMT are in compliance with the applicable local, State, and federal regulations and consent decree requirements or are on a compliance schedule.

5.5 Alternatives Analysis

25 PA Code §127.205 requires that an alternatives analysis be performed for projects that trigger nonattainment new source review. This analysis must be conducted of alternative sites, sizes, production processes and environmental control techniques for the proposed facility, which demonstrates that the benefits of the proposed facility significantly outweigh the environmental and social costs imposed within this Commonwealth as a result of its location, construction or modification. SPMT has conservatively included such an analysis here.

The Project relies upon existing equipment and utilities at the MHIC including pipeline infrastructure which terminates at the facility. Relocating, replacing, or rerouting this pipeline infrastructure outside of existing right-of-ways would create an unnecessary net environmental and community disturbance. Furthermore, equipment sizing and production processes were determined in order to meet technical requirements and

[8] Per the May 3, 2019 version of the Department's Certified Emission Reduction Credits in Pennsylvania's ERC Registry, SPMT currently holds 142.62 tons of VOC ERCs certified for Trading/Internal Use.

[9] Per the May 3, 2019 version of the Department's Certified Emission Reduction Credits in Pennsylvania's ERC Registry, SPMT currently holds 38.00 tons of NO_x ERCs certified for Trading. This amount does not reflect the 32.8 tons of NO_x ERCs that were retired to satisfy conditions of Plan Approval 23-0119E issued on March 28, 2017. Therefore, SPMT currently holds a total of 5.20 tons of NO_x ERCs.

business demands of the MHIC. Lastly, because of the facility's location in a severe nonattainment region for ozone, the Project has been designed to minimize overall emissions and, as noted above, meets LAER requirements (which are the most stringent) including offsets of NO_x and VOC emissions increases. A suitable alternate industrial location, due to the National Ambient Air Quality Standards designations for the location, may not require the same emissions control requirements as the MHIC. For the reasons stated above, there are no feasible alternative sites. As such, the planned changes represent the best alternative for this Project.

6. BAT DETERMINATION

In accordance with 25 PA Code §127.12, an applicant for Plan Approval must demonstrate that the emissions from a new source will be the minimum attainable through use of the Best Available Technology (BAT). BAT is defined as equipment, devices, methods or techniques as determined by the Department that will prevent, reduce or control emissions of air contaminants to the maximum degree possible and that are available or can be made available to the facility.

SPMT conducted a BAT analysis for Project Phoenix. This analysis considers BAT determinations for the fugitive VOC emission components, the Project Phoenix Cold Flare, and Wet Surface Air Cooler Systems associated with Project Phoenix. In this analysis SPMT reviewed information from various databases to determine recent requirements and emission limits for the new sources associated with this Project, including:

- USEPA's New Source Review website;
- USEPA's RACT/BACT/LAER Clearinghouse (RBLC) Database;
- Various state air quality regulations and websites;
- Control technology vendors information;
- Technical books and articles; and
- State and federal guidance documents.

Note that BAT is a pollutant-specific determination. Based on a review of established emission limits in permits, the following sections document the results of the source and pollutant specific BAT determinations.

6.1 Fugitive Components

SPMT is proposing that the leak levels and LDAR requirements of 40 CFR 60 Subpart VVa for Equipment Leaks of VOC in the Synthetic Organic Chemical Manufacturing Industry (SOCMI) constitute BAT for the proposed new valves, flanges, and relief valves components in VOC service.

6.2 Project Phoenix Cold Flare

The new Project Phoenix Cold Flare associated with the Project is itself a control device. Therefore, SPMT will comply with 40 CFR §60.18 to satisfy BAT requirements for NO_x, CO, and SO_2. Please refer to **Section 5.2.2** for the NO_x LAER Determination which will satisfy BAT requirements for the Project Phoenix Cold Flare.

6.3 Wet Surface Air Cooler Systems

A review of the RBLC database was conducted for the WSAC Systems. BAT for particulates was identified as utilization of a drift eliminator with maximum total drift of 0.0005% of the circulating water flow rate. This maximum drift rate will be the basis for vendor specifications for this Project. SPMT is proposing drift eliminators with maximum total drift of 0.0005% constitute BAT for particulates for the proposed new WSAC Systems.

7. APPLICABLE STANDARDS— PROJECT PHOENIX

New sources included with this Project include fugitive VOC emission components, the Project Phoenix Cold Flare, and the WSAC Systems. All other sources will continue to meet their existing permitted limits and requirements. **Table 7-1** summarizes the potentially applicable requirements identified for the Project.

Table 7-1: Federal Applicable Requirements— Project Phoenix

Regulatory Citation	Description	Emission Limit and/or Operational Restriction
40 CFR 60 Subpart A §60.18	Standards of Performance for New Stationary Sources – General control device and work practice standards	This subpart applies to certain control devices used to comply with applicable subparts of 40 CFR parts 60 and 61. Subject equipment includes flares. The Project Phoenix Cold Flare must be operated with no visible emissions, with flame present at all times, to meet exit velocity requirements, and maintain a minimum net heating value of the flare gas.
40 CFR 60 Subpart VVa	Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006	This subpart applies to the control of air emissions from equipment leaks associated with affected facilities in the organic chemicals manufacturing industry. Subject equipment includes each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, and flange or other connector in VOC service. Additionally, if a flare is used to control VOC emissions from pumps, compressors or sampling systems, the flare must comply with 40 CFR §60.18. SPMT does route or plans to route pump and compressor seal systems and sampling systems to the Project Phoenix Cold Flare for VOC control; therefore, the Project Phoenix Cold Flare will comply with the requirements of §60.18.
40 CFR 60 Subpart Kb	Standards Of Performance For Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) For Which Construction, Reconstruction, Or Modification Commenced After July 23, 1984	This subpart applies to each of the storage tanks at the storage facility with a capacity greater than or equal to 75 cubic meters (471 barrels) that is used to store volatile organic liquids for which construction or modification is commenced after July 23, 1984; therefore, the recordkeeping requirements of 40 CFR 60.115b are applicable. However, the VOC standards of 40 CFR 60.112b (i.e., requiring the installation of a floating roof and conducting periodic inspections) are not applicable because of the high vapor pressure of the material being stored (vapor pressure of 108 kiloPascal [kPa]). 40 CFR 60.112b is only applicable to storage vessels with a design capacity greater than 151 cubic meters (949 barrels) and storing a volatile organic liquid that has a maximum true vapor pressure greater than 5.2 kPa but less than 76.6 kPa.

8. REQUESTED PERMIT CONDITIONS

The following section provides requested permit conditions. As discussed in **Section 1.3** above, SPMT requests issuance of the Plan Approval to allow the commencement of construction in December 2019. Additionally, SPMT is requesting that the Plan Approval be extended by 18 months from Plan Approval issuance (expiration date that is 36 months from issuance) to facilitate the continued construction and shakedown of the sources. This request is in accordance with the guidance of Section 2.4 in PADEP Document 275-2101-002 for extended timelines which states:

> ". . . expiration dates that are based on overly optimistic or inaccurate construction dates can burden the Department and the company with the need for issuance of new plan approvals or plan approval extensions. This can disrupt construction of a source and needlessly add to the Department's and company's administrative burdens."

APPENDIX A PADEP PLAN APPROVAL FORMS

July 2019

1300-PM-BIT0001 5/2012
Form

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

GENERAL INFORMATION FORM – AUTHORIZATION APPLICATION

Before completing this General Information Form (GIF), read the step-by-step instructions provided in this application package. This version of the General Information Form (GIF) must be completed and returned with any program-specific application being submitted to the Department.

Related ID#s (If Known)				DEP USE ONLY
Client ID#	161585	**APS ID#**		Date Received & General Notes
Site ID#	270459	**Auth ID#**		
Facility ID#				

CLIENT INFORMATION

DEP Client ID# | **Client Type / Code**: NPACO

Organization Name or Registered Fictitious Name: Sunoco Partners Marketing & Terminals L.P.
Employer ID# (EIN): 23-3102655
Dun & Bradstreet ID#:

Individual Last Name	First Name	MI	Suffix	SSN

Additional Individual Last Name	First Name	MI	Suffix	SSN

Mailing Address Line 1: 100 Green Street
Mailing Address Line 2:

Address Last Line – City	State	ZIP+4	Country
Marcus Hook	PA	19061-0426	U.S.A.

Client Contact Last Name	First Name	MI	Suffix
Werner	Jed	A	

Client Contact Title: Air Permitting Manager
Phone: (610) 670-3297
Ext:

Email Address: jed.werner@energytransfer.com
FAX:

SITE INFORMATION

DEP Site ID# | **Site Name**: Marcus Hook Industrial Complex

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

Description of Site: Storage and Marine Loading Facility

County Name	Municipality	City	Boro	Twp	State
Delaware	Marcus Hook	☐	☒	☐	
		☐	☐	☐	

Site Location Line 1: 100 Green Street
Site Location Line 2:

Site Location Last Line – City	State	ZIP+4
Marcus Hook Facility	PA	19061-0426

Detailed Written Directions to Site
Follow I-95 S; Take the MARKET STREET / PA-452 exit- EXIT 2; Turn LEFT onto MARKET ST / PA-452. Continue to follow MARKET ST.; Turn RIGHT onto 11TH ST.; Turn LEFT onto GREEN ST. Enter at Visitors Entrance. Request escort by Environmental Dept. Personnel.

Site Contact Last Name	First Name	MI	Suffix
Smith	Kevin	W	

Site Contact Title: Specialist - Environmental Compliance
Site Contact Firm: Sunoco Partners Marketing & Terminals L.P.

Mailing Address Line 1: 100 Green Street
Mailing Address Line 2:

Mailing Address Last Line – City	State	ZIP+4
Marcus Hook	PA	19061-0426

Phone	Ext	FAX	Email Address
(610) 859-1279			Kevin.smith2@energytransfer.com

NAICS Codes (Two- & Three-Digit Codes – List All That Apply)	6-Digit Code (Optional)
493	493190

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		☐	Industrial Minerals Mining Operation	
☐	Beneficial Use (water)		☐	Laboratory Location	
☐	Blasting Operation		☐	Land Recycling Cleanup Location	
☐	Captive Hazardous Waste Operation		☐	Mine Drainage Trmt/Land Recy Proj Location	
☐	Coal Ash Beneficial Use Operation		☐	Municipal Waste Operation	
☐	Coal Mining Operation		☐	Oil & Gas Encroachment Location	
☐	Coal Pillar Location		☒	Oil & Gas Location	292970
☐	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
Plant Entrance (general)	39	48	41	-75	25	32

Horizontal Accuracy Measure: Feet 5 *--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 12 *--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: 7/29/2015

Source Map Scale Number: Inch(es) = Feet

--or-- Centimeter(s) = Meters

PROJECT INFORMATION

Project Name
SPMT Project Phoenix

Project Description
See attached report.

Project Consultant Last Name	First Name	MI	Suffix
McGroarty	Colin		

Project Consultant Title	Consulting Firm
Principal Consultant	Environmental Resources Management

Mailing Address Line 1	Mailing Address Line 2
75 Valley Stream Parkway	Suite 200

Address Last Line – City	State	ZIP+4
Malvern	PA	19355

Phone	Ext	FAX	Email Address
484-913-0409	409		colin.mcgroarty@erm.com

Time Schedules	Project Milestone (Optional)

1.	**Have you informed the surrounding community and addressed any concerns prior to submitting the application to the Department?**	☒	Yes	☐	No
2.	**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: _____

3.	**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 3, the application is not subject to the Land Use Policy.

If "Yes" to Question 3, 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 are encouraged to 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 an adopted municipal or multi-municipal comprehensive plan?**	☒	Yes	☐	No
3.	**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, 2 or 3, the provisions of the PA MPC are not applicable and the Applicant does not need to respond to questions 4 and 5 below.

If the Applicant answers "Yes" to questions 1, 2 and 3, the Applicant should respond to questions 4 and 5 below.

4.	**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
5.	**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 and the accompanying Cultural Resource Notice Form.

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. **4.0.1 Total Disturbed Acreage** 32.4 acres	☒	Yes	☐	No
5.0	**Does the project involve any of the following?** If "Yes", respond to 5.1-5.3. 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
6.0	**Will the project involve discharge of stormwater or wastewater from an industrial activity 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. **8.0.1 Estimated Proposed Flow (gal/day)**	☐	Yes	☒	No
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). **10.0.1 Gallons Per Year (residential septage)** _____ **10.0.2 Dry Tons Per Year (biosolids)**	☐	Yes	☒	No

11.0	**Does the project involve construction, modification or removal of a dam?** If "Yes", identify the dam. **11.0.1 Dam Name**	☐	Yes	☒	No
12.0	**Will the project interfere with the flow from, or otherwise impact, a dam?** If "Yes", identify the dam. **12.0.1 Dam Name**	☐	Yes	☒	No
13.0	**Will the project involve operations (excluding during the construction period) that produce air emissions (i.e., NOX, VOC, etc.)?** If "Yes", identify each type of emission followed by the amount of that emission. **13.0.1 Enter all types & amounts of emissions; separate each set with semicolons.** VOC = 160.79 tpy NOx = 41.17 tpy CO = 94.11 tpy PM = 9.53 tpy PM10 = 9.37 tpy PM2.5 = 8.40 tpy SO2 = 39.48 tpy CO2e = 112,799 short tons	☒	Yes	☐	No
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. **16.0.1 Supplier's Name** Chester Water Authority	☒	Yes	☐	No
	16.0.2 Letter of Approval from Supplier is Attached	☐	Yes	☒	No
17.0	**Will this project involve a new or increased drinking water withdrawal from a stream or other water body?** If "Yes", should reference both Water Supply and Watershed Management. **17.0.1 Stream Name**	☐	Yes	☒	No
18.0	**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. **18.0.1 Type & Amount** Refer to Section 3 of the Site Restoration/Post Construction Stormwater Management Plan	☒	Yes	☐	No
19.0	**Will your project involve the removal of coal, minerals, etc. as part of any earth disturbance activities?**	☐	Yes	☒	No
20.0	**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. **20.0.1 Enter all substances & capacity of each; separate each set with semicolons.**	☐	Yes	☒	No

21.0	**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. **21.0.1 Enter all substances & capacity of each; separate each set with semicolons.** Two (2) Ethane - 600,000 Barrels.	☒	Yes	☐	No
22.0	**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. **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 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. **23.0.1 Enter all substances & capacity of each; separate each set with semicolons.**	☐	Yes	☒	No
24.0	**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.

Type or Print Name Edward G. Human

Signature	Title	Date
Edward G. Human	Director of Marcus Hook Operations	7/29/19

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: 09/19/2018

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)
Sunoco Partners Marketing & Terminals, L.P.

Address 3807 West Chester Pike
Newtown Square, PA 19072

Telephone 610-670-3297 **Taxpayer ID#** 23-310-2655

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.
SIC Code 4226 – Petroleum & Chemical Bulk Stations & Terminals for Hire
SIC Code 1321- Natural Gas Liquids

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
Sunoco Partners Marketing & Terminals L.P.	PA	TX	23-3102655	Applicant
Sunoco Logistics Partners Operations GP LLC	PA	DE	23-3102660	General Partner of Applicant
Sunoco Logistics Partners Operations L.P.	PA	DE	23-3102657	Limited Partner and owner of General Partner of Applicant
Sunoco Logistics Partners GP LLC	PA	DE	23-3102658	General partner of Limited Partner of Applicant
Energy Transfer L.P.	TX	DE	73-1493906	Ultimate Parent – limited partner of the Limited Partner and owner of the general partner of the limited partner of the Applicant
Subsidiaries of ultimate parent with operations in PA- See Attachment 3				

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
see attachment #1				

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

Name	Business Address
Sunoco Partners Marketing & Terminals L.P.	3807 West Chester Pike, Newtown Square, PA 19073

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

Name	Business Address
see attachment #1	

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
see attachment #2				

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
5/2014	Belmont Terminal	PLID No: 01507	Failure to submit annual compliance certification to the Philadelphia Depart. Of Health	NOV/FOV	SXL submitted report but it was not recorded by the AMS.	$1,500
3/24/15	Marcus Hook Industrial Complex	23-00119	Failure to submit an extension for a plan approval.	NOV/FOV	The plan approval extension request was submitted on February 26, 2015.	$4,000
5/11/15	Twin Oaks Terminal	23-00045	PADEP issued an NOV for late submittal of a Permit Application.	NOV	The abatement plan was submitted on June 11, 2015.	$0
6/16/15	Marcus Hook Industrial Complex	23-00119	Failure to maintain permit required records regarding tank repair work	NOV	Corrective action submitted to PADEP July 9, 2015	$0
8/20/15	Marcus Hook Industrial Complex (MHIC)	23-00119	Failure to maintain permit records regarding sample collection of process gas to analyze for sulfur, for failure to maintain Stage II Vapor Recovery Test Results and for exceeding NOX emissions during ozone season in 2013 and 2014.	NOV	Corrective Action submitted to PADEP September 16, 2015 and October 30, 2015.	
10/23/15	Malvern Terminal	15-00043	PADEP issued a NOV for not having records available at the time of an unannounced inspection.	NOV	The requested information was provided on November 11, 2015.	$0
06/07/16	MHIC	23-00119	Exceeded 12 month rolling emission limit for tanks 607, 611 and 23.	NOV	Submitted plan approval for increase in tank emissions.	$0
1/24/17	Twin Oaks Terminal	23-00045	Penalty for late permit application and operating without a valid permit	FOV	Paid the penalty	$3,750
6/8/2017	MHIC	23-00119	Violations for missing required inspections.	NOV/CACP*	Corrected inspection deficiencies.	03/15/19 global settlement
7/7/2017	Twin Oaks Terminal	23-00045	Did not identify the cause of a delayed repair in the AVO log.	NOV/CACP*	Corrected deficiency and conducted training to personnel to record delays and cause of delay on the log form.	03/15/19 global settlement
9/15/17	Delmont Terminal	65-00354	Late submittal of the annual compliance certification.	NOV/CACP	Submitted the annual compliance certification and ensured reporting deadline is correct in the EMS.	$1,000
12/19/17	Pittsburgh Terminal	TVOP 0007	Exceeded Emission limit for tank 4 & 321	FOV	A Permit modification is pending to increase emissions	$0
1/12/18	MHIC	23-00119	Propane release to the outdoor atmosphere.	NOV	Corrective actions completed and summarized in a letter to the Department dated April 26, 2018.	$0

7/10/18	MHIC	23-0119D	Allegedly failed to monitor valves in gas/vapor service and light liquid service within 30 days of the end of startup.	NOV/CACP*	All valves have been monitored.	03/15/19 global settlement $110,000
3/18/2019	MHIC	23-00119	Butane release to the outdoor atmosphere	NOV	Root Cause analyses are being completed, and will be submitted to PADEP prior to due date.	$0

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

<u>CONTINUING OBLIGATION</u>. 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 — 4/10/19 Date
Jonathan A. Hunt
Name (Print or Type)
Vice-President, Energy Transfer L.P.
Title

Attachment #1: Names, Locations and Facility Managers for all Sunoco Partners Marketing & Terminals L.P. Related Parties in PA.

Facility Name	Owner/Operator	Federal Tax ID #	SIC Code	Facility Address	City	Zip Code	County	Facility Manager	Office Number
Belmont Term.	Sunoco Partners Marketing & Terminals L.P.	23-3102655	4226	2700 West Passyunk Ave	Philadelphia	19145	Philadelphia	Jacolyn Abdala	610-859-5752
Blawnox Term.	Sunoco Partners Marketing & Terminals L.P.	23-3102655	4226	Freeport Road & Boyd	Pittsburgh	15238	Allegheny	Adam Bechtel	412-828-7500
Delmont Term.	Sunoco Partners Marketing & Terminals L.P.	23-3102655	4226	Route 66	North Delmont	15626	Westmoreland	Mark Whalen	724-468-4072
Eldorado (Altoona) Term.	Sunoco Partners Marketing & Terminals L.P.	23-3102655	4226	Rt. 764 N. & Sugar Run Road	Altoona	16601	Blair	Mark Whalen	814-944-8153
Exton Term.	Sunoco Partners Marketing & Terminals L.P.	23-3102655	4226	601 E. Lincoln Highway	Exton	19134	Chester	Jacolyn Abdala	215-778-0206
Fullerton Term.	Sunoco Partners Marketing & Terminals L.P.	23-3102655	4226	2480 Main Street	Fullerton	18052	Lehigh	Steve Kutney	610-264-0526
Kingston Term.	Sunoco Partners Marketing & Terminals L.P.	23-3102655	4226	Rt. 11, Box 1479	Kingston	18704-3102	Luzerne	Steve Kutney	570-288-2555
Malvern Term.	Sunoco Partners Marketing & Terminals L.P.	23-3102655	4226	41 Malin Road	Malvern	10355	Chester	Jacolyn Abdala	215-778-0206
Marcus Hook Industrial Complex	Sunoco Partners Marketing & Terminals L.P.	23-3102655	4226	100 Green Street	Marcus Hook	19061	Delaware	Ed Human	610-859-1912
Mechanicsburg Term.	Sunoco Partners Marketing & Terminals L.P.	23-3102655	4226	5145 Simpson Ferry Road	Mechanicsburg	17055	Cumberland	Terry Wolfe	717-766-2526
Montello Term.	Sunoco Partners Marketing & Terminals L.P.	23-3102655	4226	PO Box 2089, Fritztown Road	Montello	19608	Berks	Terry Wolfe	610-927-2090
Northumberland Term.	Sunoco Partners Marketing & Terminals L.P.	23-3102655	4226	Rd#1, Box 285 E	Northumberland	17857	Northumberland	Steve Kutney	570-473-3575
Pittsburgh Term.	Sunoco Partners Marketing & Terminals L.P.	23-3102655	4226	5733 Butler Street	Pittsburgh	15210	Allegheny	Adam Bechtel	412-784-3460
Twin Oaks Term.	Sunoco Partners Marketing & Terminals L.P.	23-3102655	4226	4041 Market Street	Aston	19014	Delaware	Mike Billman	610-859-5742

Attachment #2: Plan Approvals & Operating Permits

Facility	Owner / Operator	State	Permit Type	Permit #	Effective	Expiration
Belmont	Sunoco Partners Marketing & Terminals L.P.	PA	Title V Permit	V04-004	08/01/2010	08/01/2015 (permit renewal submitted 1/29/15)
Blawnox	Sunoco Partners Marketing & Terminals L.P.	PA	ACHD Synthetic Minor	0011	06/28/2011	06/27/2016 (permit renewal Submitted 12/18/2015)
Delmont	Sunoco Partners Marketing & Terminals, L.P.	PA	Title V Permit	65-00354	07/12/2017	07/12/2022
Eldorado	Sunoco Partners Marketing & Terminals L.P.	PA	Synthetic Minor	07-05025	02/01/2014	01/31/2019 (permit renewal submitted 6/29/2018)
Exton	Sunoco Partners Marketing & Terminals L.P.	PA	Synthetic Minor	15-00044	05/28/2015	05/28/2020
Fullerton	Sunoco Partners Marketing & Terminals L.P.	PA	Synthetic Minor	39-00022	09/17/2014	09/17/2019
Kingston	Sunoco Partners Marketing & Terminals L.P.	PA	Synthetic Minor	40-00025	09/17/2014	09/17/2019
Marcus Hook Industrial Complex	Sunoco Partners Marketing & Terminals L.P.	PA	Title V Permit	23-00119	4/01/2015	4/01/2020
Marcus Hook Industrial Complex	Sunoco Partners Marketing & Terminals, L.P.	PA	Plan Approval	23-0119D	2/26/2015	05/18/2019
Marcus Hook Industrial Complex	Sunoco Partners Marketing & Terminals, L.P.	PA	Plan Approval	23-0119E	04/01/2016	10/01/2019
Marcus Hook Industrial Complex	Sunoco Partners Marketing & Terminals, L.P.	PA	Plan Approval	23-0119H	04/13/2018	10/13/2019
Malvern	Sunoco Partners Marketing & Terminals L.P.	PA	Title V Permit	15-00043	05/01/2014	04/30/2019 (permit renewal submitted 8/17/2018)
Mechanicsburg	Sunoco Partners Marketing & Terminals L.P.	PA	Title V Permit	21-05029	04/01/2014	03/31/2019 (permit renewal submitted 10/9/2018)
Montello	Sunoco Partners Marketing & Terminals L.P.	PA	Title V Permit	06-05064	10/01/2014	9/30/2019

Northumberland	Sunoco Partners Marketing & Terminals L.P.	PA	Synthetic Minor	49-00019	12/26/2014	12/25/2019
Pittsburgh	Sunoco Partners Marketing & Terminals L.P.	PA	ACHD Title V Permit	0007	06/30/2011	06/29/2016 (permit renewal Submitted 12/22/2015)
Twin Oaks	Sunoco Partners Marketing & Terminals L.P.	PA	Title V Permit	23-00045	12/02/2015	12/01/2020

Attachment 3
APCA Compliance Review Form
Subsidiaries with Operations in Pennsylvania of
Parent Energy Transfer L.P. of Applicant Sunoco Partners Marketing & Terminals L.P.
April 8, 2019

Entity Name	Entity Main Address	Domestic Jurisdiction	Taxpayer ID	Relationship to Applicant
Sunoco Pipeline L.P.	3807 West Chester Pike, Newtown Square, PA 19073	DE	23-3102656	Indirect subsidiary of ultimate parent
Regency Marcellus Gas Gathering LLC	8111 Westchester Drive Suite 600 Dallas, TX 75225	DE	27-2142725	Indirect subsidiary of ultimate parent
Regency NEPA GAS Gathering LLC	8111 Westchester Drive Suite 600 Dallas, TX 75225	TX	38-3877838	Indirect subsidiary of ultimate parent
ET Rover Pipeline LLC	8111 Westchester Drive Suite 600 Dallas, TX 75225	DE	46-5655475	Indirect subsidiary of ultimate parent and Member Rover Pipeline LLC joint venture
Rover Pipeline LLC	8111 Westchester Drive Suite 600 Dallas, TX 75225	DE	47-1958303	Joint Venture of ET Rover Pipeline LLC, and non affiliated company, AE-MidCo Rover, LLC
PEI Power Corporation	1 P E I CTR Wilkes-Barre, PA 18711-0601	PA	23-2933578	Indirect subsidiary of ultimate parent

2700-PM-AQ0007 Rev. 7/2004

Submit in Triplicate

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

PROCESSES

Application for Plan Approval to Construct, Modify or Reactivate an Air Contamination Source and/or Install an Air Cleaning Device

This application must be submitted with the General Information Form (GIF).

Before completing this form, read the instructions provided for the form.

Section A - Facility Name, Checklist And Certification

Organization Name or Registered Fictitious Name/Facility Name: Sunoco Partners Marketing & Terminals, L.P. Marcus Hook Industrial Complex

DEP Client ID# (if known): 161585

Type of Review required and Fees:

- ☐ Source which is not subject to NSPS, NESHAPs, MACT, NSR and PSD: ..... $_____
- ☒ Source requiring approval under NSPS or NESHAPS or both: $1,700
- ☒ Source requiring approval under NSR regulations: $5,300
- ☐ Source requiring the establishment of a MACT limitation: ..... $_____
- ☐ Source requiring approval under PSD: ..... $_____

Applicant's Checklist

Check the following list to make sure that all the required documents are included.

- ☒ **General Information Form (GIF)**
- ☒ **Processes Plan Approval Application**
- ☒ **Compliance Review Form** or provide reference of most recently submitted compliance review form for facilities submitting on a periodic basis: _____
- ☒ **Copy and Proof of County and Municipal Notifications**
- ☒ **Permit Fees**
- ☒ **Addendum A:** Source Applicable Requirements (only applicable to existing Title V facility)

Certification of Truth, Accuracy and Completeness by a Responsible Official

I, **Edward G. Human**, certify under penalty of law in 18 Pa. C. S. A. §4904, and 35 P.S. §4009(b) (2) that based on information and belief formed after reasonable inquiry, the statements and information in this application are true, accurate and complete.

(Signature): Edward G. Human Date: 7/29/19

Name (Print): Edward G. Human Title: Director of Marcus Hook Operations

OFFICIAL USE ONLY

Application No. _____ Unit ID _____ Site ID _____

DEP Client ID #: _____ APS. ID _____ AUTH. ID _____

Date Received _____ Date Assigned _____ Reviewed By _____

Date of 1st Technical Deficiency _____ Date of 2nd Technical Deficiency _____

Comments: _____

Section B - Processes Information

1. Source Information

Source Description (give type, use, raw materials, product, etc). Attach additional sheets as necessary.

Liquid ethane product storage, cold flare, wet surface air cooler, and product loading operations from existing loading docks. See attached report for additional source details.

Manufacturer	Model No.	Number of Sources
N/A	N/A	4
Source Designation	Maximum Capacity	Rated Capacity

Type of Material Processed
Liquid hydrocarbons consisting of mostly ethane

Maximum Operating Schedule

Hours/Day	Days/Week	Days/Year	Hours/Year
24	7	365	8760

Operational restrictions existing or requested, if any (e.g., bottlenecks or voluntary restrictions to limit PTE)

Capacity (specify units)

Per Hour	Per Day	Per Week	Per Year

Operating Schedule

Hours/Day	Days/Week	Days/Year	Hours/Year
24	7	365	8760

Seasonal variations (Months) From to

If variations exist, describe them

2. Fuel – Not Applicable

Type	Quantity Hourly	Annually	Sulfur	% Ash (Weight)	BTU Content
Oil Number _____	GPH @ 60°F	X 10^3 Gal	% by wt		Btu/Gal. & Lbs./Gal. @ 60 °F
Oil Number _____	GPH @ 60°F	X 10^3 Gal	% by wt		Btu/Gal. & Lbs./Gal. @ 60 °F
Natural Gas _____	SCFH	X 10^6 SCF	grain/100 SCF		Btu/SCF
Gas (other) _____	SCFH	X 10^6 SCF	grain/100 SCF		Btu/SCF
Coal _____	TPH	Tons	% by wt		Btu/lb
Other * _____					
_____					
_____					

*Note: Describe and furnish information separately for other fuels in Addendum B.

Section B - Processes Information (Continued)

3. Burner – Not Applicable

Manufacturer	Type and Model No.	Number of Burners

Description:

Rated Capacity	Maximum Capacity

4. Process Storage Vessels

A. For Liquids:

Name of material stored
Liquid Ethane

Tank I.D. No.	Manufacturer	Date Installed
130-TK-403	N/A	To be determined

Maximum Pressure	Capacity (gallons/Meter^3)
2.0 psig	25,200,000 gallons

Type of relief device (pressure set vent/conservation vent/emergency vent/open vent)
Pressure Relief Valve

Relief valve/vent set pressure (psig)	Vapor press. of liquid at storage temp. (psia/kPa)
2 psig	15.7 psia

Type of Roof: Describe:
Fixed roof, refrigerated tank

Total Throughput Per Year	Number of fills per day (fill/day): Continuous Filling Rate (gal./min.): Not Applicable Duration of fill hr./fill): Continuous
Total Ethane approximately 25,550,000 barrels per year	

4. Process Storage Vessels

A. For Liquids:

Name of material stored
Liquid Ethane

Tank I.D. No.	Manufacturer	Date Installed
135-TK-404	N/A	To be determined

Maximum Pressure	Capacity (gallons/Meter^3)
2.0 psig	25,200,000 gallons

Type of relief device (pressure set vent/conservation vent/emergency vent/open vent)
Pressure Relief Valve

Relief valve/vent set pressure (psig)	Vapor press. of liquid at storage temp. (psia/kPa)
2 psig	15.7 psia

Type of Roof: Describe:
Fixed roof, refrigerated tank

Total Throughput Per Year	Number of fills per day (fill/day): Continuous Filling Rate (gal./min.): Not Applicable Duration of fill hr./fill): Continuous
Total Ethane approximately 25,550,000 barrels per year	

Section B - Processes Information (Continued)

B. For Solids – Not Applicable

Type: ☐ Silo ☐ Storage Bin ☐ Other, Describe	Name of Material Stored	
Silo/Storage Bin I.D. No.	Manufacturer	Date Installed
State whether the material will be stored in loose or bags in silos	Capacity (Tons)	
Turn over per year in tons	Turn over per day in tons	
Describe fugitive dust control system for loading and handling operations		
Describe material handling system		

5. Request for Confidentiality

Do you request any information on this application to be treated as "Confidential"? ☒ Yes ☐ No
If yes, include justification for confidentiality. Place such information on separate pages marked **"confidential"**.

Section B - Processes Information (Continued)

6. Miscellaneous Information

Attach flow diagram of process 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.

See simplified process flow diagram included in attached report.

Describe fully the facilities provided to monitor and to record process operating conditions, which may affect the emission of air contaminants. Show that they are reasonable and adequate.

The majority of air contaminant emissions occur from the Project Phoenix Cold Flare which is affected by the throughput of material in the process, but is itself a control device. The flare will be operated according to the manufacturer's specifications. The largest source of VOC emissions occur from fugitive leaking components, which are not affected by the throughput of the material in the process. All the fugitive leak components will be included in a facility LDAR program to detect and repair leaking components. Air contaminant emissions from the product loading operations will be minimized through best management practices.

Describe each proposed modification to an existing source.

No modifications will be made as a result of this project. Incremental increases in utilization of utility sources and existing product loading equipment will result from the project. Associated piping connections will need to be completed to utilize existing utilities and processes..

Identify and describe all fugitive emission points, all relief and emergency valves and any by-pass stacks.

See the back-up emissions calculations included in the attached report.

Describe how emissions will be minimized especially during start up, shut down, process upsets and/or disruptions.

As part of the project both the high pressure and low pressure cold flares, and the existing West Warm Flare, will be used to minimize releases of air contaminants to the atmosphere during emergency depressurizations.

Anticipated Milestones:

i. Expected commencement date of construction/reconstruction/installation: December 2019
ii. Expected completion date of construction/reconstruction/installation: 4th Quarter 2022
iii. Anticipated date of start-up: 4th Quarter 2022

Section C - Air Cleaning Device

1. Precontrol Emissions*

Pollutant	Maximum Emission Rate				Calculation/ Estimation Method
	Specify Units	Pounds/Hour	Hours/Year	Tons/Year	
PM		2.18	8760	9.53	See attached
PM_{10}		2.14	8760	9.37	See attached
SO_x		9.01	8760	39.48	See attached
CO		21.49	8760	94.11	See attached
NO_x		9.40	8760	41.17	See attached
VOC		36.71	8760	160.79	See attached
Others: (e.g., HAPs)	-----	-----	-----	-----	-----
$PM_{2.5}$		1.92	8760	8.40	See attached
CO2e		25,753	8760	112,799	See attached

* These emissions must be calculated based on the requested operating schedule and/or process rate, e.g., operating schedule for maximum limits or restricted hours of operation and/or restricted throughput. Describe how the emission values were determined. Attach calculations.

2. Gas Cooling – Not Applicable

Water quenching ☐ Yes ☐ No Water injection rate _____ GPM

Radiation and convection cooling ☐ Yes ☐ No	Air dilution ☐ Yes ☐ No If yes, _____CFM
Forced Draft ☐ Yes ☐ No	Water cooled duct work ☐ Yes ☐ No

Other

Inlet Volume _____ACFM @ _____°F _____% Moisture	Outlet Volume _____ACFM @ _____°F _____% Moisture

Describe the system in detail.

Section C - Air Cleaning Device (Continued)

3. Settling Chambers – Not Applicable

Manufacturer	Volume of gas handled _____ACFM @ _____°F	Gas velocity (ft/sec.)

Length of chamber (ft.)	Width of chamber (ft.)	Height of chamber (ft.)	Number of trays

Water injection ☐ Yes ☐ No	Water injection rate (GPM)

Emissions Data

Inlet	Outlet	Removal Efficiency (%)

4. Inertial and Cyclone Collectors – Not Applicable

Manufacturer	Type	Model No.

Pressure drop (in. of water)	Inlet volume _____ACFM @ _____°F	Outlet volume _____ACFM @ _____°F

Number of individual cyclone(s)	Outlet straightening vanes used? ☐ Yes ☐ No

Length of Cyclone(s) Cylinder (ft.)	Diameter of Cyclone(s) Cylinder (ft.)	Length of Cyclone(s) cone (ft.)

Inlet Diameter (ft.) or duct area ($ft.^2$) of cyclone(s)	Outlet Diameter (ft.) or duct area ($ft.^2$) of cyclone(s)

If a multi-clone or multi-tube unit is installed, will any of the individual cyclones or cyclone tubes be blanked or blocked off?

Describe any exhaust gas recirculation loop to be employed.

Attach particle size efficiency curve

Emissions Data

Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

5. Fabric Collector – Not applicable

Equipment Specifications

Manufacturer	Model No.	☐ Pressurized Design ☐ Suction Design
Number of Compartments	Number of Filters Per Compartment	Is Baghouse Insulated? ☐ Yes ☐ No

Can each compartment be isolated for repairs and/or filter replacement? ☐ Yes ☐ No

Are temperature controls provided? (Describe in detail) ☐ Yes ☐ No

Dew point at maximum moisture _____ °F | Design inlet volume _____ SCFM

Type of Fabric

Material _____ ☐ Felted ☐ Membrane

Weight _____ oz/sq.yd ☐ Woven ☐ Others: List: _____

Thickness _____ in ☐ Felted-Woven

Fabric permeability (clean) @ ½" water-ΔP _____ CFM/sq.ft.

Filter dimensions Length _____ Diameter/Width _____

Effective area per filter _____ | Maximum operating temperature (°F) _____

Effective air to cloth ratio Minimum _____ Maximum _____

Drawing of Fabric Filter

A sketch of the fabric filter showing all access doors, catwalks, ladders and exhaust ductwork, location of each pressure and temperature indicator should be attached.

Operation and Cleaning

Volume of gases handled

_____ ACFM @ _____ °F

Pressure drop across collector (in. of water).
Describe the equipment to be used to monitor the pressure drop.

Type of filter cleaning

☐ Manual Cleaning ☐ Bag Collapse ☐ Reverse Air Jets

☐ Mechanical Shakers ☐ Sonic Cleaning ☐ Other: _____

☐ Pneumatic Shakers ☐ Reverse Air Flow

Describe the equipment provided if dry oil free air is required for collector operation

Cleaning Initiated By

☐ Timer Frequency if timer actuated _____

☐ Expected pressure drop range _____ in. of water ☐ Other Specify _____

Does air cleaning device employ hopper heaters, hopper vibrators or hopper level detectors? If yes, describe.

Describe the warning/alarm system that protects against operation when the unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

6. Wet Collection Equipment – Not Applicable

Equipment Specifications

Manufacturer	Type	Model No.

Design Inlet Volume (SCFM)	Relative Particulate/Gas Velocity (ejector scrubbers only)

Describe the internal features (e.g., variable throat, gas/liquid diffusion plates, spray nozzles, liquid redistributors, bed limiters, etc.).

Describe pH monitoring and pH adjustment systems, if applicable.

Describe mist eliminator or separator (type, configuration, backflush capability, frequency).

Attach particulate size efficiency curve.

Operating Parameters

Inlet volume of gases handled _____ (ACFM) @ _____ °F	Outlet volume of gases handled _____ (ACFM) @ _____ °F _____% Moisture

Liquid flow rates. Describe equipment provided to measure liquid flow rates to scrubber (e.g., quenching section, recirculating solution, makeup water, bleed flow, etc.)

Describe scrubber liquid supply system (amount of make-up and recirculating liquid, capacity of recirculating liquid system, etc.)

State pressure drop range (in water) across scrubber (e.g., venturi throat, packed bed, etc.) only. Describe the equipment provide to measure the pressure drop. Do not include duct or de-mister losses.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

7. Electrostatic Precipitator – Not Applicable

Equipment Specifications

Manufacturer	Model No.	☐ Wet ☐ Dry ☐ Single-Stage ☐ Two-Stage

Gas distribution grids ☐ Yes ☐ No	Design Inlet Volume (SCFM) _____ Maximum operating temperature (°F) _____

Total collecting surface area _____ sq. ft. Collector plates size length _____ ft. x width _____ ft.

Number of fields _____ Number of collector plates/field _____

Spacing between collector plates _____ inches.

Maximum gas velocity _____ ft./sec. Minimum gas treatment time: _____ sec.

Total discharge electrode length _____ ft.

Number of discharge electrodes _____ Number of collecting electrode rappers _____

Rapper control ☐ Magnetic ☐ Pneumatic ☐ Other _____ Describe in detail

Operating Parameters

Inlet gas temperature (°F) _____ Outlet gas temperature (°F) _____	State pressure drop range (inches water gauge) across collector only _____ Describe the equipment
Volume of gas handled (ACFM) _____	Dust resistivity (ohm-cm). Will resistivity vary?

Power requirements

Number and size of Transformer Rectifier sets by electrical field

Field No.	No. of Sets	Each Transformer KVA	Each Rectifier KV Ave./Peak	Each Rectifier Ma DC

Current Density _____ Micro amperes/ft^2.	Corona Power _____ Watts/1000 ACFM	Corona Power Density _____ Watts/ft^2.

Will a flue gas conditioning system be employed? If yes, describe it.

Does air cleaning device employ hopper heaters, hopper vibrators or hopper level detectors? If yes, describe.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

8. Adsorption Equipment – Not Applicable

Equipment Specifications

Manufacturer	Type	Model No.

Design Inlet Volume (SCFM)	Adsorbent charge per adsorber vessel and number of adsorber vessels

Length of Mass Transfer Zone (MTZ), supplied by the manufacturer based upon laboratory data.

Adsorber diameter (ft.) and area ft^2.)	Adsorption bed depth (ft.)

Adsorbent information

Adsorbent type and physical properties.

Working capacity of adsorbent (%)	Heel percent or unrecoverable solvent weight % in the adsorbent after regeneration.

Operating Parameters

Inlet volume of gases handled _____ (ACFM) @ _____ °F

Adsorption time per adsorption bed	Breakthrough capacity: Lbs. of solvent / 100 lbs. of adsorbent = _____
Vapor pressure of solvents at the inlet temperature	Available steam in pounds to regenerate carbon adsorber (if applicable)

Percent relative saturation of each solvent at the inlet temperature

Attach any additional data including auxiliary equipment and operation details to thoroughly evaluate the control equipment.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

9. Absorption Equipment – Not Applicable

Equipment Specifications

Manufacturer	Type	Model No.

Design Inlet Volume (SCFM)	Tower height (ft.) and inside diameter (ft.)
Packing type and size (if applicable)	Height of packing (ft.) (if applicable)
Number of trays (if applicable)	Number of bubble caps (if applicable)

Configuration

☐ Counter-current ☐ Cross flow ☐ Cocurrent flow

Describe pH and/or other monitoring and controls.

Absorbent information

Absorbent type and concentration.	Retention time (sec.)

Attach equilibrium data for absorption (if applicable)

Attach any additional information regarding auxiliary equipment, absorption solution supply system (once through or recirculating, system capacity, etc.) to thoroughly evaluate the control equipment. Indicate the flow rates for makeup, bleed and recirculation.

Operating Parameters

Volume of gas handled (ACFM)	Inlet temperature (°F)	Pressure drop (in. of water) and liquid flow rate. Describe the monitoring equipment.

State operating range for pH and/or absorbent concentration in scrubber liquid.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

10. ☐ **Selective Catalytic Reduction (SCR) – Not Applicable**
☐ **Selective Non-Catalytic Reduction (SNCR) – Not Applicable**
☐ **Non-Selective Catalytic Reduction (NSCR) – Not Applicable**

Equipment Specifications

Manufacturer	Type	Model No.

Design Inlet Volume (SCFM)	Design operating temperature (°F)

Is the system equipped with process controls for proper mixing/control of the reducing agent in gas stream? If yes, give details.

Attach efficiency and other pertinent information (e.g., ammonia slip)

Operating Parameters

Volume of gases handled _____ (ACFM) @ _____ °F

Operating temperature range for the SCR/SNCR/NSCR system (°F) From _____°F To _____°F

Reducing agent used, if any	Oxidation catalyst used, if any

State expected range of usage rate and concentration.

Service life of catalyst	Ammonia slip (ppm)

Describe fully with a sketch giving locations of equipment, controls systems, important parameters and method of operation.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

11. Oxidizer/Afterburners – Not Applicable

Equipment Specifications

Manufacturer	Type ☐ Thermal ☐ Catalytic	Model No.
Design Inlet Volume (SCFM)	Combustion chamber dimensions (length, cross-sectional area, effective chamber volume, etc.)	

Describe design features, which will ensure mixing in combustion chamber.

Describe method of preheating incoming gases (if applicable).	Describe heat exchanger system used for heat recovery (if applicable).

Catalyst used	Life of catalyst	Expected temperature rise across catalyst (°F)	Dimensions of bed (in inches). Height: _____ Diameter or Width: _____ Depth: _____

Are temperature sensing devices being provided to measure the temperature rise across the catalyst? ☐ Yes ☐ No
If yes, describe.

Describe any temperature sensing and/or recording devices (including specific location of temperature probe in a drawing or sketch.

Burner Information

Burner Manufacturer	Model No.	Fuel Used
Number and capacity of burners	Rated capacity (each)	Maximum capacity (each)

Describe the operation of the burner	Attach dimensioned diagram of afterburner

Operating Parameters

Inlet flow rate (ACFM) _____ @ _____°F	Outlet flow rate (ACFM) _____@ _____°F
State pressure drop range across catalytic bed (in. of water).	Describe the method adopted for regeneration or disposal of the used catalyst.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

12. Flares – HP Flare Tip

Equipment Specifications

Manufacturer	Type	Model No.
John Zink or equal	☒ Elevated flare ☐ Ground flare ☐ Other _____ Describe	To Be Determined

Design Volume (SCFM)	Dimensions of stack (ft.)
77,120	Diameter 2.00 Height 195

Residence time (sec.) and outlet temperature (°F)	Turn down ratio	Burner details
		R0 smokeless

Describe the flare design (air/steam-assisted or nonassisted), essential auxiliaries including pilot flame monitor of proposed flare with a sketch.

Air-assisted HP cold flare for cold liquids. Pilot flame monitoring using a thermocouple(s).

Describe the operation of the flare's ignition system.

In total for both the high pressure and low pressure flare tips, two or more flare pilots along with natural gas at total of 500 standard cubic feet per hour (scfh) will be used for the ignition system.

Describe the provisions to introduce auxiliary fuel to the flare.

Not Applicable

Operation Parameters

Detailed composition of the waste gas	Heat content	Exit velocity
Methane (0-100%) Ethane (0-100%) Propane (0-100%)	1,000 - 2,503 BTU/SCF (HHV)	To Be Determined

Maximum and average gas flow burned (ACFM)	Operating temperature (°F)
To Be Determined	

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Remote alarms will be used when flare pilot is extinguished.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)
VOC			98%

Section C - Air Cleaning Device (Continued)

12. Flares – LP Flare Tip

Equipment Specifications

Manufacturer	Type	Model No.
John Zink or equal	☒ Elevated flare ☐ Ground flare ☐ Other _____ Describe	To Be Determined

Design Volume (SCFM)	Dimensions of stack (ft.)
5,270	Diameter 1.33 Height 195

Residence time (sec.) and outlet temperature (°F)	Turn down ratio	Burner details
		R0 smokeless

Describe the flare design (air/steam-assisted or nonassisted), essential auxiliaries including pilot flame monitor of proposed flare with a sketch.

Air-assisted LP cold flare for cold liquids. Pilot flame monitoring using a thermocouple(s).

Describe the operation of the flare's ignition system

In total for both the high pressure and low pressure flare tips, two or more flare pilots along with natural gas at total of 500 standard cubic feet per hour (scfh) will be used for the ignition system.

Describe the provisions to introduce auxiliary fuel to the flare.

Not Applicable

Operation Parameters

Detailed composition of the waste gas	Heat content	Exit velocity
Methane (0-100%) Ethane (0-100%)	1,000 - 1,750 BTU/SCF (HHV)	To Be Determined

Maximum and average gas flow burned (ACFM)	Operating temperature (°F)
To Be Determined	

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Remote alarms will be used when flare pilot is extinguished.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)
VOC			98%

Section C - Air Cleaning Device (Continued)

13. Other Control Equipment – Not Applicable

Equipment Specifications

Manufacturer	Type	Model No.

Design Volume (SCFM)	Capacity

Describe pH monitoring and pH adjustment, if any.

Indicate the liquid flow rate and describe equipment provided to measure pressure drop and flow rate, if any.

Attach efficiency curve and/or other efficiency information.

Attach any additional date including auxiliary equipment and operation details to thoroughly evaluate the control equipment.

Operation Parameters

Volume of gas handled

_____ ACFM @ _____ °F _____ % Moisture

Describe fully giving important parameters and method of operation.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

14. Costs – Not Applicable

Indicate cost associated with air cleaning device and its operating cost (attach documentation if necessary)

Device	Direct Cost	Indirect Cost	Total Cost	Annual Operating Cost

15. Miscellaneous

Describe in detail the removal, handling and disposal of dust, effluent, etc. from the air cleaning device including proposed methods of controlling fugitive emissions.

Attach manufacturer's performance guarantees and/or warranties for each of the major components of the control system (or complete system).

See Appendix F.

Attach the maintenance schedule for the control equipment and any part of the process equipment that if in disrepair would increase air contaminant emissions.

Section D - Additional Information

Will the construction, modification, etc. of the sources covered by this application increase emissions from other sources at the facility? If so, describe and quantify.

The project will utilize previously permitted sources at the Marcus Hook Industrial Complex including the Auxiliary Boilers, West Warm Flare, pipeline associated components, existing storage tanks, and the product loading docks. However, these units will not be used outside of current permitted allowable emissions.

If this project is subject to any one of the following, attach a demonstration to show compliance with applicable standards. See attached report.

a. Prevention of Significant Deterioration permit (PSD), 40 CFR 52? ☐ YES ☒ NO

b. New Source Review (NSR), 25 Pa. Code Chapter 127, Subchapter E? ☒ YES ☐ NO

c. New Source Performance Standards (NSPS), 40 CFR Part 60? ☒ YES ☐ NO
(If Yes, which subpart) Subparts A, Kb, and VVa

d. National Emissions Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61? (If Yes, which subpart) _____ ☐ YES ☒ NO

e. Maximum Achievable Control Technology (MACT) 40 CFR Part 63? ☐ YES ☒ NO
(If Yes, which part) _____

Attach a demonstration showing that the emissions from any new sources will be the minimum attainable through the use of best available technology (BAT).

See attached report.

Provide emission increases and decreases in allowable (or potential) and actual emissions within the last five (5) years for applicable PSD pollutant(s) if the facility is an existing major facility (PSD purposes).

See attached report.

Section D - Additional Information (Continued)

Indicate emission increases and decreases in tons per year (tpy), for volatile organic compounds (VOCs) and nitrogen oxides (NOx) for NSR applicability since January 1, 1991 or other applicable dates (see other applicable dates in instructions). The emissions increases include all emissions including stack, fugitive, material transfer, other emission generating activities, quantifiable emissions from exempted source(s), etc.

Permit number (if applicable)	Date issued	Indicate ***Yes*** or ***No*** if emission increases and decreases were used previously for netting	Source I. D. or Name	VOCs		NOx	
				Emission increases in potential to emit (tpy)	Creditable emission decreases in actual emissions (tpy)	Emission increases in potential to emit (tpy)	Creditable emission decreases in actual emissions (tpy)
See attached report							

If the source is subject to 25 Pa. Code Chapter 127, Subchapter E, New Source Review requirements,

a. Identify Emission Reduction Credits (ERCs) for emission offsets or demonstrate ability to obtain suitable ERCs for emission offsets.

b. Provide a demonstration that the lowest achievable emission rate (LAER) control techniques will be employed (if applicable).

c. Provide an analysis of alternate sites, sizes, production processes and environmental control techniques demonstrating that the benefits of the proposed source outweigh the environmental and social costs (if applicable).

Attach calculations and any additional information necessary to thoroughly evaluate compliance with all the applicable requirements of Article III and applicable requirements of the Clean Air Act adopted thereunder The Department may request additional information to evaluate the application such as a standby plan, a plan for air pollution emergencies, air quality modeling, etc. See attached report.

Section E - Compliance Demonstration – See Addendum A

Note: Complete this section if source is not a Title V facility. Title V facilities must complete Addendum A.

Method of Compliance Type: Check all that apply and complete all appropriate sections below

☐ Monitoring ☐ Testing ☐ Reporting

☐ Recordkeeping ☐ Work Practice Standard

Monitoring:

a. Monitoring device type (Parameter, CEM, etc): See Addendum A

b. Monitoring device location:

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

Testing:

a. Reference Test Method: Citation

b. Reference Test Method: Description

Recordkeeping:

Describe what parameters will be recorded and the recording frequency:

See Addendum A

Reporting:

a. Describe what is to be reported and frequency of reporting:

b. Reporting start date: _____

Work Practice Standard:

Describe each:

Section F - Flue and Air Contaminant Emission

1. Estimated Atmospheric Emissions*

Pollutant	Maximum emission rate			Calculation/ Estimation Method
	specify units	lbs/hr	tons/yr.	
PM		2.18	9.53	See attached report
PM_{10}		2.14	9.37	See attached report
SO_x		9.01	39.48	See attached report
CO		21.49	94.11	See attached report
NO_x		9.40	41.17	See attached report
VOC		36.71	160.79	See attached report
Others: (e.g., HAPs)	-----	-----	-----	-----
$PM_{2.5}$		1.92	8.40	See attached report
CO2e		25,753	112,799	See attached report

* These emissions must be calculated based on the requested operating schedule and/or process rate e.g., operating schedule for maximum limits or restricted hours of operation and /or restricted throughput. Describe how the emission values were determined. Attach calculations.

2. Stack and Exhauster – Not Applicable

Stack Designation/Number

List Source(s) or source ID exhausted to this stack:	% of flow exhausted to stack:

Stack height above grade (ft.) Grade elevation (ft.)	Stack diameter (ft) or Outlet duct area (sq. ft.)	f. Weather Cap ☐ YES ☐ NO

Distance of discharge to nearest property line (ft.). Locate on topographic map.

Does stack height meet Good Engineering Practice (GEP)?

If modeling (estimating) of ambient air quality impacts is needed, attach a site plan with buildings and their dimensions and other obstructions.

Location of stack** Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

Stack exhaust
Volume _____ ACFM Temperature _____ °F Moisture _____ %

Indicate on an attached sheet the location of sampling ports with respect to exhaust fan, breeching, etc. Give all necessary dimensions.

Exhauster (attach fan curves) _____ in. of water _____ HP @ _____RPM.

** If the data and collection method codes differ from those provided on the General Information Form-Authorization Application, provide the additional detail required by that form on a separate form.

Section G - Attachments

Number and list all attachments submitted with this application below:

A	PADEP Plan Approval Forms
B	Plot Plan and Block Flow Diagram
C	Flare Connection List (CONFIDENTIAL)
D	Back-up Emissions Calculations
E	Contemporaneous Tables
F	Flare Vendor Specification
G	County and Municipal Notifications

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
40 CFR 60 Subpart A §60.18	This subpart applies to certain control devices used to comply with applicable subparts of 40 CFR parts 60 and 61. Subject equipment includes flares. The Project Phoenix Cold Flare must be operated with no visible emissions, with flame present at all times, to meet exit velocity requirements, and maintain a minimum net heating value of the flare gas.	Same
40 CFR 60 Subpart Kb	This subpart applies to each of the storage tanks at the storage facility with a capacity greater than or equal to 75 cubic meters (471 barrels) that is used to store volatile organic liquids for which construction or modification is commenced after July 23, 1984; therefore, the recordkeeping requirements of 40 CFR 60.115b are applicable. However, the VOC standards of 40 CFR 60.112b (i.e., requiring the installation of a floating roof and conducting periodic inspections) are not applicable because of the high vapor pressure of the material being stored (vapor pressure of 108 kiloPascal [kPa]). 40 CFR 60.112b is only applicable to storage vessels with a design capacity greater than 151 cubic meters (949 barrels) and storing a volatile organic liquid that has a maximum true vapor pressure greater than 5.2 kPa but less than 76.6 kPa.	Same
40 0 CFR 60 Subpart VVa	This subpart applies to the control of air emissions from equipment leaks associated with affected facilities in the organic chemicals manufacturing industry. Subject equipment includes each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, and flange or other connector in VOC service. Additionally, if a flare is used to control VOC emissions from pumps, compressors or sampling systems, the flare must comply with 40 CFR §60.18. SPMT does route or plans to route pump and compressor seal systems and sampling systems to the Project Phoenix Cold Flare for VOC control; therefore, the Project Phoenix Cold Flare will comply with the requirements of	Same

Citation Number	Citation Limitation	Limitation Used
	§60.18.	

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	23-1743283-12	**Firm Name:**	Sunoco Partners Marketing & Terminals, L.P.
Plant Code:		**Plant**	Marcus Hook Industrial Complex

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

☐ **The entire site**

☐ **A group of sources, Group ID:**

☒ **A single source, Unit ID:** Cold Flare (Project Phoenix), Source ID To Be Determined

☐ **Alternative Scenario, Scenario Name:**

Citation #: 40 CFR § 60.18

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.):** TO BE DETERMINED
2. **Monitoring device location:** TO BE DETERMINED

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

(a) The permittee shall continuously monitor the presence of a pilot flame for this flare by using an infrared sensor or other device approved by the Department

(b) The permittee shall monitor the type and amount of fuel combusted in the flare on a daily basis.

3. How will data be reported:	TO BE DETERMINED

Section 3: Testing

1. Reference Test Method Description:	EPA Test Methods 22, 2(A, C, or D), 3A, 18, ASTM D 2504-67, ASTM D 2382-76
2. Reference Test Method Citation:	40 CFR § 60.18

Section 4: Record Keeping

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

(a) The permittee shall maintain hourly records for the presence of a pilot flame on this flare

(b) The permittee shall maintain daily records of the type and amount of fuel combusted in this flare

Section 5: Reporting

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

The permittee shall submit to the Department semi-annual exception reports of the date and time the pilot flame was not working.

1. Reporting start date:	TO BE DETERMINED

Section 6: Work Practice Standard

Describe any work practice standards:

The permittee shall ensure that the flare is operated and maintained in conformance with its design.

(a) The flare shall be operated with a flame present at all times

(b) The flare shall be used only with the net heating value of the gas being combusted is 300 BTU/SCF or

greater. The net heating value of the gas being combusted shall be determined by the methods specified in 40 CFR §60.18(f)

(c) The air-assisted flare shall be designed and operated with an exit velocity less than the maximum velocity (Vmax) as determined by the method specified in 40 CFR §60.18(f)(6)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	23-1743283-12	**Firm Name:**	Sunoco Partners Marketing & Terminals, L.P.
Plant Code:		**Plant**	Marcus Hook Industrial Complex

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

☐ **The entire site**

☐ **A group of sources, Group ID:**

☒ **A single source, Unit ID:** Refrigerated Ethane Storage Tank, 130-TK-403 - Source ID To Be Determined

☐ **Alternative Scenario, Scenario Name:**

Citation #: 40 CFR § 60.112b - 60.116b

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:

Refer to TVOP #23-00119 Section D, Source ID 101 Conditions #001-003

Section 5: Reporting

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

Refer to TVOP #23-00119 Section D, Source ID 101 Conditions #004-005

2. **Reporting start date:** TO BE DETERMINED

Section 6: Work Practice Standard

Describe any work practice standards:

Refer to TVOP #23-00119 Section D, Source ID 101 Conditions #006

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	23-1743283-12	**Firm Name:**	Sunoco Partners Marketing & Terminals, L.P.
Plant Code:		**Plant**	Marcus Hook Industrial Complex

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

☐ **The entire site**

☐ **A group of sources, Group ID:**

☒ **A single source, Unit ID:** Refrigerated Ethane Storage Tank, 135-TK-404 - Source ID To Be Determined

☐ **Alternative Scenario, Scenario Name:**

Citation #: 40 CFR § 60.112b - 60.116b

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:**

4. **Reference Test Method Citation:**

Section 4: Record Keeping

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

Refer to TVOP #23-00119 Section D, Source ID 101 Conditions #001-003

Section 5: Reporting

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

Refer to TVOP #23-00119 Section D, Source ID 101 Conditions #004-005

3. **Reporting start date:** TO BE DETERMINED

Section 6: Work Practice Standard

Describe any work practice standards:

Refer to TVOP #23-00119 Section D, Source ID 101 Conditions #006

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	23-1743283-12	**Firm Name:**	Sunoco Partners Marketing & Terminals, L.P.
Plant Code:		**Plant**	Marcus Hook Industrial Complex

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

☐ **The entire site**

☒ **A group of sources, Group ID:** Fugitive Equipment Leaks from equipment in VOC service, ID 103

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: 40 CFR § 60.485a

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.):** Refer to TVOP #23-00119 Section D, Source ID 103 Conditions #002-004

8. **Monitoring device location:** Refer to TVOP #23-00119 Section D, Source ID 103 Conditions #002-004

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

Refer to TVOP #23-00119 Section D, Source ID 103 Conditions #002-004

9. How will data be reported:	Refer to TVOP #23-00119 Section D, Source ID 103 Conditions #002-004

Section 3: Testing

5. Reference Test Method Description:	Refer to TVOP #23-00119 Section D, Source ID 103 Condition #001
6. Reference Test Method Citation:	Refer to TVOP #23-00119 Section D, Source ID 103 Condition #001

Section 4: Record Keeping

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

Refer to TVOP #23-00119 Section D, Source ID 103 Conditions #005-006

Section 5: Reporting

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

Refer to TVOP #23-00119 Section D, Source ID 103 Condition #007

4. Reporting start date:	TO BE DETERMINED

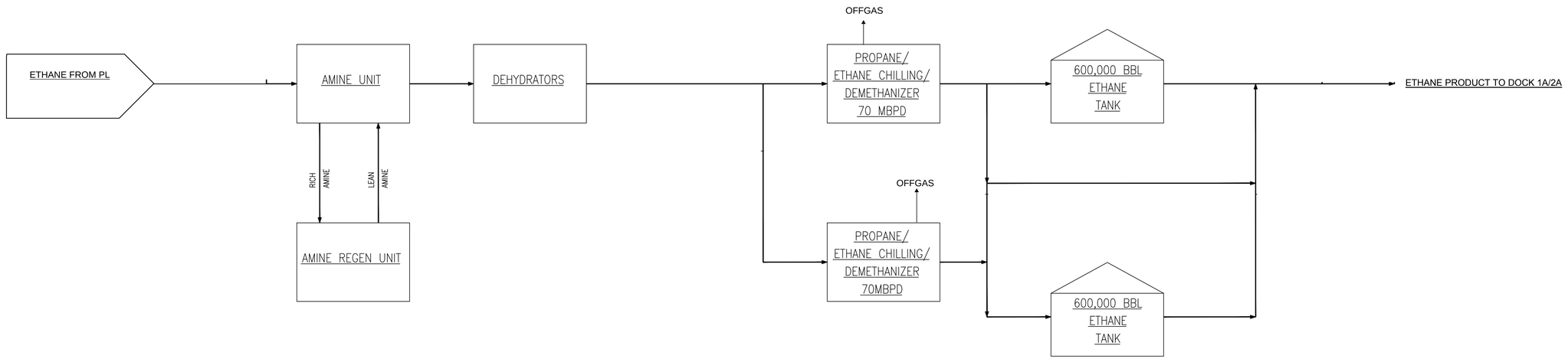
Section 6: Work Practice Standard

Describe any work practice standards:

Refer to TVOP #23-00119 Section D, Source ID 103 Conditions #008-024

APPENDIX B PLOT PLAN AND BLOCK FLOW DIAGRAM

July 2019



PRELIMINARY - NOT FOR CONSTRUCTION

BURNS McDONNELL

REFERENCE DRAWINGS

REV	DESCRIPTION	BY	DATE	CHK'D	APP'D

FACILITY CODE OR ACCOUNT NO:
CONSTRUCTION YEAR:

	BY	DATE
DRAWN		
CHECK		
APPROVED		

SCALE:

ENERGY TRANSFER

BLOCK DIAGRAM
PROJECT PHOENIX

MARCUS HOOK, PA, USA

AFE NO.

OLD DRAWING NO.

DRAWING NO. SK-100-002

REV. NO. J

PRELIMINARY - NOT
FOR CONSTRUCTION

REV.	DATE	APP#	DESCRIPTION	DG / APPROVAL
1			ISSUED FOR REFERENCE	

ENGINEERING RECORD	
DRAWN BY	
CHECKED BY	
APPROVED BY	
DATE	
SCALE	
SCADA	

Sunoco Logistics Partners L.P.

MARCUS HOOK INDUSTRIAL COMPLEX
PROJECT PHOENIX
MECHANICAL
PERMIT OVERVIEW PLOT PLAN

MARCUS HOOK — DELAWARE COUNTY PA

OLD DRAWING NO.	DWG. NO.	REV. NO.
		2

APPENDIX C FLARE CONNECTION LIST - CONFIDENTIAL

July 2019

APPENDIX D DETAILED EMISSIONS CALCULATIONS

July 2019

Sunoco Partners Marketing & Terminals L.P.

Project Phoenix

Project Emissions Summary

July 2019

Table D-1: Summary of Projected Annual Emissions

Source	Emissions (TPY)							
	NO_x	VOC	CO	PM	PM10	PM2.5	SO_2	CO_2e
Fugitive Equipment	- - -	36.17	- - -	- - -	- - -	- - -	- - -	5,521
Cold Flare HP/LP	5.95	3.57	27.12	- - -	- - -	- - -	0.02	11,281
Wet Surface Air Cooler System (2 Units)	- - -	- - -	- - -	0.55	0.43	0.001	- - -	- - -
Incremental Flows to West Warm Flare	0.10	0.01	0.48	- - -	- - -	- - -	0.001	210
Aggregated Projects[1]	35.12	121.03	66.51	8.98	8.94	8.40	39.46	95,786
Total	**41.17**	**160.79**	**94.11**	**9.53**	**9.37**	**8.40**	**39.48**	**112,799**

[1]In accordance with the adjudication decision by Judge Bernard A. Labuskes, Jr. of the Commonwealth of Pennsylvania Environmental Hearing Board, EHB Docket No. 2016-073-L, this project will be evaluated as part of a single aggregated project. Refer to "Aggregated Projects" table for list of all Plan Approvals and RFDs included.

Table D-2: Summary of Projected Short Term Emission Rates

Source	Emissions (lb/hour)							
	NO_x	VOC	CO	PM	PM10	PM2.5	SO_2	CO_2e
Fugitive Equipment	- - -	8.26	- - -	- - -	- - -	- - -	- - -	1,261
Cold Flare HP/LP	1.36	0.82	6.19	- - -	- - -	- - -	0.01	2,576
Wet Surface Air Cooler System	- - -	- - -	- - -	0.13	0.10	0.0003	- - -	- - -
Incremental Flows to West Warm Flare	0.02	0.003	0.11	- - -	- - -	- - -	0.0002	48
Aggregated Projects	8.02	27.63	15.19	- - -	- - -	- - -	9.01	21,869
Total	**9.40**	**36.71**	**21.49**	**2.18**	**2.14**	**1.9183**	**9.014**	**25,753**

Sunoco Partners Marketing & Terminals L.P.
Project Phoenix
Aggregated Projects
July 2019

Table D-3: Summary of Annual Emissions from Aggregated 23-0119E

Emissions	Pollutant (TPY)[1]							
	VOC	NO_x	CO	PM	PM10	PM2.5	SO_2	CO_2e
23-0119	8.78	--	0.09	--	--	--	0.0001	48
23-0119A	3.04	0.02	--	--	--	--	--	13
23-0119B[2]	10.19	24.40	19.02	8.13	8.13	8.13	39.40	74,400
23-0119C	5.52	--	--	0.25	0.23	0.01	--	--
23-0019D[3]	54.98	10.38	47.34	0.40	0.38	0.06	0.06	21,325
23-0119E	18.24	0.30	--	0.20	0.20	0.20	--	--
23-0119F	13.67	--	--	--	--	--	--	--
RFD 5236 (Spheres Project)	0.87	--	--	--	--	--	--	--
RFD 5340 (Tank 609 Vapor Pressure)	2.69	--	--	--	--	--	--	--
RFD 5918 (Propane Railcar Offloading)	2.19	--	--	--	--	--	--	--
RFD 5944 (Portable Flare for Metering Maintenance)	0.002	0.0002	--	--	--	--	--	0.48
RFD 6484 (Methanol Tank)	0.65	--	--	--	--	--	--	--
RFD 7548 (H-5 Unloading Area Upgrade)	0.21	0.02	0.07	--	--	--	--	--
Total	**121.03**	**35.12**	**66.51**	**8.98**	**8.94**	**8.40**	**39.46**	**95,786**

[1]All emissions from this table are permitted thresholds from PADEP Review Memos.

[2]All emissions for Plan Approval 23-0119B are from its respective PADEP Review Memo with exception to CO emissions, which have been re-evaluated using actual emissions data from CEMs.

[3]All emissions for Plan Approval 23-0119D are inclusive of new flows and connections to associated Cold Flares (ME-1 Cold Flare - C01, ME-2 Cold Flare - C02), in addition to permitted thresholds from the respective PADEP Review Memo.

Sunoco Partners Marketing & Terminals L.P.
Project Phoenix
July 2019
Fugitive Emissions Summary

Table D-4: Summary of Emissions from Fugitive Source Systems

Source	Emissions (TPY)	
	VOC	CO_2e
Propane Refrigeration System	6.49	0.00
Amine Treatment System	0.42	0.00
Natural Gas System	0.00	1245.25
Ethane System	29.26	101.61
Methane / Ethane System	0.00	2,141.35
Flare System	0.00	2,032.51
Acid Gas System	0.00	0.75
Total	**36.17**	**5,521**

Attachment #4

Table D-5: Detailed Fugitive Component Emissions

Area	Equipment Type	Service	Emission Factor (kg/hr/source)[a]	Component Counts	Control Efficiency for LDAR Monitored Components	Total VOC (weight %)	Total GHG (weight %)	VOC Emissions (tons/year)	CO_2e Emissions (tons/year)[g]
Natural Gas System	Valves	Gas[b]	0.00597	445	0%	0%	90%	0.00	577.46
	Pressure Relief Valves	Gas	0.104	10	0%	0%	90%	0.00	216.92
	Connectors	All	0.00183	1,134	0%	0%	90%	0.00	450.87
Ethane System	Valves	Gas[b]	0.00597	1,748	0%	4%	1%	3.63	12.60
		Light Liquid[c]	0.00403	2,623	0%	4%	1%	3.67	12.76
	Pump Seal Valves	Light Liquid[c]	0.00403	108	0%	4%	1%	0.15	0.53
	Pump Seal Connectors	All	0.00183	343	0%	4%	1%	0.22	0.76
	Analyzer Valves	Gas[b]	0.00597	540	0%	4%	1%	1.12	3.89
	Analyzer Connectors	All	0.00183	1,140	0%	4%	1%	0.73	2.52
	Sample Station Valves	Light Liquid[c]	0.00403	24	0%	4%	1%	0.03	0.12
	Sample Station Connectors	All	0.00183	120	0%	4%	1%	0.08	0.27
	Compressor Seal Valves	Gas	0.00597	331	0%	4%	1%	0.69	2.39
		Light Liquid[c]	0.00403	0	0%	4%	1%	0.00	0.00
		Heavy Liquid[d]	0.00023	0	0%	4%	1%	0.00	0.00
	Compressor Seal Connectors	All	0.00183	840	0%	4%	1%	0.53	1.86
	Pump Seals	Light Liquid[c]	0.0199	10	0%	4%	1%	0.07	0.23
		Heavy Liquid[d]	0.00862	0	0%	4%	1%	0.00	0.00
	Compressor Seals	Gas	0.228	14	0%	4%	1%	1.14	3.96
	Pressure Relief Valves	Gas	0.104	212	0%	4%	1%	7.68	26.66
	Connectors	All	0.00183	14,965	0%	4%	1%	9.52	33.06
	Sampling Connections	All	0.015	1	0%	4%	1%	0.01	0.02
Methane / Ethane System	Valves	Gas[b]	0.00597	602	0%	0%	50%	0.00	434.09
	Analyzer Valves	Gas[b]	0.00597	720	0%	0%	50%	0.00	518.83
	Analyzer Connectors	All	0.00183	1,440	0%	0%	50%	0.00	318.08
	Pressure Relief Valves	Gas	0.104	38	0%	0%	50%	0.00	482.04
	Connectors	All	0.00183	1,758	0%	0%	50%	0.00	388.32
Flare System	Valves	Gas[b]	0.00597	685	0%	0%	90%	0.00	888.76
	Pump Seal Valves	Heavy Liquid[d]	0.00023	10	0%	0%	90%	0.00	0.48
	Pump Seal Connectors	All	0.00183	65	0%	0%	90%	0.00	25.76
	Analyzer Valves	Gas[b]	0.00597	120	0%	0%	90%	0.00	155.65
	Analyzer Connectors	All	0.00183	300	0%	0%	90%	0.00	119.28
	Connectors	All	0.00183	2,119	0%	0%	90%	0.00	842.59
Acid Gas System	Valves	Gas[b]	0.00597	40	0%	0%	24%	0.00	0.55
	Connectors	All	0.00183	48	0%	0%	24%	0.00	0.20
							TOTALS	**29.26**	**5,521.48**

Sunoco Partners Marketing & Terminals L.P.
Project Phoenix
July 2019
Fugitive Component Emissions

Table D-6: Gas Speciation for Fugitive Source Systems

Speciation[f]	Propane Refrigeration System - Weight %	Amine Treatment System - Weight %	Natural Gas System - Weight %	Ethane System - Weight %	Methane/Ethane System - Weight %	Flare System - Weight %	Acid Gas System - Weight %
Methane			90.0%	0.5%	50.0%	90.0%	
Ethane	2.0%		10.0%	95.9%	50.0%	10.0%	1.0%
Propane	97.0%			3.6%			
i-Butane	1.0%						
Diethanolamine (DEA)		10.0%					
Water		90.0%					75.0%
CO2							24.0%
Total VOC	**98.0%**	**10.0%**	**0.0%**	**3.6%**	**0.0%**	**0.0%**	**0.0%**
Total GHG	**0.0%**	**0.0%**	**90.0%**	**0.5%**	**50.0%**	**90.0%**	**24.0%**

[a] Emission Factors from EPA's *Procotol for Equipment Leak Emission Estimates,* EPA-453/R-95-017, Table 2-1.

[b] Gas/vapor - material in a gaseous state at operating conditions.

[c] Light liquid - material in a liquid state in which the sum of the concentration of individual constituents with a vapor pressure over 0.3 kilopascals (kPa) at 20 degree C is greater than or equal to 20 weight percent.

[d] Heavy liquid - not in gas/vapor service or light liquid service.

[e] Control Efficiency from Texas Commission on Environmental Quality (TCEQ) 28VHP Leak Detection and Repair Program for compenents in VOC service.

[f] The composition (weight %) is an engineering estimate only and should not be considered a permit representation.

[g] The global warming potential of methane is 25 from 40 CFR Part 98, Table A-1.

Table D-7: New Fugitive Equipment Component Counts (total for each)

Component Category	Component	Component Counts (Units/Streams in VOC service and in LDAR Program)	
		Propane Refrigeration System	Amine Treatment System
Valves	Valves	1787	1323
	Pump Seal Valves	29	26
	Compressor Seal Valves	254	0
	Sample Station Valves	0	48
	Analyzer Valves	0	0
Reliefs	Pressure Relief Valves	77	30
Connectors	Connectors	5,996	3416
	Analyzer Connectors	0	0
	Pump Seal Connectors	86	204
	Compressor Seal Connectors	662	0
	Sampling Connections	0	2
	Sample Station Connectors	0	240
---	Compressor Seals	12	0
---	Pump Seals	2	6

Table D-8: LDAR Screening Values

	Default 0	0-500	500-1000	1,001-10,000	>10000
Assumed Leak Concentration		18	751	1393	61483
Assumed Leak Rate - Valves	0.02%	97.40%	0.79%	1.58%	0.21%
Assumed Leak Rate - Pump Seals	0.44%	94.36%	0.77%	3.76%	0.66%
Assumed Leak Rate - Connectors	0.01%	98.95%	0.24%	0.67%	0.12%
Assumed Leak Rate - Others	0.06%	98.51%	0.46%	0.97%	0.00%

Table D-9: Screening Value Emission Factors

	Leak Rate (kg/hr)				
Component Type					
Valves	7.80E-06	2.000E-05	3.201E-04	5.074E-04	6.400E-02
Pump Seals	2.40E-05	2.959E-04	2.857E-03	4.164E-03	7.400E-02
Connectors	7.50E-06	1.294E-05	1.988E-04	3.130E-04	2.800E-02
Others	4.00E-06	7.527E-05	6.721E-04	9.670E-04	7.300E-02
	Table 2-12	Table 2-10	Table 2-10	Table 2-10	Table 2-14

(Source: "Protocol for Equipment Leak Emission Estimates", EPA-453/R-95-017)

Attachment #3

Sunoco Partners Marketing & Terminals L.P.
Project Phoenix
July 2019
Fugitive Component Emissions, Screening Methodology

Table D-10: Total Material Emissions Due to Fugitive Equipment (lbs)

Component	Leak Rate (lb/yr)					Total (lbs/day)	Total (lbs/year)	Total (tons/year)
	Default 0	0-500	500-1000	1,001-10,000	>10000			
Valves	0	1304	169	535	9098	**30.43**	**11106.87**	**5.55**
Pump Seals	0	45	4	25	80	**0.42**	**153.98**	**0.08**
Connectors	0	2623	99	432	6955	**27.70**	**10109.35**	**5.05**
Others	0	171	7	22	0	**0.55**	**199.83**	**0.10**
Total (all components)	**0**	**4143.86**	**278.08**	**1014.36**	**16133.35**	**59.10**	**21570.02**	**10.79**

Table D-11 Percent (%) of Total Components per Unit

	Propane Refrigeration System	Amine Treatment System
Valves	59.7%	40.3%
Pump Seals	28.6%	71.4%
Connectors	63.6%	36.4%
July 2019	74.9%	25.1%
Total (all components)	62.7%	37.3%

Table D-12: Gas Speciation for New Fugitive Equipment

Speciation	Propane Refrigeration System - Weight %	Amine Treatment System - Weight %
Methane		
Ethane	2%	
Propane	97%	
i-Butane	1%	
Diethanolamine (DEA)		10%
Water		90%
CO2		
Total VOC	**98%**	**10%**
Total GHG	**0%**	**0%**

Table D-13: Emissions Summary by Component Type

Components	Total (tons/year)	Propane Refrigeration System (TPY)	Amine Treatment System (TPY)
Valves	5.55	3.32	2.24
Pump Seals	0.08	0.02	0.05
Connectors	5.05	3.21	1.84
Others	0.10	0.07	0.03
Total (all components)	**10.79**	**6.63**	**4.16**

Total VOC Percentage By Unit Stream (%)	98%	10%
Total VOC Emissions By Unit Stream (TPY)	6.49	0.42

Total CO_2e Percentage By Unit Stream (%)	0%	0%
Total CO_2e Emissions By Unit Stream (TPY)	0.00	0.00

Total VOC Emissions (TPY)	**6.91**
Total CO_2e Emissions (TPY)	**0.00**

Sunoco Partners Marketing & Terminals L.P.
Project Phoenix
July 2019
Flare Emissions Summary

Table D-14: Emissions Summary for New Project Phoenix Cold Flare

New Cold Flare	MMBtu/hr	Emissions (TPY)				
		NO_x	CO	VOC	SO_2	CO_2e
Project Phoenix HP Cold Flare						
Pilot & Purge Continuous Flows	0.51	0.15	0.70	0.02	0.001	295
Sweep Continuous Flows	6.80	2.02	9.23	0.26	0.02	4,061
Operational & Maintenance Flows	0.76	0.23	1.03	1.27	8.1E-09	418
Project Phoenix LP Cold Flare						
Pilot & Purge Continuous Flows	0.51	0.15	0.70	0.02	0.001	295
Sweep Continuous Flows	1.56	0.46	2.12	0.06	0.004	931
Operational & Maintenance Flows	9.84	2.93	13.35	1.94	---	5,280
Total	**19.97**	**5.95**	**27.12**	**3.57**	**0.02**	**11281**

Table D-15: Emissions Summary for Existing West Warm Flare

Incremental Flows to West Warm Flare	MMBtu/hr	Emissions (TPY)				
		NO_x	CO	VOC	SO_2	CO_2e
Sweep Continuous Flows	0.35	0.10	0.48	0.01	0.001	210
Operational & Maintenance Flows	0.00	0.00	0.00	---	---	0
Total	**0.35**	**0.10**	**0.48**	**0.01**	**0.001**	**210**

Sunoco Partners Marketing & Terminals L.P.
Project Phoenix
July 2019
Flare Pilot/Purge Gas Flow Emissions

			Project Phoenix HP Cold Flare (1)	Project Phoenix LP Cold Flare (1)		
Continuous Flow			**Value**	**Value**	**Units**	**Notes**
[A]	Pilot Flow Rate	=	500	500	scfh	Design
[B]	Purge Flow Rate	=	0	0	scfh	Design
[C]	Total Flow	=	0.0005	0.0005	MMscfh	= ([A] + [B]) /1,000,000
[D]	Total Flow	=	22.0	22.0	lb/hr	= ([A] + [B]) /379 * [F]
[E]	HHV (natural gas)	=	1026	1026	Btu/scf	40 CFR Part 98, Table C-1
[F]	Molecular weight (natural gas)	=	16.65	16.65	lb/lbmol	Supplier Data
[G]	Heating Duty	=	0.51	0.51	MMBtu/hr	= [C] * [E]
[H]	Annual Heating Duty	=	4,494	4,494	MMBtu/yr	= [G] * 8760
Flare Emissions					**Units**	**Notes**
[I]	NO_x Emission Factor	=	0.068	0.068	lb/MMBtu	AP-42 Ch 13.5, Table 13.5-1
[J]	VOC Destruction Efficiency	=	98%	98%	% DRE	Compliance with 40 CFR 60.18
[K]	VOC Content of natural gas	=	1%	1%	% VOC	Composition Data
[L]	CO Emission Factor	=	0.31	0.31	lb/MMBtu	AP-42 Ch 13.5, Table 13.5-2 (Updated April 2015)
[M]	SO_2 Emission Factor	=	0.0006	0.0006	lb/MMBtu	AP-42 Table 1.4-2 (converted to lb/MMBtu)
[N]	NO_x Emission Rate	=	0.03	0.03	lb/hr	= [G] * [I]
[O]	VOC Emission Rate	=	0.00	0.004	lb/hr	= [D] * (1 - [J]) * [K]
[P]	CO Emission Rate	=	0.16	0.16	lb/hr	= [G] * [L]
[Q]	SO_2 Emission Rate	=	0.0003	0.0003	lb/hr	= [G] * [M]
[R]	NO_x Emissions	=	0.15	0.15	TPY	= [N] * 8760/2000
[S]	VOC Emissions	=	0.02	0.02	TPY	= [O] * 8760/2000
[T]	CO Emissions	=	0.70	0.70	TPY	= [P] * 8760/2000
[U]	SO_2 Emissions	=	0.001	0.001	TPY	= [Q] * 8760/2000
[V]	Volumetric CO_2 Emissions[1]	=	4,292,400	4,292,400	scf CO_2/year	40 CFR Part 98, Equation W-20
[W]	Volumetric CH_4 Emissions[1]	=	87,600	87,600	scf CH_4/year	40 CFR Part 98, Equation W-19
[X]	N_2O Emission factor for Natural Gas	=	0.0001	0.0001	kg/MMBtu	40 CFR Part 98, Equation W-40
[Y]	CO_2 Emissions	=	249	249	TPY	40 CFR Part 98, Equation W-36
[Z]	CH_4 Emissions	=	1.85	1.85	TPY	40 CFR Part 98, Equation W-36
[AA]	CH_4 Global Warming Potential	=	25	25		40 CFR Part 98, Table A-1
[AB]	N_2O Emissions	=	0.000	0.000	TPY	40 CFR Part 98, Equation W-40
[AC]	N_2O Global Warming Potential	=	298	298		40 CFR Part 98, Table A-1
[AD]	CO_2e Emissions	=	295	295	TPY	= [Y] + [Z] * [AA] + [AB] * [AC]

[1] Assuming composition of 100% methane.

Sunoco Partners Marketing & Terminals L.P.
Project Phoenix
July 2019
Flare Sweep Gas Flow Emissions

			Project Phoenix HP Cold Flare (1)	Project Phoenix LP Cold Flare (1)	West Warm Flare (1)		
Sweep Gas Flow			**Value**	**Value**	**Value**	**Units**	**Notes**
[A]	Natural Gas Mass Flow	=	2,645,820	606,492	136,656	lb/yr	Engineering Analysis
[B]	Natural Gas Volume Flow		6,875	1,576	355	scfh	Engineering Analysis
[C]	Natural Gas HHV	=	22,500	22,500	22,500	Btu/lb	Engineering Analysis
[D]	Heating Duty (Natural Gas)	=	59,531	13,646	3,075	MMBtu/yr	= [A] * [C] /1000000
[E]	Operating Hours	=	8,760	8,760	8,760	hrs/yr	Assumption
[F]	SPMT Heating Duty	=	6.80	1.56	0.35	MMBtu/hr	= [D] / [E]
Flare Emissions			**Value**	**Value**	**Value**	**Units**	**Notes**
[G]	NO_x Emission Factor	=	0.068	0.068	0.068	lb/MMBtu	AP-42 Ch 13.5, Table 13.5-1
[H]	VOC Destruction Efficiency	=	98%	98%	98%	% DRE	Compliance with 40 CFR 60.18
[I]	VOC Content of natural gas	=	1%	1%	1%	% VOC	Composition Data
[J]	CO Emission Factor	=	0.31	0.31	0.31	lb/MMBtu	AP-42 Ch 13.5, Table 13.5-2 (Updated April 2015)
[K]	SO_2 Emission Factor	=	0.0006	0.0006	0.0006	lb/MMBtu	AP-42 Table 1.4-2 (converted to lb/MMBtu)
[L]	NO_x Emission Rate	=	0.46	0.11	0.02	lb/hr	= [F] * [G]
[M]	VOC Emission Rate	=	0.06	0.01	0.003	lb/hr	= [A] / [E] * (1 - [H]) * [I]
[N]	CO Emission Rate	=	2.11	0.48	0.11	lb/hr	= [F] * [J]
[O]	SO_2 Emission Rate	=	0.0040	0.0009	0.0002	lb/hr	= [F] * [K]
[P]	NO_x Emissions	=	2.02	0.46	0.10	TPY	= [L] * 8760/2000
[Q]	VOC Emissions	=	0.26	0.06	0.01	TPY	= [M] * 8760/2000
[R]	CO Emissions	=	9.23	2.12	0.48	TPY	= [N] * 8760/2000
[S]	SO_2 Emissions	=	0.02	0.004	0.001	TPY	= [O] * 8760/2000
[T]	Volumetric CO_2 Emissions[1]	=	59,021,660	13,529,335	3,048,455	scf CO_2/year	40 CFR Part 98, Equation W-20
[U]	Volumetric CH_4 Emissions[1]	=	1,204,524	276,109	62,213	scf CH_4/year	40 CFR Part 98, Equation W-19
[V]	N_2O Emission factor for Natural Gas	=	0.0001	0.0001	0.0001	kg/MMBtu	40 CFR Part 98, Equation W-40
[W]	CO_2 Emissions	=	3,422	784	177	TPY	40 CFR Part 98, Equation W-36
[X]	CH_4 Emissions	=	25.49	5.84	1.32	TPY	40 CFR Part 98, Equation W-36
[Y]	CH_4 Global Warming Potential	=	25	25	25		40 CFR Part 98, Table A-1
[Z]	N_2O Emissions	=	0.0066	0.0015	0.0003	TPY	40 CFR Part 98, Equation W-40
[AA]	N_2O Global Warming Potential	=	298	298	298		40 CFR Part 98, Table A-1
[AB]	CO_2e Emissions	=	4,061	931	210	TPY	= [W] + [X] * [Y] + [Z] * [AA]

Sunoco Partners Marketing & Terminals L.P.
Project Phoenix
July 2019
Flare Operational & Maintenance Flow Emissions

			Project Phoenix HP Cold Flare (1)	Project Phoenix LP Cold Flare (1)	West Warm Flare (1)		
Operational & Maintenance Flow			**Value**	**Value**	**Value**	**Units**	**Notes**
[A]	Ethane Mass Flow	=	120,880	3,684,954	0	lb/yr	Engineering Analysis
[B]	Methane Mass Flow	=	51,100	7,300	0	lb/yr	Engineering Analysis
[C]	Natural Gas Mass Flow	=	1	0	0	lb/yr	Engineering Analysis
[D]	Propane Mass Flow	=	126,685	193,945	0	lb/yr	Engineering Analysis
[E]	Amine Mass Flow	=	0	0	159	lb/yr	Engineering Analysis
[F]	Ethane HHV	=	22,198	22,198	22,198	Btu/lb	Engineering Analysis
[G]	Methane HHV	=	23,811	23,811	23,811	Btu/lb	Engineering Analysis
[H]	Natural Gas HHV	=	22,500	22,500	22,500	Btu/lb	Engineering Analysis
[I]	Propane HHV	=	21,564	21,564	21,564	Btu/lb	Engineering Analysis
[J]	Amine HHV	=	16,636	16,636	16,636	Btu/lb	Engineering Analysis
[K]	Ethane Heating Duty	=	2,683	81,799	0	MMBtu/yr	= [A] * [F] /1000000
[L]	Methane Heating Duty	=	1,217	174	0	MMBtu/yr	= [B] * [G] /1000000
[M]	Natural Gas Heating Duty	=	0.03	0	0	MMBtu/yr	= [C] * [H] /1000000
[N]	Propane Heating Duty	=	2,732	4,182	0	MMBtu/yr	= [D] * [I] /1000000
[O]	Amine Heating Duty	=	0	0	3	MMBtu/yr	= [E] * [J] /1000000
[P]	Total Heating Duty	=	6,632	86,155	3	MMBtu/yr	= [K] + [L] + [M] + [N] + [O]
[Q]	Operating Hours	=	8,760	8,760	8,760	hrs/yr	Assumption
[R]	SPMT Heating Duty	=	0.76	9.84	0.00	MMBtu/hr	= [P] / [Q]

Sunoco Partners Marketing & Terminals L.P.
Project Phoenix
July 2019
Flare Operational & Maintenance Flow Emissions

Flare Emissions			**Value**	**Value**	**Value**	**Units**	**Notes**
[S]	NO_x Emission Factor	=	0.068	0.068	0.068	lb/MMBtu	AP-42 Ch 13.5, Table 13.5-1
[T]	VOC Destruction Efficiency	=	98%	98%	98%	% DRE	Compliance with 40 CFR 60.18
[U]	VOC Content of natural gas	=	1%	1%	1%	% VOC	Composition Data
[V]	CO Emission Factor	=	0.31	0.31	0.31	lb/MMBtu	AP-42 Ch 13.5, Table 13.5-2 (Updated April 2015)
[W]	SO_2 Emission Factor (Natural Gas Only)	=	0.0006	0.0006	0.0006	lb/MMBtu	AP-42 Table 1.4-2 (converted to lb/MMBtu)
[X]	NO_x Emission Rate	=	0.05	0.67	0.00	lb/hr	= [R] * [S]
[Y]	VOC Emission Rate	=	0.29	0.44	0.00	lb/hr	= ((([C] * [U]) + [D]) * (1 - [T])) / [Q]
[Z]	CO Emission Rate	=	0.23	3.05	0.00	lb/hr	= [R] * [V]
[AA]	SO_2 Emission Rate	=	1.8E-09	0	0	lb/hr	= [W] * [M] / [Q] (Natural gas only)
[AB]	NO_x Emissions	=	0.23	2.93	0.00	TPY	= [X] * 8760/2000
[AC]	VOC Emissions	=	1.27	1.94	0.00	TPY	= [Y] * 8760/2000
[AD]	CO Emissions	=	1.03	13.35	0.00	TPY	= [Z] * 8760/2000
[AE]	SO_2 Emissions	=	8.1E-09	0	0	TPY	= [AA] * 8760/2000
[AF]	Volumetric CO_2 Emissions	=	6,978,338	90,989,617	2,485	scf CO_2/year	40 CFR Part 98, Equation W-20
uly 201	CO_2 density	=	0.0526	0.0526	0.0526	kg/scf	40 CFR Part 98 (t)
[AH]	CO_2 Emissions	=	405	5,276	0.14	TPY	40 CFR Part 98, Equation W-36
[AI]	Volumetric CH_4 Emissions	=	24,145	3,449	0	scf CH_4/year	40 CFR Part 98, Equation W-19
[AJ]	CH_4 Density	=	0.0192	0.0192	0.0192	kg/scf	40 CFR Part 98 (t)
[AK]	CH_4 Emissions	=	0.51	0.07	0.00	TPY	40 CFR Part 98, Equation W-36
[AL]	CH_4 Global Warming Potential	=	25	25	25		40 CFR Part 98, Table A-1
[AM]	N_2O Emission Factor	=	0.0001	0.0001	0.0001	kg/MMBtu	40 CFR Part 98, Equation W-40
[AN]	N_2O Emissions	=	0.0007	0.0095	0.0000	TPY	40 CFR Part 98, Equation W-40
[AO]	N_2O Global Warming Potential	=	298	298	298		40 CFR Part 98, Table A-1
[AP]	CO_2e Emissions	=	418	5,280	0.14	TPY	= [AH] + [AK] * [AL] + [AN] * [AO]

Sunoco Partners Marketing & Terminals L.P.
Project Phoenix
July 2019
Wet Surface Air Cooler Systems

Table D-16: WSAC System Parameters

Parameter	Value
Number of Units	2
Design Water Flow Rate (gpm)	21,000
Design Water Flow Rate in VOC-service (gpm)	0
Cooling Tower Drift Rate (% of circulating water)	0.0005
Total Dissolved Solids (ppm)	200
Cycles of Concentration Ratio (tower/makeup water)	6
VOC EF (lb/MMgal)	0.7
PM_{10} Fraction	0.7763
$PM_{2.5}$ Fraction	0.0024

Table D-17: WSAC Emission Summary

Parameter	PM [1]	PM_{10} [2]	$PM_{2.5}$ [2]	VOC
Hourly (lb/hr)	0.13	0.10	0.0003	0
Daily (lb/day)	3.03	2.35	0.007	0
Annual (tpy)	0.55	0.43	0.001	0

[1] PM calculated based on flow rate, drift rate, and total dissolved solids.

[2] Reisman, J. and Frisbie, G., "Calculating Realistic PM10 Emissions From Cooling Towers."

Factors:

60	min/hr
8.345	water density (CWS)
8760	hr/yr
2000	lb/ton

Sunoco Partners Marketing & Terminals L.P.
Project Phoenix
July 2019
Wet Surface Air Cooler Systems

Table D-18: Example from Reisman/Frisbie Paper

	Eq2	Eq 3	Eq 4		Eq 7		
EPRI Droplet Diameter (µm)	Droplet Volume (μm^3)	Droplet Mass (µg)	Particle Mass (Solids) (µg)	Solid Particle Volume (μm^3)	Solid Particle Diameter (µm)	EPRI % Mass Smaller	
10	524	5.24E-04	6.29E-07	0.29	0.817	0.000	
20	4189	4.19E-03	5.03E-06	2.29	1.634	0.196	PM2.5
30	14137	1.41E-02	1.70E-05	7.72	2.452	0.226	0.24
40	33510	3.35E-02	4.02E-05	18.29	3.269	0.514	
50	65450	6.55E-02	7.86E-05	35.72	4.086	1.816	
60	113097	1.13E-01	1.36E-04	61.73	4.903	5.702	
70	179594	1.80E-01	2.16E-04	98.02	5.721	21.348	
90	381704	3.82E-01	4.58E-04	208.33	7.355	49.812	PM10
110	696910	6.97E-01	8.37E-04	380.36	8.989	70.509	77.63
130	1150347	1.15E+00	1.38E-03	627.84	10.624	82.023	
150	1767146	1.77E+00	2.12E-03	964.48	12.258	88.012	
180	3053628	3.06E+00	3.67E-03	1666.61	14.710	91.032	
210	4849048	4.85E+00	5.82E-03	2646.52	17.162	92.468	
240	7238229	7.24E+00	8.69E-03	3950.49	19.613	94.091	
270	10305995	1.03E+01	1.24E-02	5624.82	22.065	94.689	
300	14137167	1.41E+01	1.70E-02	7715.80	24.517	96.288	
350	22449298	2.25E+01	2.70E-02	12252.41	28.603	97.011	
400	33510322	3.35E+01	4.02E-02	18289.32	32.689	98.340	
450	47712938	4.77E+01	5.73E-02	26040.84	36.775	99.071	
500	65449847	6.55E+01	7.86E-02	35721.32	40.861	99.071	
600	113097336	1.13E+02	1.36E-01	61726.44	49.033	100.000	

Constants:

PI	3.14159	
Density of water	1.000600	
Total Dissolved Solids (ppm)	1,200	Test
Density of TDS	2.2	

Sunoco Partners Marketing & Terminals L.P.

Project Phoenix

July 2019

Auxiliary Boiler Emissions

Table D-19: Project Phoenix Steam Demand

Project Phoenix	Steam Demand (lb/hr)
Dehydrator regeneration vaporizer	27,000
Amine stripper tower reboiler	9,300
Total Project Phoenix Steam Demand	**36,300**

Table D-20: Steam Demand by Project/Plan Approval

Project	Plan Approval	Steam Demand (lb/hr)
Project Mariner and Base Facility	23-0119	210,000
Project Mariner - Deethanizer	23-0119A	62,000
Natural Gasoline Project	23-0119B	53,000
Project Mariner - Cooling Tower	23-0119C	0
New Tanks Project	23-0119D	17,000
ETP Project Revolution and SXL Depropanizer Project	23-0119E	238,700
Storage Tank Update	23-0119F	0
Crude Storage	23-0119G	0
Flare Replacement (Warm Flare)	23-0119H	0
Methanol Removal Project	RFD 6484	2,292
Project Phoenix	23-0119J	36,300
Total MHIC Steam Demand		**619,292**

Sunoco Partners Marketing & Terminals L.P.

Project Phoenix

July 2019

Emission Reduction Credits

Table D-21: ERC Accounting

Plan Approval	VOC ERC (TPY)	NO_x ERC (TPY)
Aggregated Project	-315.69	-65.92
Plan Approval 23-0119B	34.65	0.00
Plan Approval 23-0119E	56.10	32.80
Plan Approval 23-0119F	17.77	0.00
Plan Approval 23-0119H	106.83	0.00
Remaining ERCs to be Surrendered	**-100.34**	**-33.12**

*Negative numbers indicate the amount of additional ERC Credits that have or will be surrendered. Positive numbers indicate previously surrendered credits.

APPENDIX E CONTEMPORANEOUS TABLES

July 2019

Project Date: **4/1/2016**
Contemporaneous Period Begins: **4/1/2011**

Table E-1
Evaluation of Applicability of 40 CFR 52.21
Facility Emission Aggregation Occurring Within 5 Years of Application
SPMT Marcus Hook Industrial Complex

PA/RFD No.	Source Description	Date	Emission Rates							
			NO_2 (tons/yr)	SO_2 (tons/yr)	CO (tons/yr)	PM (tons/yr)	PM_{10} (tons/yr)	H_2SO_4 (tons/yr)	Lead (tons/yr)	CO_2e (tons/yr)
Marcus Hook Industrial Complex										
Pa23-0001AD	CO controls for 6 WWTA diesels	5/17/2012	0.44	0.53	-1.27	0.05	0.05			363.81
ERC Application	Shutdown of Delaware Sources (SRU1/SRU2, Ethylene Cooling Tower, 17-1P heater, 17-1P Cooling Tower)	11/5/2012	-29.29	-20.62	-17.52	-3.93	-3.93			-20,425
RFD 5597	15-2B Cooling Tower Expansion	4/11/2016	- - -	- - -	- - -	-0.04	-0.04	- - -	- - -	- - -
RFD 5597	15-2B Cooling Tower Expansion	4/11/2016	- - -	- - -	- - -	0.15	0.15	- - -	- - -	- - -
Pa23-0119F	Storage Tank Update Plan Approval	8/16/2016	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
RFD 5865	Diesel Tanks and Pumps	8/29/2016	1.56	- - -	0.32	0.03	- - -	- - -	- - -	- - -
Pa23-0119G	Crude Storage Plan Approval	Sept. 2016	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
De Minimis	Mobile Thermal Oxidizer	10/3/2016	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
De Minimis	Crude Pump	11/14/2016	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
De Minimis	Spheres S-20 and S-21 Commissioning	4/10/2018	0.06	0.00	0.28	0.00	0.00	0.00	0.00	0
RFD 6991	Temporary Dock Flaring	4/12/2018	0.32	0.00	1.46	0.00	0.00	0.00	0.00	597
Pa23-0119H	Flare Replacement Project Plan Approval	4/13/2018	7.16	0.03	32.64	0.00	0.00	0.00	0.00	14,616
De Minimis	Source ID 118 Butane Tank TOOS	8/24/2018	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
De Minimis	West Warm Flare Connections	3/22/2019	0.00	- - -	0.00	- - -	- - -	- - -	- - -	- - -
Marcus Hook Industrial Complex 5-Year (extended) Sub-total			***-19.75***	***-20.06***	***15.91***	***-3.73***	***-3.77***	***0.00***	***0.00***	**-4,848**

Project Date: **2016**
Contemporaneous Period Begins: **2012**

Table E-2
Evaluation of Applicability of 25 PA Code §127.203(b)(1)(i)
Facility Emission Aggregation for Consecutive 5 Calendar-Year Period
SPMT Marcus Hook Industrial Complex

Permit No.	Source Description	Date	Emission Rates	
			NO_x (tons/yr)	VOC (tons/yr)
Marcus Hook Industrial Complex				
Pa23-0001AD	CO controls for 6 WWTA diesels	5/17/2012	0.44	- - -
ERC Application	Shutdown of Delaware Sources (SRU1/SRU2, Ethylene Cooling Tower, 17-1P heater, 17-1P Cooling Tower)	11/5/2012	-29.29	- - -
RFD 5597	15-2B Cooling Tower Expansion	4/11/2016	- - -	- - -
Pa23-0119F	Storage Tank Update Plan Approval[1]	8/16/2016	- - -	5.65
RFD 5865	Diesel Tanks and Pumps	8/29/2016	1.56	0.01
Pa23-0119G	Crude Storage Plan Approval	Sept. 2016	- - -	13.63
De Minimis	Mobile Thermal Oxidizer	10/3/2016	- - -	1.00
De Minimis	Crude Pump	11/14/2016	- - -	0.81
De Minimis	Spheres S-20 and S-21 Commissioning	4/10/2018	0.06	0.55
RFD 6991	Temporary Dock Flaring	4/12/2018	0.32	1.17
Pa23-0119H	Flare Replacement Project Plan Approval[2]	4/13/2018	7.16	58.23
De Minimis	Source ID 118 Butane Tank TOOS	8/24/2018	- - -	1.00
De Minimis	West Warm Flare Connections	3/22/2019	0.00	0.00
Marcus Hook Industrial Complex 5-Calendar Year (extended) Sub-total			*9.54*	82.05

Notes:

[1] The Storage Tank Update Plan Approval (23-0119F) is linked to Natural Gasoline Project because the VOC emissions limits set forth for Tanks 607, 609, and 611 in the Natural Gasoline Plan Approval (23-0119B) were revised. The total shown in this table is the total VOC emissions from the tanks not associated with the Natural Gasoline Plan Approval, without any offsets applied in order to allow for a total offset accounting during the aggregated project period.

[2] The Flare Replacement Project triggered NANSR requirements for ozone for the precursor VOC. SPMT provided VOC offsets for the project and contemporaneous emissions of VOC, however, the number shown in this table is the total VOC emissions from the project without the applied offsets in order to allow for a total offset accounting during the aggregated project period.

Project Date: **2016**
Contemporaneous Period Begins: **2007**

Table E-3
Evaluation of Applicability of 25 PA Code §127.203(b)(1)(ii)
Facility Emission Aggregation Occuring Within 10 Years of Application
Marcus Hook Industrial Complex

Permit No.	Source Description	Date	Emission Rates	
			NO_x (tons/yr)	VOC (tons/yr)
Marcus Hook Industrial Complex				
eRFD 112	Inject water in CO boiler combustion zone	6/20/2007	-177.00	- - -
Pa23-0001AA	12 - 3 New Cooling Tower 10/28/2009	10/28/2009	- - -	- - -
Pa23-0001AD	CO controls for 6 WWTA diesels	5/17/2012	0.44	- - -
ERC Application	Shutdown of Delaware Sources (SRU1/SRU2, Ethylene Cooling T	11/5/2012	-29.29	- - -
RFD 5597	15-2B Cooling Tower Expansion	4/11/2016	- - -	- - -
Pa23-0119F	Storage Tank Update Plan Approval[1]	8/16/2016	- - -	5.65
RFD 5865	Diesel Tanks and Pumps	8/29/2016	1.56	0.01
Pa23-0119G	Crude Storage Plan Approval	Sept. 2016	- - -	13.63
De Minimis	Mobile Thermal Oxidizer	10/3/2016	- - -	1.00
De Minimis	Crude Pump	11/14/2016	- - -	0.81
De Minimis	Spheres S-20 and S-21 Commissioning	4/10/2018	0.06	0.55
RFD 6991	Temporary Dock Flaring	4/12/2018	0.32	1.17
Pa23-0119H	Flare Replacement Project Plan Approval[2]	4/13/2018	7.16	58.23
De Minimis	Source ID 118 Butane Tank TOOS	8/24/2018	- - -	1.00
De Minimis	West Warm Flare Connections	3/22/2019	0.00	0.00
Marcus Hook Industrial Complex 10-Calendar Year (extended) Sub-total			*-196.75*	82.05

Notes:

[1] The Storage Tank Update Plan Approval (23-0119F) is linked to Natural Gasoline Project because the VOC emissions limits set forth for Tanks 607, 609, and 611 in the Natural Gasoline Plan Approval (23-0119B) were revised. The total shown in this table is the total VOC emissions from the tanks not associated with the Natural Gasoline Plan Approval, without any offsets applied in order to allow for a total offset accounting during the aggregated project period.

[2] The Flare Replacement Project triggered NANSR requirements for ozone for the precursor VOC. SPMT provided VOC offsets for the project and contemporaneous emissions of VOC, however, the number shown in this table is the total VOC emissions from the project without the applied offsets in order to allow for a total offset accounting during the aggregated project period.

Project Date: **4/1/2016**
Contemporaneous Period Begins: **4/1/2011**

Table E-4
Evaluation of Applicability of 25 PA Code §127.203a(a)(1)(i)(A)
Facility Emission Aggregation Occurring Within 5 Years of Application
SPMT Marcus Hook Industrial Complex

PA/RFD No.	Source Description	Date	$PM_{2.5}$ Precursor Emission Rate
			NO_x (tons/yr)
Marcus Hook Industrial Complex			
Pa23-0001AD	CO controls for 6 WWTA diesels	5/17/2012	0.44
ERC Application	Shutdown of Delaware Sources (SRU1/SRU2, Ethylene Cooling Tower, 17-1P heater, 17-1P Cooling Tower)	11/5/2012	-29.29
RFD 5597	15-2B Cooling Tower Expansion	4/11/2016	- - -
RFD 5597	15-2B Cooling Tower Expansion	4/11/2016	- - -
Pa23-0119F	Storage Tank Update Plan Approval	8/16/2016	- - -
RFD 5865	Diesel Tanks and Pumps	8/29/2016	1.56
Pa23-0119G	Crude Storage Plan Approval	Sept. 2016	- - -
De Minimis	Mobile Thermal Oxidizer	10/3/2016	- - -
De Minimis	Crude Pump	11/14/2016	- - -
De Minimis	Spheres S-20 and S-21 Commissioning	4/10/2018	0.06
RFD 6991	Temporary Dock Flaring	4/12/2018	0.32
Pa23-0119H	Flare Replacement Project Plan Approval	4/13/2018	7.16
De Minimis	Source ID 118 Butane Tank TOOS	8/24/2018	- - -
De Minimis	West Warm Flare Connections	3/22/2019	0.00
Marcus Hook Industrial Complex 5-Year (extended) Sub-total			***-19.75***

APPENDIX F FLARE VENDOR SPECIFICATION

July 2019

JOHN ZINK HAMWORTHY
COMBUSTION

John Zink Reference number: 83059-A2
Regarding the Flare System for ME-2X Dual 70K project Marcus Hook, PA

For the LP Flare:

Elevated Flares by their nature do not lend themselves to direct measurement of the products of combustion using conventional techniques. The industry standards for determination of destruction or combustion efficiency of elevated flares are based on the testing conducted by the US EPA and Chemical Manufacturers from 1983 to 1985 and published in EPA document" Evaluation of the Efficiency of Industrial Flares (Sept 1985). Based on these studies the US EPA concluded that properly designed and operated flares achieve greater than 98% combustion efficiency. The EPA promulgated regulations for flares (40CFR60.18 and 40 CFR 63.11(b)) that establish guidelines for exit velocity and minimum heating value for steam assisted, air assisted and non-assisted flares to ensure proper flame stability / destruction efficiency of flares. The emissions factors obtained during this testing are published in EPA document AP42. This has become the industry standard (worldwide) for the determination of destruction efficiency of flares. Flares designed within these guidelines have been assumed to provide minimum DRE of 98%. Recent studies by the EPA and other environmental enforcement agencies have concluded that there are numerous other factors that should be considered in order to ensure that a flare is operating at high destruction efficiency including over-steaming of steam assisted flares, over-aeration of air assisted flares, high winds, and flame lift off. These studies also showed that operation at the “incipient smoke point” normally produced a DRE of 98% or better. Additionally, testing of some types of high pressure flares has indicated that this class of flare can provide consistently high combustion efficiency when proper staging control is used. It is therefore impossible to guarantee the destruction efficiency of a flare without defining all the possible flow conditions and operating conditions that the flare will be operated under.

For the HP Flare:

The proposed HP flare is designed to provide a minimum 98% hydrocarbon destruction efficiency when operated within the design guidelines. This minimum DRE is valid for flare gas containing a minimum 800 BTU/SCF net heating value and design minimum operating pressure of the HP burners. This DRE is based upon numerous US EPA certified tests of the proposed burners under similar heating value and operating pressure range. The burners used have proven to be > 99.5% DRE in most of test data we shall limit our DRE guarantee to 98% which is the requested value used for the permitting of new flare. Elevated Flares by their nature do not lend themselves to direct measurement of the products of combustion using conventional techniques. If validation of the destruction efficiency is requested testing for a single Indair arm could be offered in our test facility to prove the minimum DRE.

JOHN ZINK HAMWORTHY
COMBUSTION
John Zink Company, LLC
11920 East Apache
Tulsa, Oklahoma 74116 USA
☏ +1 832 300 2422

APPENDIX G COUNTY AND MUNICIPAL NOTIFICATIONS

July 2019

ENERGY TRANSFER

July 29, 2019

John P. McBlain, Chairman
Delaware County Council
201 West Front Street
Media, PA 19063

RE: Sunoco Partners Marketing & Terminals L.P. – Marcus Hook County Notification

Dear Mr. McBlain,

In accordance with the Commonwealth of Pennsylvania's Administrative Code, Section 1905-A, please be advised that Sunoco Partners Marketing & Terminals, L.P., located in the Borough of Marcus Hook, Delaware County, Pennsylvania, has submitted an Application for Plan Approval in order to construct and operate ethane storage tanks and associated equipment at its Marcus Hook Industrial Complex.

This letter serves to satisfy the requirements in DEP 127.43a for municipal and county notification upon application for a Plan Approval Application. A 30 day comment period begins upon receipt of this notice.

Please contact me at 610-670-3297 if you require any additional information on this matter.

Sincerely,

Jed A. Werner,
Air Permitting Manager

ENERGY TRANSFER

July 29, 2019

Josephine M. Laird
President
Borough Council
Borough of Marcus Hook
10th and Green Street
Marcus Hook, Pennsylvania, 19061

RE: Sunoco Partners Marketing & Terminals L.P. – Marcus Hook Municipal Notification

Dear Ms. Laird:

In accordance with the Commonwealth of Pennsylvania's Administrative Code, Section 1905-A, please be advised that Sunoco Partners Marketing & Terminals, L.P., located in the Borough of Marcus Hook, Delaware County, Pennsylvania, has submitted an Application for Plan Approval in order to construct and operate ethane storage tanks and associated equipment at its Marcus Hook Industrial Complex.

This letter serves to satisfy the requirements in DEP 127.43a for municipal and county notification upon application for a Plan Approval Application. A 30 day comment period begins upon receipt of this notice.

Please contact me at 610-670-3297 if you require any additional information on this matter.

Sincerely,

Jed A. Werner,
Air Permitting Manager