SFPP, L.P.
Air Quality Operating Permit 1674

Technical Support Document

I. General Comments:

A. Company Information

1. SFPP, L.P.

2. Source Address: 3841 E. Refinery Way, Tucson, AZ 85713.
   Mailing Address: 1100 Town & Country Road, Suite 700, Orange, CA 92868.

B. Background

SFPP, L.P. Tucson Terminal (SFPP) is a bulk fuel products distribution terminal with storage tanks, loading racks and other associated equipment (including air pollution control equipment). The terminal receives petroleum fuel products via pipeline or truck, and blends products with additives and oxygenates prior to distribution. The final fuel is loaded into truck cargo tanks. Petroleum products are received directly via an interstate pipeline originating in Texas. Ethanol (an oxygenating additive) may be received by railcar or truck while other additives are typically received by truck. The terminal does not process any incoming materials and is thus not classified as a refinery.

SFPP may add customer or supplier specific additives at the time that products are dispensed at the loading racks. Materials and products handled at the terminal are various grades of gasoline, diesel, transmix, aviation fuels, ethanol (an oxygenating additive), and other customer-specific proprietary and generic fuel additives. The terminal operates continuously in all phases described therefore loading racks are available for customer trucks on a 24/7 basis.

This is the first renewal of the Title V air quality operating permit issued to SFPP and includes a significant revision to modify the existing permit to incorporate the existing assets formerly owned by Chevron (Permit # 1767) and acquired by SFPP in October of 2010. The former Chevron facility is contiguous to the SFPP, L.P. terminal and includes a number of storage tanks, a loading rack with a dedicated vapor recovery system, a railcar unloading station, and ancillary equipment which are similar equipment and operate under the same Standard Industrial Classification Code. A permit transfer application was submitted and approved by PDEQ to transfer the assets, permit, and operations to SFPP. This is the first acquisition made by SFPP since the issuance of the Title V permit. The previous Chevron, air quality operating permit limited throughput through the loading rack (LR-5) to 120,000,000 gallons of gasoline. The addition of the former Chevron assets into a single unified Title V operating permit does not involve a physical change or change in the method of operation at either facility. With this renewal SFPP is proposing the same synthetic throughput limitation through the acquired loading rack that existed in the former permit.

Air pollution sources at the facility include point and fugitive emissions sources as a result of the storage, handling, and transfer of fuel and additives into cargo tank trucks, the processing fuel vapors collected by the loading racks, and from the landing and refilling of 5 "drain-dray" storage tanks at the facility. The facility contains 38 active above ground fuel storage tanks, five truck loading racks, a thermal oxidizer, a vapor recovery system, rail car and truck offloading equipment for denatured alcohol, a pipe flow meter "prover" system with associated sump, and facility oil/water separator systems. SFPP has proposed an operational limit of 1.12 billion gallons of all products through the loading racks. Gasoline products will compose 90% of the total throughput.

The facility is a categorical major source of VOC, a synthetic minor source of hazardous air pollutants (HAP), and a true minor source of all other criteria pollutants.

Table 1: Summary of Permit Actions
(Within the Previous Permit Term)

Date Received	Permit Action
09/24/2007	1674-5P: Facility Change w/o Revision: Notification and approval to add Drag Reducing Agent (DRA) storage tank and delivery system skid to insignificant activities list.
05/09/2008	1674-6P: Minor Revision: Application to replace thermal oxidizer and establish 250 F as minimum temperature operating parameter of the new thermal oxidizer.
10/07/2009	1674-8P: Facility Change w/o Revision: Notification and approval to replace DRA tank and delivery system for the pipeline drag reducing agent skid.
12/04/2009	1674-9P: Facility Change w/o Revision: Notification and approval to use of portable thermal oxidizer to control emissions of VOC's during tank degassing.
05/12/2010	1674-11P: Facility Change w/o Revision
09/01/2010	1674-12P: Transfer Application: Application to transfer former Chevron assets formerly operating under permit #1767, Class II air quality operating permit.
09/07/2010	1674-13P: Facility Change w/o Revision: Notification and approval to use of portable thermal oxidizer to control emissions of VOC's during tank degassing.
10/21/2010	1674-14P: Amendment: Added Mark J. Sandon as Responsible Official
10/21/2010	1674-15P: Facility Change w/o Revision
10/25/2010	1674-16P: Other Notification Notification of the future consolidation of Chevron assets formerly operating under permit #1767 and submittal of significant revision application to consolidate under permit #1674.
01/12/2011	1674-OR-1: Notification of Compliance Status Report Submittal of GD GACT Notification of Compliance Status for Tucson Terminal including former Chevron affected facilities.
03/07/2011	1674-17P: Significant Revision Significant revision to incorporate adjacent former Chevron facility assets into permit #1674, Class I, Title V operating permit.
11/22/2011	1674-18P: Permit Renewal Application. Off-spec product off-loading included in the list of permitted equipment. Facility wide emissions of regulated air pollutants reviewed. PDEQ accepts the resulting increase in emissions due to emission factor updates and the permitting of additional equipment.
11/01/2011	1674-19P: Facility Change w/o Revision Notification and approval of temporary use of portable thermal oxidizer to control emissions of VOC's during tank degassing.
01/17/2012	1674-20P: Facility Change w/o Revision Temporary use of portable thermal oxidizer to control emissions of VOC's during tank degassing.
03/06/2012	1674-21P: Facility Change w/o Revision Temporary use of portable thermal oxidizer to control emissions of VOC's during tank degassing.
07/05/2012	1674-22P: Facility Change w/o Revisions Replacement of the mechanical shoe primary seal on Tank T-15
08/07/2012	1674-23& 24P: Other Notification Proposed addition of a portable thermal oxidizer at the Tucson Terminal and recordkeeping provision for 293 annual operating hours. Addition of Responsible Official.

Date Received	Permit Action
08/29/2012	1674-25P: Facility Change w/o Revision Installation of a new OWS to replace and existing OWS
11/19/2013	1674-26P: Facility Change w/o Revision Revision to replace secondary seal on Tank T-34. The existing rim-mounted wiper secondary seal replaced by a rim-mounted compression plate type seal.

C. Attainment Classification

SFPP is located in a region that is designated attainment for all criteria pollutants.

II. Source Description

A. Process Description

SFPP is a bulk fuel terminal that receives petroleum products in 38 active storage vessels (2 are currently out of service) via pipeline and tanker trucks. Petroleum products are then distributed to tanker trucks through loading racks or to manifolds serving adjacent customer's tanks. The facility operates five "drain dry" tanks that receive and store fuel from pipelines entering Arizona from the East and transfer product internally to designated terminal storage tanks. While the five drain dry tanks do not currently distribute fuel products to the loading racks, the Tucson terminal facility can operate to transfer fuel from these tanks to the loading racks and is considered in the emission inventory for the facility. Other products (such as fuel additives and ethanol) are received by tanker trucks and railcars.

The significant air pollutant emitting equipment at the Tucson Terminal consists of the following:

- Thirty-eight active and two out of service petroleum product aboveground storage tanks including a vapor bladder tank (T-24) associated with one of the vapor collection and control systems at the facility;
- Five truck loading racks equipped with vapor collection and processing capability;
- One John Zink carbon adsorption unit;
- One John Zink thermal oxidizer unit;
- One pipe flow meter "prover" system with one associated sump;
- Contact water systems consisting of :
    - Four oil/water separators and associated sumps
    - Two underground sumps identified as the Wastewater and Transmix sumps which function together as an oil water separation system;
- Railcar and truck offloading equipment for denatured ethanol and off spec product.

B. Operating Capacity and Schedule

The operating capacity of the facility is limited by the by the volume of gasoline that can be loaded into the tanker trucks from the loading racks under continuous operation. The throughput capacity of the loading racks is physical constrained by the number trucks that can be physically loaded in the loading rack bays rather than the nominal pumping capacity of the loading arms and piping. For purposes of estimating emissions, the PTE of the loading racks is calculated using the maximum number of tanker trucks that can be loaded in each bay (three 8400 gallon tanker trucks in each bay in one hour) with the loading racks operating 24 hours a day, 7 hours a days a week, and 360 days a year (minus holidays). The rate of tanker truck loading in actual practice is lower. There are no limitations on the facility operating schedule.

Maximum throughput through the loading racks LR-1, LR-2, LR-3, LR-4 was estimated to be 870,912,000 gallons of combined products (90% as gasoline, and 10% as diesel). The maximum throughput of loading rack LR-5 was estimated as 120,000,000 gallons of gasoline and 321,504,000 gallons of diesel, jet fuel, or other low vapor pressure products. The fugitive storage tank emissions estimates were conservatively estimated using 1.12 billion gallons/year of gasoline through each of the gasoline or multiproduct storage tanks and 896,000,000 gallons/year of diesel/jet fuel through each of the diesel/jet fuel product storage tanks.

The applicant has accepted the following voluntary throughput limitations on the loading racks to avoid classification as a major source of HAPs and the applicability of 40 CFR Part 63, Subpart R – National Emission Standards for Gasoline Distribution Facilities (Bulk Gasoline Terminals and Pipeline Breakout Stations). The throughput limitation is also contingent upon the facility not using MTBE to oxygenate gasoline at the facility.

- The combined annual throughput of all products through loading racks LR-1 through 5 will be limited to 1.12 billion gallons in any consecutive 12 month period.

- The annual throughput of gasoline (including oxygenate and additives) through LR-5 will be limited to 120 million gallons in any consecutive 12 month period.

C. Air Pollution Control Equipment

There are two primary Air Pollution Control Devices (APCDs) in use at the source to collect and process gasoline vapors from the loading of tank trucks and the refilling of the terminal drain dry tanks. A thermal oxidizer and a Vapor Recovery System (VRS) consisting of a carbon adsorption unit and gasoline vapor absorption system. The thermal oxidizer processes vapors captured from loading racks LR-1, LR-2, LR-3, and LR-4 and the drain dry tanks T-6, T-7, T-8, T-14, and T-25. The VRS unit collects and processes vapors collected from loading rack LR-5.

III. Emission Estimates

Potential to Emit with Controls (Tons/yr) (See Attachment 1 for detailed emission estimates)									
Emission Sources	**PM_{10}**	**$PM_{2.5}$**	**NO_X**	**SO_2**	**CO**	**VOC**	**HAP Total**	**HAP Single**	**GHG[2]**
Storage Tanks Fugitives	-	-	-	-	-	79.02 [1]	4.15	1.26	-
Loading Rack/Truck Fugitives	-	-	-	-	-	74.12	3.89	1.19	-
John Zink Thermal Oxidizer (Includes vapors displaced from Drain Dry Tank turnovers)	0.44	0.44	16.40	0.26	41.00	37.39	1.98	0.60	1.1218×10^7
John Zink Vapor Recovery System	-	-	-	-	-	17.46	0.92	0.28	-
Ethanol Offloading Pump Sleeves	-	-	-	-	-	4.84	0.25	0.08	-
Piping Component Fugitives	-	-	-	-	-	3.29	0.17	0.05	-
Oil/Water Separators	-	-	-	-	-	1.15	0.06	-	-
Pipeline Meter Prover and Sump	-	-	-	-	-	0.20	0.01	-	-
Transmix Sump	-	-	-	-	-	0.03	-	-	-
WW Sump	-	-	-	-	-	0.03	-	-	-
Water Tank	-	-	-	-	-	0.52	-	-	-
Onsite portable thermal oxidizer rated at 50 MMBTU/hr; Fuel: LPG, Propane. or Butane	0.02	0.02	1.0	0.36	0.25	0.02	-	-	450
Facility Wide Total	**0.46**	**0.46**	**17.40**	**0.62**	**41.25**	**218.07**	**11.43**	**3.46**	**1.122×10^7**

1 The majority of the storage tank fugitive emissions are from annual standing losses from gasoline storage tanks (71.65 tpy), working losses for the tanks were estimated by using the worst case working losses through Tank T-18 and T-40 as modeled using 4.09d for gasoline and diesel respectively and using the maximum annual facility wide throughput volume in gallons through each respective storage tank.

2 GHG emissions based on total annual throughput through the thermal oxidizer using EPA published data.

IV. Applicable Requirements

Code of Federal Regulations:

40 CFR, Part 60 Standards of Performance for New Stationary Sources

Subpart A	General Provisions
Subpart Ka	Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978
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
Subpart XX	Standards of Performance for Bulk Gasoline Terminals
Appendix A	Test Methods
Appendix B	Performance Specifications

40, CFR, Part 63 National Emission Standards for Hazardous Air Pollutants for Source Categories

Subpart A	General Provisions
Subpart 6B	National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Distribution Bulk Terminal, Bulk Plants, and Pipeline Facilities

40, CFR, Part 64 Compliance Assurance Monitoring

Pima County Code, Title 17, Chapter 17.12 – Permits and Permit Revisions:

Article I – General Provisions

17.12.010	Statutory Authority.
17.12.020	Planning, Constructing, or Operating Without a Permit.
17.12.035	Affirmative defenses for excess emissions due to malfunctions, startup, and shutdown.
17.12.040	Reporting requirements.
17.12.045	Test methods and procedures.
17.12.050	Performance tests.
17.12.080	Permit Display or Posting

Article II – Individual Source Permits

17.12.160	Permit application processing procedures for Class I permits.
17.12.180	Permit contents for Class I permits.
17.12.190	Permits Containing synthetic emission limitations and standards.
17.12.220	Compliance plan – Certification.
17.12.230	Facility Changes allowed without permit revisions Class I.
17.12.255	Minor Permit Revisions.
17.12.260	Significant Permit Revisions.
17.12.270	Permit reopenings – revocation and reissuance – termination.
17.12.280	Permit renewal and expiration.
17.12.310	Permit shields.

Article II – Individual Source Permits (continued)

17.12.320	Annual emissions inventory questionnaire.
17.12.350	Material permit condition.

Article VI – Fees

17.12.510	Fees related to Class I permits.

Pima County State Implementation Plan (SIP):

SIP Rules:	224, 302, 315, 316, 318, 321, 343, 344

Pima County Code, Title 17, Chapter 17.16 – Emission Limiting Standards

Article I – General Provisions

17.16.010	Local rules and standards – Applicability of more than one standard.
17.16.020	Noncompliance with applicable standards.
17.16.030	Odor limiting standards.

Article II – Visible Emission Standards

17.16.040	Standards and applicability (includes NESHAP).
17.16.050	Visibility limiting standard.

Article III – Emissions from Existing and New Nonpoint Sources

17.16.060	Fugitive dust producing activities.
17.16.070	Fugitive dust emissions standards for motor vehicle operation.
17.16.080	Vacant lots and open spaces.
17.16.090	Roads and streets.
17.16.100	Particulate materials.
17.16.110	Storage piles.

Article IV – New and Existing Stationary Source Performance Standards

17.16.130	Applicability.
17.16.230	Standards of performance for storage vessels for petroleum liquids.
17.16.400	Organic solvents and other organic materials.
17.16.430	Standards of performance for unclassified sources.

Pima County Code Title 17, Chapter 17.20 – Emissions Source Testing and Monitoring

17.20.010	Source sampling, monitoring and testing.
17.20.040	Concealment of emissions.

Pima County Code Title 17, Chapter 17.24 – Emissions Source Recordkeeping and Reporting

17.24.020	Recordkeeping for compliance determination.

V. Permit Changes and Applicability Determinations.

1. Permit and Permit Summary:

   The permit and summary was modified to include the acquisition of the terminal and assets formerly owned and operated by Chevron (permit #1767). The former Chevron terminal permit incorporated a voluntary throughput limitation of 120 million gallons of gasoline including additives and oxygenates through its loading rack. The renewal permit includes the combined facilities, and the prior limitation in permit # 1767 remains unchanged. The throughput limitation has been included under II.G.1.b and is applicable to loading rack LR-5 and is the underlying basis for the emission estimates for that portion of the Facility Wide PTE.

   The combined facility does not trigger any requirements for new major sources or major modifications to existing sources under the rules in 40 CFR §52.21 - Prevention of significant deterioration of air quality (PSD) requirements since the facility has not been physically changed and/or changed in the manner of operation that resulted in a significant net emissions increase of any air pollutant.

   The former chevron facility was previously a non-categorical minor source of VOC, and not required to estimate fugitive emissions in their PTE. The estimates of fugitive emissions from the former Chevron terminal (permit #1767) are included with this renewal permit.

2. Applicability:

   This section of the permit was modified to provide a reference for the applicability of the CFR rules to the affected facilities and to organize the permit sections. Condition I.A.4.d of Part B is a voluntary limitation that has been added to clarify that the GD GACT will apply to the facility storage tanks and equipment that handle transmix, or are listed by the permit in multiproduct service that includes gasoline.

3. Section A – Sources subject to GD GACT:

   This section was added to the permit to incorporate applicable requirements in 40 CFR 63, Subpart BBBBBB to the permit.

4. Section F – Air Pollution Controls:

   This section was added to the permit to incorporate applicable requirements from 40 CFR 64 – Compliance Assurance Monitoring (CAM) and the respective CAM plans in Attachment 2 of the renewal permit for the John Zink thermal oxidizer (TO) and vapor recovery system (VRS) control devices operating at the facility.

5. Section G - Facility Wide Operations:

   This section was added to the permit to incorporate the applicable County and facility terminal specific provisions that fall outside the source category rules in the CFR.

   This section includes the following:

   - Voluntary limitations taken by the facility to remain a minor source of HAPs are provided in II.G.1.a and b. A notification requirement in condition II.G.1.c of Part B was added to clarify that the PTE and minor source HAPs status of the facility is dependent on the gasoline throughput of the facility and not using reformulated or oxygenated gasoline containing MTBE. Use of MTBE reformulated or oxygenated gasoline would subject the source to the rules in 40 CFR 63, Subpart R and 40 CFR 61, Subpart V – Equipment Leaks (Fugitive Emission Sources).

- A previous permit condition to record the number of turnovers (roof landings) of the terminal drain dry tanks was moved to IV.G.4 of Part B. The permit was modified to add a voluntary limit in II.G.1.d of Part B to limit the number of turnovers (roof landings). A complimentary monitoring condition was also added in III.G.1of Part B.

- A voluntary condition was also added to the renewal permit to limit, monitor, and record the annual operating hours of an onsite portable thermal oxidizer used for degasing storage tanks emptied for repairs.

- County and SIP rules were added for fugitive dust that apply to facility nonpoint sources as well as general provisions to include VOC handling and odor.

  Note: In Attachment 2, the Permittee has identified vacant lots and/or open spaces that are contiguous to the facility and requested that PDEQ clarify if the areas are considered undisturbed land as provided in I.G.6.b.ii of Part B which provides a locally enforceable exemption for undisturbed land from the visibility limiting standard.

  For the purpose of this permit, it is PDEQ's position that undisturbed land means: "land that has not been the subject of human activity that has changed the land surface such that it is clear or observable". Currently, some of the areas identified in Attachment 2 contain observable areas that have been disturbed by human activity or development, while other areas appear to be relatively undisturbed. In the event of a complaint or identified deficiency with the visibility limiting standard, the undisturbed land exemption in I.G.6.b.ii of Part B will be determined by inspection on a case-by-case basis.

6. CAM Plans:

The Cam plans for the PSEU's were modified and added as attachments in a standard outline form. The Cam Plan for the VRS at the previous Chevron facility was also added. The two PSEU's are the primary control devices for the facility loading racks. The CAM Plan operating limits equal or exceed the applicable operating parameter limits in the NSPS and NESHAP source category rules in the CFR. Conditions were modified to clarify the indicators, minimum data collection, and maintenance requirement thresholds that constitute excursions or exceedances.

VI. Periodic Monitoring.

The semiannual summary report of required monitoring condition in V.G.2 of Part B has been modified from the previous permit condition to include the semiannual report requirements in 40 CFR Part 63, Subpart BBBBBB, and the monitoring of the facility wide voluntary limitations. For all other monitoring required by the source category rules in the CFR, the permit requires the facility to maintain the required monitoring records on site as provided in IV.G.6 of Part B of the Permit.

VII. Insignificant Activities.

The insignificant activities listed in Attachment 4 of the renewal permit have been determined by the Control Officer as not necessary to be included (based on size or production rate) in an application in order to determine all applicable requirements and to calculate fees under Title 17 of the Pima County Code.

Attachment 1

Pages from Application dated November 22, 2011,
Pages 15 through 27 – Section 6.0 Emission related information,
Emission Inventory Calculation Tables, Appendix A,
Tanks 4.0.9d Total Emissions Summaries,
and Approval of Onsite Portable Thermal Oxidizer and Emission Estimates.

6.0 EMISSIONS-RELATED INFORMATION

Emissions of regulated pollutants from sources at the Tucson Terminal have been quantified based on the procedures and assumptions described in this section. Anticipated maximum hourly and annual emissions from significant emission sources at the Tucson Terminal are listed in the "Emission Source" tables provided with the Standard Application Form. The emission inventory calculation tables and supporting information are presented in Appendix A.

The Tucson Terminal proposes in this application a voluntary limitation on product throughput that is less than the level corresponding to the facility potential to emit (PTE) based on the physical design of the equipment. The combined annual throughput of Loading Racks LR-1 through LR-5 at the Tucson Terminal is to be limited to a total throughput of all products combined of 1.12 billion gallons in any consecutive 12-month period. Absent these voluntary limitations on throughput, the potential to emit would be derived from the rated pumping capacity of loading arms and the maximum number of arms that can be operated simultaneously. For bulk terminals of this type, this method is overly conservative and gives an unrealistically high throughput estimate that is not representative of facility operations.

These limits are not intended to constrain the facility operating schedule. Loading Racks LR-1 through LR-5 will continue to be available for delivery of product to customer tank truck vehicles on a 24 hours/day, 365 days/year operating schedule. These operational throughput limits would be voluntarily accepted by SFPP to avoid otherwise applicable requirements, specifically 40 CFR Part 63, Subpart R -*National Emission Standards for Gasoline Distribution Facilities (Bulk Gasoline Terminals and Pipeline Breakout Stations.*

The loading rack operational limit determines many of the other equipment process rates that are needed to determine and regulate emissions. There is no significant fuel burning equipment located at the Tucson Terminal. Internal combustion engine-driven equipment is identified as Insignificant Activities.

The annual throughput of loading rack identified as LR-5 will continue to be limited to a total of 120,000,000 gallons during any consecutive 12-month period for gasoline (including oxygenate and additives). In addition, SFPP estimates that another 321,504,000 gallons of diesel, jet fuel or other low vapor pressure product may be loaded during any consecutive 12-month period for a total product throughput of 441,504,000 gallons. The additional throughput is based on the assumption that three tanker trucks may load in each of the two bays in one hour (approximately 20 minutes per tanker truck) each with a capacity of approximately 8400 gallons. This was multiplied times 365 days/year to develop an annual throughput.

SFPP will maintain, and have available for inspection, accurate monthly throughput records for the loading racks at the Tucson Terminal. The product throughput records will include the date, throughput per month in gallons by product, and the current 12-month cumulative throughput. The 12-month total throughput will be calculated no later than 20 days after the end of each operating month. A summary of these records will be included in the facility annual Compliance Report.

Table 6-1: Maximum Annual and Hourly Process Rate Estimates for Emission Units at the Tucson Terminal

Equipment	Max. Anticipated Annual Process Rate	Max. Rated Hourly Process Rate
Loading racks (LR-1, LR-2, LR-3, and LR-4)	1,000,000,000 gallons/year of all products for four racks combined	Each arm of the loading racks has a design capacity of 600 gpm, or 36,000 gallons per hour
Loading rack LR-5	120,000,000 gallons/12–month period for gasoline (including oxygenate and additives). 321,504,000 gallons/12-month period of diesel, jet fuel, or other low vapor pressure product	8400 gallons per 20 minutes. (25,200 gallons/hr)
Storage tanks, not including drain dry tanks (as listed in Table 1-1)	1,000,000,000 gallons/year of all products for this group tanks	Not calculable, as tanks receive and dispense contents in multiple configurations
Drain dry tanks (T-6, T-7, T-8, T-14, T-25)	50 turnovers per year	Not calculable, as tanks receive and dispense contents in multiple configurations
John Zink Thermal Oxidizer	Receives a maximum of 2,628,000,000 gallons of liquid suspended as vapor. Actual amount depends on relative activity of LR-1, LR-2, LR-3, and LR-4 and drain dry tanks	300,000 gallons/hr gasoline vapors (5,000 gpm)
John Zink Carbon Adsorption Unit	620.0 million gallons/year of saturated vapor, if all operated continuously at maximum hourly rate	70,800 gallons/hr gasoline vapors
Oil/water separators (OWS-1, OWS-2, OWS-3, OWS-4)	30 barrels per day per separator	10,950 barrels per year per separator (459,900 gal/yr per separator)

With the operational limit on throughput in place, the results of emission calculations demonstrate that the Tucson Terminal is not a major source of Hazardous Air Pollutants (HAPS). The estimated total HAP emissions are below 25 tons per year, and the emission of any single HAP is below 10 tons per year. These results support the determination that the National Emission Standards for Hazardous Air Pollutants (NESHAP) and Gasoline Distribution Maximum Available Control Technology (MACT) requirements are not applicable to the Tucson Terminal. The facility, however, is subject to GDGACT requirements.

6.1 Point Source Emissions

6.1.1 John Zink Thermal Oxidizer

The captured hydrocarbon emissions from operation of four loading racks (LR-1, LR-2, LR-3, and LR-4) and the re-filling of five drain dry tanks (T-6, T-7, T-8, T-14, T-25) are collected and controlled through the use of a vapor processing system. Each time a drain dry tank is emptied, the internal floating roof or pan settles onto a number of piers or legs to keep it off the floor of the tank. When the tank subsequently refills with product, this action causes air trapped in the vapor space below the supported roof to be displaced. From the drain dry tank the displaced air is passed through an 11,750 gallon saturator tank (V-3), which is simply a gas-liquid contactor that saturates the stream with gasoline. The saturator tank is not vented to atmosphere, and is not an emissions source.

Vapors exiting the saturator are stored in a vapor holding tank, also termed a "bladder" tank (T-24). Captured vapor from the three truck loading racks is passed through a 10,500 gallon saturator tank, which is simply a gas-liquid contactor that saturates the stream with gasoline. The saturator tank is not vented to atmosphere, and is not an emissions source and is then routed to this holding tank. The vapor holding tank unit is constructed as a conventional steel shell with a sealed expandable inner bladder. The volume of the bladder tank expands as hydrocarbon vapors enter, until a pre-set level limit is reached. Level controls on the bladder tank ensure proper delivery of an adequate quantity of the saturated vapors to the burner of the John Zink thermal oxidizer. The bladder tank, because of its sealed design, does not emit air pollutants

The John Zink thermal oxidizer receives and combusts the saturated hydrocarbon vapors fed from the holding tank. The unit does not burn supplemental fuel, but relies solely on the saturated stream supplied by the holding tank to sustain the combustion process. The saturated vapor from the holding tank is introduced via a control valve system to the burner inside the firebox at the base of the flare enclosure. The combustion exhaust is discharged to the atmosphere through the open top of the cylindrical combustion chamber.

Exhaust from the thermal oxidizer includes emissions of unconverted VOC and other regulated pollutants, NO_X, CO, SO_X, and PM_{10}. Emissions of VOC from this vapor collection and processing system are based on manufacturer guarantee of 0.0835 lbs/ 1000 gallons of gasoline loaded. Performance tests on the thermal oxidizer in past years have confirmed that the thermal oxidizer can meet this emission limitation. Emissions of PM are based on AP-42 -, Section 5, Liquefied Petroleum Gas Combustion, Table 1.5-1. Emissions of PM were calculated by converting the VOC vapors to propane that has the same Btu content. Emissions of Sulfur dioxide are based on sulfur balance assuming all of the sulfur in the vapors is converted to SO_2.

Table 6-2 and 6-3 summarize the emission calculations for the gases exhausted through the thermal oxidizer from drain dry tanks. Table 6-4 and 6-5 provide calculations for emissions from the thermal oxidizer associated with vapor exhausted form loading racks. Emission factors for thermal oxidizer were utilized to calculate these emissions.

Table 6-2: PTE of Drain Dry Tank Vapors Processed at the Thermal Oxidizer (TO)

Tank	Turnovers	Heel Space (1000 gal)	Annual Heel Space Vapor (1000 gal)	Vapor EF (lb/1000 gal)	Controlled VOC Emissions (lbs/yr)	VOC Uncontrolled EF (lb/1000 gal)	VOC's into TO (lbs)	VOC's sent to TO converted to Propane (1000 gal)
T-6	150	154.5	23178	0.0835	1935.3	5.79	134182	34.4
T-7	150	164.8	24716	0.0835	2063.8	5.79	143089	36.7
T-8	150	165.8	24869	0.0835	2076.5	5.79	143972	36.9
T-14	150	60.5	9072	0.0835	757.5	5.79	52520	13.5
T-25	150	196.1	196	0.0835	2456.5	5.79	170319	43.7

Table 6-3: PTE for Criteria Pollutants of Drain Dry Tank Vapors Processed at the Thermal Oxidizer (TO)

Tank	Emission Factors				Emissions			
	NO_X (lb/1000 gal)	CO (lb/1000 gal)	SO^2 (lb/lb of vapor)	PM (lb/1000 gal)	NO_X (lb/yr)	CO (lb/yr)	SO^2 (lb/yr)	PM (lb/yr)
T-6	0.0334	0.0835	9.00E	0.6	774.1	1935.3	12.1	20.6
T-7	0.0334	0.0835	9.00E	0.6	825.5	2063.8	12.9	22.0
T-8	0.0334	0.0835	9.00E	0.6	830.6	2076.5	13.0	22.2
T-14	0.0334	0.0835	9.00E	0.6	303.0	757.5	4.7	8.1
T-25	0.0334	0.0835	9.00E	0.6	982.6	2456.5	15.3	26.2

Table 6-4: PTE of Loading Racks 1, 2, 3 and 4 Vapors Processed at the Thermal Oxidizer (TO)

Commodity	Annual Throughput (1000 gals)	Uncontrolled Diesel Emission Factor (lb/1000 gals)	Annual Uncontrolled Diesel Emissions (lbs)	Emission Factor Gasoline (lbs/1000 gal)	Control Efficiency for Diesel	Annual Emissions (lbs)
Gasoline	783,821	N/A	N/A	0.0835	N/A	65,449
Diesel	87,091	0.0405	3,522.7	N/A	0.99	35.2

Note: Maximum Daily throughput = 4 lanes x 3 trucks per lane x 24 hours per day x 8400 gallons per truck

Table 6-5: PTE for Criteria Pollutants of Loading Rack 1, 2, 3, and 4 Vapors Processed at the Thermal Oxidizer (TO)

Commodity	Emission Factors				Emissions			
	NO_X (lb/1000 gal)	CO (lb/1000 gal)	SO^2 (lb/lb of vapor)	PM (lb/1000 gal)	NO_X (lb/yr)	CO (lb/yr)	SO^2 (lb/yr)	PM (lb/yr)
Gasoline	0.0334	0.0835	9.00E-05	0.6	29,088.5	72,721.3	453.8	775.8

6.1.2 John Zink Carbon Adsorption Unit

The captured hydrocarbon vapors from a single loading rack (LR-5) are routed to vapor processing system that consists of a John Zink Carbon Adsorption Unit (CAU). The hydrocarbon/air mixture is then drawn through one of two activated carbon adsorbers. As the hydrocarbon/air mixture flows upward through the adsorbing bed, hydrocarbon molecules are adsorbed onto the activated carbon granule surfaces and are removed from the stream. The cleansed air is discharged to the atmosphere through a vent pipe at the top of the adsorber. At approximately 15 minute intervals, the active and inactive carbon beds switch and the carbon in the bed not actively processing vapors is regenerated by pulling a vacuum on the bed and reabsorbing the hydrocarbons in gasoline.

Estimation of VOC emissions from this vapor collection and processing system are based on the NSPS emission standard of 35 mg VOC/1000 L loaded (NSPS rule 40 CFR 60.502(b)). In English units, this is equivalent to 0.29 lb VOC/1000 gal loaded. Performance tests for the carbon adsorber system in past years have confirmed that the JZCAU can meet this emission limitation. The HAP emissions from the CAU have been calculated based on accepted gasoline species profiles in EIIP Guidance for Emissions Inventory Development - Gasoline Marketing (Stage I and Stage II), Vol. III, Chapter 11 (Eastern Research Group, Jan. 2001). There are no emissions of other regulated air pollutants from the JZCAU. Detailed emission calculations for the JZCAU are presented in Table 6-6.

Table 6-6: PTE of Loading Rack 5 Vapors Processed at the Carbon Adsorption Unit

Commodity	Annual Throughput (1000 gals)	Uncontrolled Diesel Emission Factor (lb/1000 gals)	Annual Uncontrolled Diesel Emissions (lbs)	Emission Factor Gasoline (lbs/1000 gal)	Control Efficiency for Diesel	Annual Emissions (lbs)
Gasoline	120,000	N/A	N/A	0.29	N/A	34,800
Diesel	315,456	0.0405	12,759.8	N/A	0.99	127.6

6.1.3 Pipeline Meter-Prover and Sump

A fixed-volume meter "prover" is operated at the Tucson Terminal to measure and verify measurement of the liquid transported by pipelines. The prover-is a horizontal pipe circuit containing a precisely known volume of 35 barrels. The prover circuit empties into a small (100 bbl volume) sub-surface sump (S-1) with an open atmospheric vent, which represents the point source for this emissions unit. A vapor balance approach was used to estimate the emissions from the prover, which are released from the vent of the sub-surface sump.

At the beginning of each prover calibration run, the pipe circuit contains only saturated vapor. When the liquid received from the underground pipeline is routed to run through the prover, the hydrocarbon vapors in the prover are expelled by the incoming liquid and discharged to the atmosphere by way of vents in the prover and the sump.

As required for maintenance or inspections, the contained liquid is drained to the sub-surface sump and stored. When the sump is refilled, additional hydrocarbon vapors in the sump head space are expelled to the atmosphere through the open vent. The active or "breathing" losses during a single prover calibration cycle are estimated as a saturated vapor volume equal to twice the prover circuit volume of 35 bbl. Calculation of the prover calibration test cycle emissions assume the prover is measuring gasoline flow, which is the product having the highest emissions per cycle. Based on review of plant operation, execution of one prover calibration cycle per month is representative of the highest practical level of operation. Normally, a prover calibration cycle is performed every few months.

As shown in the calculations provided in Table 6-7 and Table 6-8, the residual gasoline vapors before and after a test cycle are assumed to be at atmospheric pressure and temperature. The Ideal Gas Law was used to estimate the weight of vapor in the prover circuit, and double this amount is the weight of vapor emitted per cycle.

Table 6-7: PTE VOC Emissions for Prover Operation

No. of Test per Year	Volume per Test		True Vapor Pressure		MW of Vapor (g/mole)	Ambient Temp.		VOC Emission per Test		Annual VOC Emission	
	(Gallons)	(m^3)	(PSI)	(kg/m^2)		(°F)	(K)	(gram)	(lbs)	lbs/yr	tpy
12	1,470	5.565	6.372	43,932	66	68.4	293	6,618	14.6	175	0.1

Table 6-8: PTE VOC Emissions for Prover Drainage Sump

Product	Throughput (1000 gal)	EF (lb/1000 gal)	VOC Emissions (lbs/yr)	VOC Emissions (tpy)
Gasoline	17.64	12.5	221	0.1

6.1.4 Oil/Water Separators

There are four oil/water separators (OWS-1, OWS-2, OWS-3, OWS-4) and associated sumps at the Tucson Terminal. To estimate annual and hourly emissions from the separator vents, an emission factor characterizing oil/water separators at refineries was obtained from Section 5.1 of U.S. EPA Document AP-42. Annual and maximum hourly emissions were based on the highest probable daily water throughput of 30 Barrels (1,260 gallons) per day per separator. Potential to emit calculations for the four pieces of equipment are provided in Tables 6-9.

Table 6-9: PTE VOC Emissions for 4 Oil/Water Separators

Throughput (1000 gals)	EF lbs/1000 gal	Annual PTE (lbs/yr)	Annual PTE (lbs/yr)
460	5	2299	1.15

6.1.5 Ethanol Offloading Pump Sleeves

There is one location at the Tucson Terminal where ethanol is offloaded from tank trucks. An offloading station is provided at LR-2, from which the ethanol is transferred to bulk storage tanks. The "pump sleeves" serving these stations are 10 -12 inch diameter pipes that are purged of residual ethanol vapor at the beginning of each truck delivery. The number of loading per years is based upon gasoline throughput at the loading racks. Annual gasoline throughput at the loading racks (Loading Racks 1, 2, 3, 4, and 5) are estimated to be 903,821,000 gallons. It is estimated the ethanol throughput would be approximately 10% of the total loading rack annual gasoline throughput. The resulting volume is then divided by the volume of a tanker truck, approximately 8,400 gallons, resulting in the estimated maximum potential number of loadings per year. The purge emissions represent a point source of VOC emissions which are shown in Table 6-10.

A rail car ethanol unloading station is also in operation at the Tucson Terminal. Offloading is done by connecting a pump to the offloading car and going directly to the tank. There is no pump sleeve or sump involved with this operation. The rail car ethanol unloading station is included in Section 8.0 Insignificant Sources and Activities.

Table 6-10: PTE VOC Emissions from Ethanol Unloading

No. of Loadings per year	Pump Sleeve		No. of Compartments per Truck	No. of Pump Sleeves	Volume of Displaced Vapors per Event (cu/ft)	True Vapor Pressure (PSI)	MW of Vapor (g/mole)	Ambient Temp. (°F)	Annual VOC Emissions	
	Dia. (ft)	Length (ft)							lbs	tpy
10,750	1	8	5	3	94.2	1.0854	49.07	68.4	9675	4.84

6.1.6 Wastewater and Transmix Sumps

There is one underground Transmix Sump (TR) and one underground wastewater sump (WW) included with the acquired assets. These two sumps are operated in tandem to achieve oil and water separation similar to that achieved with an oil/water separator. After separation, water from the wastewater sump is sent to the water tank (R-5-OWS formerly Chevron Tank T-11) and stored transmix is sent offsite. Recent usage records indicate that approximately 32,000 gallons annually of Transmix and 30,000 gallons of water have been processed. To conservatively calculate potential emissions, 300,000 gallons of wastewater were assumed to go through each of these sumps. An emission factor of 0.2 lbs/1000 gallons was used with the potential throughput of 300,000 gallons per year for both the wastewater sump and the transmix sump. Potential to emit emission calculations are shown Table 6-11 and Table 6-12.

Table 6-11: PTE VOC Emissions for Wastewater Sump

Throughput (gals)	EF (Assume behave like covered OWS), lbs/1000 gal	Annual PTE (lbs/yr)	Annual PTE (lbs/yr)
300,000	0.20	60	0.03

Table 6-12: PTE VOC Emissions for Transmix Sump

Throughput (gals)	EF (Assume behave like covered OWS), lbs/1000 gal	Annual PTE (lbs/yr)	Annual PTE (lbs/yr)
300,000	0.20	60	0.03

6.1.7 Fugitive Sources

The significant fugitive sources at the Tucson Terminal include the uncaptured portion of hydrocarbon emissions from the loading racks, breathing and working displacement losses from bulk storage tanks, and leakage from pipe fittings and other components.

6.1.8 Loading Rack Fugitive Emissions

Due to inefficiencies inherent in a vapor collection system and tank trucks, a small portion of loading rack hydrocarbon vapor emissions are not captured and controlled. To estimate these fugitive emissions, it is first necessary to estimate the amount of total loading emissions in the absence of controls. These total loading releases were quantified according to emission factors in Section 5.2 of EPA Document AP-42; utilizing vapor pressures, molecular weights, and temperatures developed using procedures in AP-42, Chapter 7 Section 1. The uncaptured portion that escapes as fugitive emissions was estimated assuming a MACT-level vapor tightness test will be the standard for trucks using the facility. This standard specifies a 98.7 percent capture efficiency from the headspace of the truck tanks, so this calculation assumes 0.8 percent of the total loading releases may be emitted to the atmosphere as fugitive emissions. Annual potential to emit calculations are presented in Table 6-13.

Table 6-13: PTE for Loading Rack Tanker Truck Fugitive Emissions

Product	Annual Throughput (1000 gals)	S	P	M	T	Uncontrolled EF for Bulk Loading	Vapors Generated (lbs/year)	Truck Capture Efficiency	Fugitive Vapors (lbs/year)
Gasoline	903,821	1	8.5	64	538	12.59	11,387,201	98.7%	148,033
Diesel/Jet	402,547	1	0.013	130	538	0.04	16,119	98.7%	210

6.1.9 Bulk Petroleum Storage Tanks

As listed in Table 6-15, there are a total of 38 active bulk storage tanks at the Tucson Terminal. In addition, two storage tanks (TC-21, TC-22) are currently out of service, but may be restored to limited service for ethanol or additive storage. The remaining tanks store petroleum fuels and either dispense product to the loading racks, or are identified as "drain dry" tanks that temporarily store products that are stored temporarily and later internally transferred to terminal storage. The capacities of the individual bulk storage tanks range from 42,000 gallons to 2,814,000 gallons.

Table 6-15 also lists the storage tanks along with the type of tank, year of installation, the product proposed for inclusion in the Title V permit, and dimensional information. Each floating roof tank has a primary mechanical shoe seal and a rim-mounted compression plate secondary seal. The specific hardware characteristics and products contained in each tank at the SFPP facility were considered in the simulation of emissions using the U.S. EPA TANKS 4.09d model. Gasoline throughput was set at 100% of the facility maximum throughput limit of 1,120,000,000 gallons per year for tanks which may contain gasoline and was assumed to all go through the tank with the largest emission per volume of throughput. The Reid Vapor Pressure (RVP) of the gasoline was varied each month using the maximum RVP that could be stored in a particular month in order to provide a realistic estimate of emissions. Jet and/or diesel throughput was developed by assuming 80% of maximum facility throughput equaling 896,000,000 gallons. This throughput was modeled by volumetrically assigning the total volume to each of the cone roof tanks. The summary output for each tank is provided in Appendix B. A copy of the RVP specifications is included in Appendix B.

At the Tucson Terminal, floating roof tanks are used to store higher vapor pressure products, such as gasoline, aviation fuels, denature ethanol, and transmix. Fixed roof tanks are used to store diesel fuel or commercial jet fuel that has lower vapor pressure than gasoline. However, it is possible that floating roof tanks may also be utilized to store these lower-volatility products. Table 1-1 lists the tanks present at the facility, the type of tank, the product currently contained, the highest volatility that may be contained, and the floating roof type and seals that are in place to control fugitive emissions.

Floating roof tanks, both external and internal roof types, offer better control of evaporative emissions than fixed roof tanks. Floating roof storage tanks used for product dispensing to loading racks are not routinely emptied of product. Such storage tanks typically contain one type of product and are operated so as to maintain a "heel" of product between the roof and the floor. Since the floating roof remains suspended on the liquid contents a vapor space does not form in the heel space. However, vapors may escape in small amounts as fugitive emissions through rim seals, deck fittings or deck seals.

Hydrocarbon emissions from a fixed roof tank occur as the tank is filled, which represent "working losses", and during daily temperature cycles while the liquid is stored, termed "breathing losses”. During refilling of fixed-rood tanks, the hydrocarbon vapor in the headspace is displaced by the incoming liquid and vents to the atmosphere, which are “working-losses”. During storage, vapors evaporate from the liquid surface, so that the daily temperature cycles also cause daily cycles in differential pressure between the tank and surroundings. Floating roof tanks at the Tucson Terminal, both external and internal roof types, offer better control of such evaporative emissions than fixed roof tanks. These tanks do not have an open headspace that will be displaced during filling operations. However, due to daily cycles in differential pressure between the tank and surroundings vapors may escape in small amounts as fugitive emissions through rim seals, deck fittings or deck seals.

Drain dry tanks are operated as "drain-dry" tanks that are entirely emptied of one product so as to be available for subsequent use, potentially with a different type of product. When a drain dry tank is emptied, the floating roof or pan is supported on a set of legs that keep the roof off the floor of the tank and therefore create a vapor space between the floor and the supported roof of the tank. Upon refilling, the trapped air and hydrocarbon vapors in the vapor space below the roof of the tank are displaced.

In this application, fugitive emission estimates are provided for the collective groups of tanks that store petroleum fuels. Because any single scenario for individual storage tank usage would not- reflect the maximum potential emissions, a modeling construct was developed to provide a "worst case" for these sources. This same approach was used for the group of fixed roof tanks, and the individual drain dry tanks.

6.1.10 Petroleum Product Additive Tank

The emissions from the single additive tank were quantified using a projected throughput equal to 0.3 percent of the allowable gasoline throughput. The summary output from the TANKS model for the insignificant additive tanks is provided in Appendix B.

6.1.11 Water Tanks

The emissions from the two water tanks were quantified using a projected throughput equal to 300,000 gallons each annually, the same as the wastewater sump. Because of the potential to have product in the water, this tank was modeled as if it contained gasoline. The estimated emissions from the tank were multiplied by 0.05 since the tank is connected to the vapor recovery system and a minimum of 95 percent control is anticipated. The summary output from the TANKS model for the insignificant additive tanks is provided in Appendix B.

Table 6-14: PTE VOC Emissions for Water Tank 44 & 45

Throughput (gals)	Emissions from TANKS Model	Control Efficiency	Annual PTE (lbs/yr)	Annual PTE (tpy)
300,000	5,174.7	95%	258.7	0.13
300,000	5,174.7	95%	258.7	0.13
		Total	517.5	0.26

6.1.12 Floating Roof Tank Group

1) A "worst case" floating roof tank was identified by applying the TANKS 4.09 model to estimate maximum potential working emissions from each individual floating roof tank. These simulations assumed the entire loading rack gasoline portion of throughput under- the proposed operational -limits (1,120,000,000 gallons/yr) passed through each individual tank as gasoline (the most volatile product stored in the floating roof tanks). This analysis identified tank T-18 as the

one with the highest potential working emissions among the floating roof tank group. Appendix B of this application provides the TANKS output for each of these cases.

2) For the maximum annual breathing losses from the entire group, this application uses the sum of the breathing loss contributions from each tank estimated using TANKS in Step 1.

3) For maximum annual working displacement losses from the floating roof group, this application uses the predicted working loss contribution from the SINGLE tank (Tank T-18) for which those losses are highest from Step 1. Distributing the gasoline throughput to any other tank or combination of tanks would yield a lower working loss estimate. By this method, the TANKS model provides a conservative estimate of those emissions from the group of tanks together.

6.1.13 Fixed Roof Tank Group

1) In a procedure similar to that for the floating roof group, a "worst case" fixed roof tank was identified by applying the TANKS 4.09 model to estimate maximum potential working emissions from each individual fixed roof tank. These simulations assumed the entire facility throughput of distillate fuels under the highest facility-wide emission case (896,000,000 gallons/yr) passed through each individual single tank as "turbine" grade distillate, which the grade of distillate fuel with the vapor pressure. This worst case analysis identified tank T-40 as the one with the highest potential emissions among the fixed roof tank group. Appendix B of this application provides the TANKS output for each of these cases. For the annual maximum emission rate from the entire group, this application uses the sum of the breathing loss contributions estimated for each tank using TANKS in Step 1 for this group.

2) For annual working displacement losses from the fixed roof group, this application uses the predicted working loss contribution from the SINGLE tank for which those losses are highest from Step 1. Distributing the throughput to any other tank or combination of tanks would yield a lower working loss estimate. By this method, the TANKS model provides a conservative estimate of those emissions from the group of tanks together.

6.1.14 Drain Dry Tank Group

1) A "worst case" drain dry tank was included in the floating roof tank group described in Section 6.1.12 and was identified by applying the TANKS 4.09 model to estimate maximum potential working emissions from each individual floating roof tank. These simulations assumed the entire loading rack gasoline portion -of- throughput under- the proposed operational -limits (1,120,000,000 gallons/yr) passed through each individual tank as gasoline (the most volatile product stored in the floating roof tanks). This analysis identified tank T-21 as the one with the highest potential working emissions among the floating roof tank and drain dry tank groups. Appendix B of this application provides the TANKS output for each of these cases.

2) The TANKS 4.09 model was then run separately for each drain dry tank, assuming the 150-turnover throughput was 100% gasoline, to estimate maximum potential gasoline vapors which were sent to the thermal oxidizer.
3) For the maximum annual breathing losses from the entire group, this application uses the sum of the breathing loss contributions from each tank estimated using TANKS in Step 1 of Section 6.1.12.

For the floating roof and fixed roof tank groups, the working displacement losses from the "worst case" tank and the TANKS estimates of breathing losses from all others in the group were added together quantify the maximum emissions under the proposed operational limit of 1.12 billion gallons per year. Any other pattern of tank usage, within the 1,120,000,000-gallon throughput limit, will result in a lower estimate of tank fugitive emissions than this hypothetical construct.

Some of the key tank parameters necessary for operating the TANKS 4.09 model are listed in Table 6-15 for the 38 active petroleum bulk storage tanks. Additional modeling assumptions and other supporting information are provided in Appendix A. The summary output from the TANKS model is provided in Appendix B. The emissions from the eight additive tanks are not quantified toward the emission inventory since these tanks meet the definition of insignificant sources per Pima County Code - Air Pollution Control 17.04.340. (109).

Table 6-15: Petroleum Storage Tank Descriptions for Tucson Terminal

Tank No.	Tank Type	Year of Installation	Highest Volatility Product Stored (Current Product Stored)	Diameter (ft.)	Height (ft.)	Working Volume (Gallons)
T-1	AST-EFR	1955	Gasoline	60	39.8	840,000
T-2	AST-EFR	1955	Gasoline (JP-8)	50	47.8	701,904
T-3	AST-EFR	1955	Gasoline (Jet A)	50	48	714,000
T-4	AST-EFR	1955	Gasoline (Jet A)	50	48	714,000
T-5	AST-EFR	1956	Gasoline (JP-8)	50	48	714,000
T-6*	AST-EFR	1957	Gasoline	87	48	2,100,000
T-7*	AST-EFR	1957	Gasoline	87	48	2,100,000
T-8*	AST-EFR	1958	Gasoline	87	48	2,100,000
T-9	AST-VFR	1961	Diesel	48	48	651,000
T-10	AST-VFR	1956	Diesel	45	35.6	420,000
T-11	AST-EFR	1956	Gasoline (Transmix)	45	35.6	420,000
T-12	AST-VFR	1953	Diesel	40	35.8	337,092
T-13	AST-EFR	1956	Transmix	45	35.6	420,000
T-14*	AST-EFR	1958	Gasoline (Transmix)	60	40	845,040
T-15	AST-IFR	1960	JP-8	60	41	845,040
T-16	AST-IFR	1970	Diesel	106.1	40	2,520,000
T-17	AST-EFR	1959	Gasoline	80	45	1,680,000
T-18	AST-IFR	1965	Ethanol	35	36.5	268,800
T-19	AST-EFR	1959	Gasoline	67	48	1,260,000
T-20	AST-IFR	1959 (Modified 1990)	Gasoline	67	48	1,260,000
TC-21 INACTIVE	AST-IFR	1955	Transmix (None)	30	24	126,000

Tank No.	Tank Type	Year of Installation	Highest Volatility Product Stored (Current Product Stored)	Diameter (ft.)	Height (ft.)	Working Volume (Gallons)
TC-22 INACTIVE	AST-FR	Pre 1970	Additives (None)			
T-23	AST-IFR	1992	Gasoline (Diesel)	56	48	840,000
T-25*	AST-IFR	1997	Gasoline	87	50	2,100,000
T-26	AST-IFR	1999	Gasoline	110	48	2,832,690
T-27	AST-VFR	1955	Diesel	50	48	615,594
T-28	AST-IFR	1955	Gasoline	60	48	1,008,000
T-29	AST-IFR	1967	Gasoline (Ethanol)	50	48	619,584
T-30	AST-IFR	1970	Gasoline (Ethanol)	50	48	600,390
T-33	AST-IFR	1955	Gasoline (Diesel)	70	48	1,390,200
T-34	AST-IFR	2000	Gasoline	87	50	2,814,000
T-35	EFR	1955	(Gasoline), Transmix, Ethanol, Diesel, Jet Fuel	50	N/A	16,131 (bbl)
T-36	IFR	1955	Gasoline, Transmix, (Ethanol), Diesel, Jet Fuel	37	N/A	9,090 (bbl)
T-37	Cone Roof	1955	Diesel, (Jet Fuel)	32	N/A	6,663 (bbl)
T-38	Cone Roof	1955	Diesel, (Jet Fuel)	27	N/A	4,866 (bbl)
T-39	Cone Roof	1955	(Diesel), Jet Fuel	20	N/A	2,682 (bbl)
T-40	Cone Roof	1959	Diesel, (Jet Fuel)	40	N/A	10,642 (bbl)
T-41	EFR	1959	(Gasoline), Transmix, Ethanol, Diesel, Jet Fuel	40	N/A	10,616 (bbl)
T-42	IFR	1963	(Gasoline), Transmix, Ethanol, Diesel, Jet Fuel	50	N/A	23,084 (bbl)
T-43	IFR	1969	(Gasoline), Transmix, Ethanol, Diesel, Jet Fuel	50	N/A	16,355 (bbl)

*Drain dry tanks
AST – aboveground storage tank
EFR – external fixed roof
IFR – internal fixed roof
FR – fixed roof

6.1.15 Pipe Fitting and Component Fugitive Emissions

Fugitive hydrocarbon emissions may occur when petroleum product liquids are contained in the pipe lines throughout the Tucson Terminal. Hydrocarbon vapor could be released from piping components, such as valves, flanges, pump seals, sampling ports, and other fittings. The emission rate depends on the type of component or fitting, the number of each type of component, and the category of fluid service (gas, light liquid or heavy liquid).

This emission source was quantified based on the facility-wide component counts for the facility. Emission factors were obtained from the U.S. EPA report entitled "Protocol for Equipment Leak Emission Estimates" (U.S. EPA, 1995). A detailed calculation with the component counts is presented in Table 6-16.

Table 6-16: Fugitive Component Count & Emission Estimate

Source	# of Components	Emission Factor (kg/hr/source)	Emission Factor (lbs/hr/source)	VOC Emissions (lbs/hr)	VOC Emissions (lbs/day)	VOC Emissions (lbs/year)	VOC Emissions (tons/year)
Valves	1556	4.30E-05	9.47E-05	1.47E-01	3.54	1,291.00	0.65
Pumps	118	5.40E-04	1.19E-03	1.40E-01	3.37	1,229.49	0.61
Fittings	5168	8.00E-06	1.76E-05	9.11E-02	2.19	797.74	0.40
Other	1299	1.30E-04	2.86E-04	3.72E-01	8.93	3,258.37	1.63
	8141			7.51E-01	18.02	6,576.60	3.29

Emissions Summary

Source	Annual, lbs VOC	Annual, tpy
Gasoline Tanks, Standing	143,305.82	71.65
Gasoline Tanks, Working	6,207.64	3.10
Diesel/Jet Tank Cone Roof, Standing	1,352.75	0.68
Diesel/Jet Tank Cone Roof, Working	7,183.99	3.59
Fugitive Components	6,576.60	3.29
Water Tank	258.73	0.13
WW Sump	60.00	0.03
Oil Water Separators (3)	2,299.50	1.15
Transmix Sump	60.00	0.03
VRU Controlled	74,773.97	37.39
CAU Controlled	34,927.60	17.46
Prover	395.59	0.20
Ethanol Offloading	9,675.00	4.84
Truck Fugitives	148,243.17	74.12
TOTAL	**435,320.36**	**217.66**

Throughput Modeled for This Calculation, gal/yr	In Tank	Commodity	Standing Losses	Working Losses	Total Annual PTE	Lbs/hr
1,120,000,000	T-1	Gasoline	5,832.17	3,520.54	9,352.71	1.082
1,120,000,000	T-2	Gasoline	5,385.63	4,224.65	9,610.28	1.112
1,120,000,000	T-3	Gasoline	5,446.04	4,224.65	9,670.69	1.119
1,120,000,000	T-4	Gasoline	5,406.42	4,224.65	9,631.07	1.115
1,120,000,000	T-5	Gasoline	5,385.63	4,224.65	9,610.28	1.112
1,120,000,000	T-6	Gasoline	7,233.00	2,427.96	9,660.96	1.118
1,120,000,000	T-7	Gasoline	6,837.81	2,427.96	9,265.77	1.072
1,120,000,000	T-8	Gasoline	6,852.53	2,427.96	9,280.49	1.074
896,000,000	T-9	Diesel/Jet	174.44	4,807.33	4,981.77	0.577
896,000,000	T-10	Diesel/Jet	117.65	4,615.86	4,733.51	0.548
1,120,000,000	T-11	Gasoline	16,849.17	4,694.04	21,543.21	2.493
100,000,000	T-12	Diesel/Jet	87.57	4,543.04	4,630.61	0.536
1,120,000,000	T-13	Gasoline	5,164.09	4,694.04	9,858.13	1.141
1,120,000,000	T-14	Gasoline	5,743.62	3,520.54	9,264.16	1.072
896,000,000	T-15	Diesel/Jet	14.77	3,579.21	3,593.98	0.416
896,000,000	T-16	Diesel/Jet	26.96	2,142.19	2,169.15	0.251
1,120,000,000	T-17	Gasoline	4,533.10	2,640.41	7,173.51	0.830
1,120,000,000	T-18	Gasoline	2,291.19	6,207.64	8,498.83	0.984
1,120,000,000	T-19	Gasoline	6,282.76	3,152.71	9,435.47	1.092
1,120,000,000	T-20	Gasoline	9,276.54	3,199.78	12,476.32	1.444
1,120,000,000	T-23	Gasoline	3,173.92	3,839.35	7,013.27	0.812
1,120,000,000	T-25	Gasoline	4,105.66	2,595.41	6,701.07	0.776
1,120,000,000	T-26	Gasoline	7,578.39	2,042.50	9,620.89	1.114
896,000,000	T-27	Diesel/Jet	185.62	4,870.12	5,055.74	0.585
1,120,000,000	T-28	Gasoline	854.31	3,520.54	4,374.85	0.506
1,120,000,000	T-29	Gasoline	4,062.34	4,309.13	8,371.47	0.969
1,120,000,000	T-30	Gasoline	1,585.34	4,309.13	5,894.47	0.682
1,120,000,000	T-33	Gasoline	1,093.65	3,017.59	4,111.24	0.476
1,120,000,000	T-34	Gasoline	4,898.30	2,133.43	7,031.73	0.814
1,120,000,000	T-35	Gasoline	6,081.52	4,224.65	10,306.17	1.193
1,120,000,000	T-36	Gasoline	1,775.09	5,863.27	7,638.36	0.884
896,000,000	T-37	Diesel/Jet	203.54	6,966.24	7,169.78	0.830
896,000,000	T-38	Diesel/Jet	144.44	6,859.19	7,003.63	0.811
896,000,000	T-39	Diesel/Jet	79.04	6,729.49	6,808.53	0.788
896,000,000	T-40	Diesel/Jet	318.72	7,183.99	7,502.71	0.868
1,120,000,000	T-41	Gasoline	6,279.88	5,280.79	11,560.67	1.338
1,120,000,000	T-42	Gasoline	1,644.05	3,520.54	5,164.59	0.598
1,120,000,000	T-43	Gasoline	1,653.67	4,309.13	5,962.80	0.690
	Facility PTE for all Tanks		**150,866.21**		**142,329.47** Total for Floating Roof tanks	**16.473**
					8,536.74 Total for Fixed roof tanks	**0.988048611**

Tank Emissions, PTE

Equipment Type	ID	Old Chevron ID #	Shell Capacity, bbl (SFPP Table - Safe Fill)	Nominal Capacity, bbl (SFPP Table)	Number of Turns Modeled	Diameter, ft (SFPP Table)	Height, ft (SFPP Table)	Primary Seal (SFPP Table as confirmed by inspection)	Secondary Seal (SFPP Table as confirmed by inspection)	[redacted]	Annual Standing Loss, lbs	Annual Working Loss floaters – annual for fixed, lbs	Commodity Modeled
EFR	T-1	N/A	16,944	20,000	1,365	60.00	39.83	Mechanical Shoe	Compression Plate		5,832.17	3,520.54	Gasoline
EFR	T-2	N/A	14,737	16,712	1,454	50.00	47.75	Mechanical Shoe	Compression Plate		5,385.63	4,224.65	Gasoline
EFR	T-3	N/A	14,640	16,712	1,457	50.00	48.00	Mechanical Shoe	Compression Plate		5,446.04	4,224.65	Gasoline
EFR	T-4	N/A	14,735	16,712	1,454	50.00	48.00	Mechanical Shoe	Compression Plate		5,406.42	4,224.65	Gasoline
EFR	T-5	N/A	14,847	16,712	1,476	50.00	48.00	Mechanical Shoe	Compression Plate		5,385.63	4,224.65	Gasoline
EFR	T-6	N/A	45,742	50,000	150	87.00	48.00	Mechanical Shoe	Compression Plate		7,233.00	2,427.96	Gasoline
EFR	T-7	N/A	45,639	50,000	150	87.00	48.00	Mechanical Shoe	Compression Plate		6,837.81	2,427.96	Gasoline
EFR	T-8	N/A	46,357	50,000	150	87.00	48.00	Mechanical Shoe	Compression Plate		6,852.53	2,427.96	Gasoline
FR	T-9	N/A	14,701	15,500	162	48.00	48.00				174.44	4,807.33	Diesel
FR	T-10	N/A	9,395	10,000	253	45.00	35.58				117.65	4,615.86	Diesel
EFR	T-11	N/A	8,332	10,000	2,452	45.00	35.58	Mechanical Shoe	None		16,849.17	4,694.04	Gasoline
FR	T-12	N/A	7,010	8,026	323	40.00	35.83				87.57	4,543.04	Diesel
EFR	T-13	N/A	8,402	10,000	2,626	50.00	48.00	Mechanical Shoe	Wedge Double Wiper		5,164.09	4,694.04	Gasoline
EFR	T-14	N/A	17,770	20,120	150	60.00	40.00	Mechanical Shoe	Compression Plate		5,743.62	3,520.54	Gasoline
IFR	T-15	N/A	17,737	99,952	132	60.00	40.17	Mechanical Shoe	Apron		14.77	3,579.21	Jet Fuel
IFR	T-16	N/A	56,641	60,000	42	106.58	40.00	Mechanical Shoe	None		26.96	2,142.19	Diesel
EFR	T-17	N/A	35,507	40,300	604	80.00	45.00	Mechanical Shoe	Compression Plate		4,533.10	2,640.41	Gasoline
IFR	T-18	N/A	5,139	6,400	4,265	35.00	36.50	Mechanical Shoe	Compression Plate		2,291.19	6,207.64	Gasoline
EFR	T-19	N/A	26,205	30,000	817	67.00	48.00	Mechanical Shoe	Compression Plate		6,282.76	3,152.71	Gasoline
IFR	T-20	N/A	27,247	30,000	759	67.00	48.00	Mechanical Shoe	Compression Plate		9,276.54	3,199.78	Gasoline
IFR	T-23	N/A	18,557	20,000	1,155	56.00	48.00	Mechanical Shoe	Compression Plate		3,173.92	3,839.35	Gasoline
IFR	T-25	N/A	44,455	50,000	150	87.00	50.00	Mechanical Shoe	Compression Plate		4,105.66	2,595.41	Gasoline
IFR	T-26	N/A	66,034	80,000	318	110.00	48.00	Mechanical Shoe	Compression Plate		7,578.39	2,042.50	Gasoline
FR	T-27	N/A	16,161	16,800	162	50.00	48.00				185.62	4,870.12	Diesel
DIFR	T-28	N/A	21,852	24,000	998	60.00	48.00	Mechanical Shoe	Compression Plate		854.31	3,520.54	Gasoline
IFR	T-29	N/A	15,299	16,790	1,453	50.00	48.00	Wedge type/Double Wiper	Wedge type/Double Wiper		4,062.34	4,309.13	Gasoline
IFR	T-30	N/A	14,834	16,790	1,492	50.00	49.67	Wedge type/Double Wiper	Wedge type/Double Wiper		1,585.34	4,309.13	Gasoline
DIFR	T-33	N/A	26,653	32,880	713	70.00	48.00	Mechanical Shoe	Compression Plate		1,093.65	3,017.59	Gasoline
IFR	T-34	N/A	59,073	67,000	357	100.00	48.25	Mechanical Shoe	Wiper w/ Apron		4,898.30	2,133.43	Gasoline
EFR	T-35	1	14,470	16,131	1,477	50.00	48.00	Mechanical Shoe	Compression Plate		6,081.52	4,224.65	Gasoline
IFR	T-36	2	7,120	9,090	3,010	37.00	47.75	Mechanical Shoe	Compression Plate		1,775.09	5,863.27	Gasoline
FR	T-37	3	5,778	6,663	412	32.00	47.58				203.54	6,966.24	Jet Fuel
FR	T-38	4	3,867	4,866	616	27.00	47.58				144.44	6,859.19	Jet Fuel
FR	T-39	5	2,182	2,682	1,533	20.00	47.58				79.04	6,729.49	Jet Fuel
FR	T-40	6	9,641	10,642	246	40.00	47.58				318.72	7,183.99	Jet Fuel
EFR	T-41	7	8,860	10,616	2,419	40.00	47.58	Mechanical Shoe	Compression Plate		6,279.88	5,280.79	Gasoline
DIFR	T-42	8	18,464	23,084	1,161	50.00	47.25	Mechanical Shoe	Compression Plate		1,644.05	3,520.54	Gasoline
IFR	T-43	9	15,684	16,355	1,499	50.00	48.00	Mechanical Shoe	Compression Plate		1,653.67	4,309.13	Gasoline

Breakout tanks

Chevron John Zink VRU Emissions, PTE (loading rack 5)

Commodity	Monthly Throughput, 1000 gal	Annual Throughput, 1000 gal	Uncontrolled Emissions, Diesel, lb/1000 gal	Monthly Uncontrolled Emissions from Diesel, lbs	Annual Uncontrolled Emissions from Diesel, lbs	EF, lbs/1000 gal gasoline	Control Eff for diesel/jet	Monthly Emissions, lbs	Annual Emissions, lbs
Gasoline	10,000	120,000				0.29		2,862.30	34,800.00
Diesel/Jet	26,288	315,456	0.04045	1,063.31	12,759.76		0.99	10.49	127.60

Max Daily	=2 lanes x 3 tk/lane/hr x 24 hr/day x 8.4 (1000s gal)/tk				1,210
Max Month	36,288	1000s gal			
Max Ann	435,456	1000s gal			

John Zink VRU Emissions, PTE (loading racks 1,2, 3 and 4))

Commodity	Monthly Throughput, 1000 gal	Annual Throughput, 1000 gal	Uncontrolled Emissions, Diesel, lb/1000 gal	Monthly Uncontrolled Emissions from Diesel, lbs	Annual Uncontrolled Emissions from Diesel, lbs	EF, lbs/1000 gal gasoline	Control Eff for diesel/jet	Monthly Emissions, lbs	Annual Emissions, lbs
Gasoline	65,318	783,821				0.08		5,383.18	65,449.04
Diesel/Jet	7,258	87,091	0.04045	293.56	3,522.72		0.99	2.90	35.23
		870,912							

Max Daily	=4 lanes x 3 tk/lane/hr x 24 hr/day x 8.4 (1000s gal)/tk				2,419
Max Month	72,576	1000s gal			
Max Ann	870,912	1000s gal			

PTE VOC for Loading Racks 1,2,3 4 and 5 (lbs/hour)

Commodity	Hourly Throughput, 1000 gal	Uncontrolled Emissions, Diesel, lb/1000 gal	Hourly Uncontrolled Emissions from Diesel, lbs	EF, lbs/1000 gal gasoline	Control Eff for diesel/jet	Max Hourly Emissions, lbs/hr	
Gasoline	101			0.08		8.42	
Diesel/Jet	101	0.04045	4.08		0.99	0.04	8.46
Gasoline	50			0.29		14.62	
Diesel/Jet	50	0.04045	2.04		0.99	0.02	14.64

Potential Tanker Truck Fugitives from Loading Racks 1,2,3,4 and 5 (lbs/year)

	Product	Throughput (1000 Gals)	S	P	M	T	Uncontrolled Emission Factor for Bulk Loading (lb/1000 gal)	Vapors Generated (lbs/year)	Truck Cap. EFF	Fugitive Vapors (lbs/year)
Annual	Gasoline	120,000	1	8.5	64	538	12.598959	1,511,875	98.70%	19,654
	Gasoline	783,821	1	8.5	64	538	12.598959	9,875,326	98.70%	128,379
	Diesel/Jet	402,547	1	0.0133	130	538	0.040043	16,119	98.70%	210

Potential Tanker Truck Fugitives from Loading Racks 1,2,3 4 and 5 (lbs/hour)

	Product	Throughput (Gals per hour)	S	P	M	T	Uncontrolled Emission Factor for Bulk Loading (lb/1000 gal)	Vapors Generated (lbs/hr)	Truck Cap. EFF	Fugitive Vapors (lbs/hr)
Annual	Gasoline	13,699	1	8.5	64	538	12.598959	173	98.70%	2.24
	Gasoline	89,477	1	8.5	64	538	12.598959	1,127	98.70%	14.66
	Diesel/Jet	45,953	1	0.0133	130	538	0.040043	2	98.70%	0.02

Breakout Tank Vapors sent to the VRU

Tank	Turnovers	Heal Space (BBL)	Heal Space (1000 Gal)	Annual Heel Space Vapor (1000 Gal)	Vapor EF (lb/1000 gal)	Controlled VOC emissions (lb/yr)	VOC Uncontrolled Emission Factor (lb/1000 gal)	VOCs into Thermal Oxidizer (lbs)	[5]Vapors to Thermal Oxidizer converted to Propane (1000 gal)
T-6	150	3678.997	154.5	23177.7	0.0835	1935.3	5.79	134182.4	34.4
T-7	150	3923.195	164.8	24716.1	0.0835	2063.8	5.79	143089.0	36.7
T-8	150	3947.394	165.8	24868.6	0.0835	2076.5	5.79	143971.6	36.9
T-14	150	1439.991	60.5	9071.9	0.0835	757.5	5.79	52520.2	13.5
T-25	150	4669.789	196.1	29419.7	0.0835	2456.5	5.79	170319.1	43.7

[5] Vapor sent to the Thermal Oxidizer converted to propane, factor based on Thermal Equivelancy is equal to 3.9 lb/gal

PTE for Loading Rack Vapors converted to Propane

Loading Rack	Product	Throughput (1000 gals)	Vapr EF (lb/1000 gal)	Controlled VOC Emissions	VOC Uncontrolled EF (lb/1000 gal)	VOC's to Thermal Oxidizer (lb/yr)	Vapors to Thermal Oxidizer converted to Propane (1000 gal)
LR-1,2,3 & 4	Gasoline	783822	0.0835	65449.1	5.79	4538329.4	1163.67
	Diesel	87092	0.0835	7272.2	5.79	504262.7	129.30
LR-5	Gasoline	12000	0.292	3504.0	5.79	69480.0	17.82
	Diesel	315456	0.292	92113.2	5.79	1826490.2	468.33

Fugitive Component Count & Emission Estimate

Source	No. of Components	Emission Factor (kg/hr/source)	Emission Factor (lbs/hr/source)	VOC Emssions (lbs/hr)	VOC Emissions (lbs/day)	VOC Emissions (lbs/year)	VOC Emissions (tons/year)
Valves	1556	4.30E-05	9.47E-05	1.47E-01	3.54	1,291.00	0.65
Pumps	118	5.40E-04	1.19E-03	1.40E-01	3.37	1,229.49	0.61
Fittings	5168	8.00E-06	1.76E-05	9.11E-02	2.19	797.74	0.40
Other	1299	1.30E-04	2.86E-04	3.72E-01	8.93	3,258.37	1.63
	8141			7.51E-01	18.02	6,576.60	3.29

WATER TANK R5-OWS				
PTE Throughput, gal	Emissions from TANKS Model	Control Efficiency	Annual PTE (lbs)	Annual PTE (tons)
300,000	5,174.65	95%	258.73	0.13

WASTEWATER SUMP			
PTE Throughput, gal	EF (Assume behave like covered OWS), lbs/1000 gal	Annual PTE (lbs)	Annual PTE (tons)
300,000	0.20	60	0.03

TRANSMIX SUMP			
PTE Throughput, gal	EF (Assume behave like covered OWS), lbs/1000 gal	Annual PTE (lbs)	Annual PTE (tons)
300,000	0.20	60	0.03

4 Oil Water Seperator			
PTE Throughput (1000 gal)	EF lbs/1000 gal	Annual PTE (lbs)	Annual PTE (tons)
460	5	2,299.50	1.14975

lbs/hr
0.266145833

Conversion Factors

1 gallon =	0.00379 m3	R =	8.31
1 PSI =	6,894.76 Pa	1 atm =	101,325.01 Pa
1 lb =	453.5924 g	1 bbl =	42 gal
1 cu ft =	0.028317 m3		

PTE for VOC Emissions form Ethanol Offloading - Displaced Vapor (tons/year)

Number of Loadings per Year	Pump Sleeve[1]		Number of Compartments per Truck[3]	Number of Pump sleeves Involved in Offloading	Volume of displaced Vapor per Offloading		True Vapor Pressure		MW of Vapor[2] (g/mole)	Ambient Temperature		VOC Emission per Offloading		VOC Emission per Year	
	Dia. (feet)	Length (feet)			cu ft	m^3	(PSI)	(kg/m^2)		(°F)	(K)	(gram)	(lbs)	(lbs/yr)	tpy
10750	1	8	5	3	94.2	2.67	1.0854	7.484	49.07	68.4	293	402	0.9	9675	4.838

Note:

1. Dimensions of Pump Sleeve pipe that is purged of residual vapor at beginning of each offload
2. Molecular weight of ethanol (Perry's Handbook, 6th Edition. Table 3-2) weighted with contribution of 5 wt% gasoline MW= 66
3. All Trucks assumed to have 5 compartments and the sleeve is assumed to be purged for each compartment

PTE for VOC Emissions form Ethanol Offloading - Displaced Vapor (lbs/hour)

Number of Loadings per Year	Pump Sleeve[1]		Number of Pump sleeves Involved in Offloading	Volume of displaced Vapor per Offloading		True Vapor Pressure		MW of Vapor[2] (g/mole)	Ambient Temperature		VOC Emission per Offloading	VOC Emission per Hour
	Dia. (feet)	Length (feet)		cu ft	m^3	(PSI)	(kg/m^2)		(°F)	(K)	(gram)	(lbs/hr)
10750	1	8	3	37.6	0.53	1.0854	7.484	49.07	68.4	293	161	0.35

Note:

1. Dimensions of Pump Sleeve pipe that is purged of residual vapor at beginning of each offload
2. Molecular weight of ethanol (Perry's Handbook, 6th Edition. Table 3-2) weighted with contribution of 5 wt% gasoline MW= 66

Conversion Factors

1 gallon =	0.00379 m3	R =	8.31
1 PSI =	6,894.76 Pa	1 atm =	101,325.01 Pa
1 lb =	453.5924 g		

TABLE A-12
VOC EMISSIONS FROM PROVER TEST - DISPLACED VAPOR

No. of Tests per Year	Volume per Test		True Vapor Pressure		MW of vapor (g/mole)	Ambient Temperature		VOC Emission /test [1]		VOC Emissions	
	(gallons)	(m^3)	(PSI)	(kg/m^2)		(°F)	(K)	(gram)	(lbs)	lbs/yr	tpy
12	1,470	5.564538	6.3718	43,932	66	68.4	293	6,618	14.6	175	0.1
Total										**175**	**0.1**

[1] The VOC Emission/test = (P*V*MW)/(R*T), assuming the vapor in the pipeline is saturated with gasoline vapor at the ambient temperature.

TABLE A-13
VOC EMISSIONS FROM PROVER DRAINAGE SUMP

Product	Throughput (1000 gal)	EF (lb/1000 gal)[1]	VOCs (lbs)	VOCs tpy	VOC's lbs/hr
Gasoline	17.64	12.5	221	0.1	14.6

[1] The EF is from AP-42, Table 5.2-7 for gasoline service station., conservatively assuming all test volume is gasoline.

The method for quantifying emissions for service station tanks was used, as worst-case; filling of gasoline tanks from tanker trucks: 11.5 lb/1000 gal; UST breathing loss: 1.0 lb/1000 gallons. Total is 12.5 lb/1000 gallons.

VOC Emissions from Gasoline:		VOC Emissions from Diesel:									
lbs/year	426,411.24	lbs/year	8,909.12	Gasoline Tanks	Diesel Tanks	Fugitive Components	VRU Controlled	Truck Fugitives	Ethanol Offloading	O/W Separator	Prover and Sump
				149,513.46	8,536.74	6,576.60	100,249.04	148,034	9,675.00	2,299.50	396

HAP	HAP Percent in Gasoline[1]	Annual HAPs, lbs	Annual HAPs, tons
Hexane	1.6	6,822.58	3.41
Benzene	0.9	3,837.70	1.92
Toluene	1.3	5,543.35	2.77
2,2,4 Trimethylpentane	0.8	3,411.29	1.71
Xylenes	0.5	2,132.06	1.07
Ethyl Benzene	0.1	426.41	0.21
MTBE	0	0.00	0.00
Naphthalene	0.05	213.21	0.11
	HAP Percent in Diesel		
Hexane	6.00	534.55	0.27
TOTAL HAPS		22,921.14	11.46
MAX SINGLE HAP (Hexane)		7,357.13	3.68

HAPS by Source, lbs/year

Gasoline Tanks[3]	Diesel Tanks	Fugitive Components	VRU Controlled	Truck Fugitives	Ethanol Offloading[2]	O/W Separator	Prover and Sump
2392.22		105.23	1603.98	2368.54	7.74	36.79	6.33
1345.62		59.19	902.24	1332.30	4.35	20.70	3.56
1943.67		85.50	1303.24	1924.44	6.29	29.89	5.14
1196.11		52.61	801.99	1184.27	3.87	18.40	3.16
747.57		32.88	501.25	740.17	2.42	11.50	1.98
149.51		6.58	100.25	148.03	0.48	2.30	0.40
0.00		0.00	0.00	0.00	0.00	0.00	0.00
74.76		3.29	50.12	74.02	0.24	1.15	0.20
			127.60	210			
	512.20		7.66	12.57			

Gasoline Market (Stage I and Stage II), Prepared by Eastern Research Group, Revised Final, January 2001

Note:

1. Gasoline Market (Stage I and Stage II), Prepared by Eastern Research Group, Revised Final, January 2001
2. HAP emission from ethanol offloading calculated assuming the composition of ethanol is 95% ethyl alcohol and 5% gasoline
3. HAP emissions from tanks are calculated by applying HPA speciation profile of baseline gasoline to emmisions from floating roof tanks and applying HAP speciation profile for Diesel anf Jet-A to emissions from fixed roof tanks

PTE of NOx, CO, SO2, and PM from Loading Rack 1, 2, 3 and 4 Vapors to the Thermal Oxidizer

	Emission Factors				Emissions				Emissions			
	NOx[1] (lb/1000 gal)	CO[1](lb/1000 gal)	SO2[3](lb/lb of vapor)	PM[4](lb/1000 gal)	NOx (lbs/yr)	CO (lbs/yr)	SO2 (lbs/yr)	PM (lbs/yr)	NOx (tpy)	CO (tpy)	SO2 (tpy)	PM (tpy)
Loading Racks 1-4	0.0334	0.0835	9.00E-05	0.6	29088.53	72721.32	453.83	775.78	14.5443	36.3607	0.2269	0.3879

PTE of NOx, CO, SO2, and PM from Breakout Tank Vapors to the Thermal Oxidizer

	Emission Factors				Emissions				Emissions			
	NOx[1] (lb/1000 gal)	CO[1](lb/1000 gal)	SO2[3](lb/lb of vapor)	PM[4](lb/1000 gal)	NOx (lbs/yr)	CO (lbs/yr)	SO2 (lbs/yr)	PM (lbs/yr)	NOx (tpy)	CO (tpy)	SO2 (tpy)	PM (tpy)
T-6	0.0334	0.0835	9.00E-05	0.6	774.13	1935.34	12.08	20.64	0.3871	0.9677	0.0060	0.0103
T-7	0.0334	0.0835	9.00E-05	0.6	825.52	2063.80	12.88	22.01	0.4128	1.0319	0.0064	0.0110
T-8	0.0334	0.0835	9.00E-05	0.6	830.61	2076.53	12.96	22.15	0.4153	1.0383	0.0065	0.0111
T-14	0.0334	0.0835	9.00E-05	0.6	303.00	757.51	4.73	8.08	0.1515	0.3788	0.0024	0.0040
T-25	0.0334	0.0835	9.00E-05	0.6	982.62	2456.54	15.33	26.20	0.4913	1.2283	0.0077	0.0131

Notes:

[1] Emissions gurantee for VOC, CO, and NOx provided by the manufacturer of the thermal oxidizer

[2] Emission Factor from AP-42, Section 5.2 Transportation and Marketing of Petroleum Liquids, Equation (1)

$L_L = 12.46 * (S*P*M)/T$

where:

L_L = loading loss, pounds per 1000 gallons (lb/10^3 gal) of liquid loaded

S = a saturation factor of 0.6

P = true vapor pressure of liquid loaded, pounds per square inch absolute (psi) 6.20

M = molecular weight of vapors, pounds per pound-mole (lb/lb-mole) for Gasoline RVP 10 is 66

T = temperature of bulk liquid loaded, *R (F + 460) (see Tanks 4.09d reports) is 68.42 F

528.42 R

[3] SO_2 emissions are based on the maximumpool averae sulfur contenet of gasoline at 90 ppm by weight as S (40 CFR 80, Subpart H). It is assumed that all the sulfur contained in gasoline is converted to S $_2$O Molecular weight of SO_2 is 64

[4] Emission Factor from AP-42. Section 1.5 Liquified Petroleum Gas Combustion, Table 1.5-1 Emission Factors For LPG Combustion

[5] Vapro sent to the Thermal Oxidizer converted to propane, factor based on Thermal Equivelancy is equal to 3.9 lb/gal

TANKS 4.0.9d
Emissions Report - Detail Format
Total Emissions Summaries - All Tanks in Report

Emissions Report for: Annual

Tank Identification				Losses (lbs)
T-01 2011	SFPP, L.P.	External Floating Roof Tank	Tucson, AZ	9,352.71
T-02 2011	SFPP, L.P.	External Floating Roof Tank	Tucson, AZ	9,610.29
T-03 2011	SFPP, L.P.	External Floating Roof Tank	Tucson, AZ	9,670.69
T-04 2011	SFPP, L.P.	External Floating Roof Tank	Tucson, AZ	9,631.08
T-05 2011	SFPP, L.P.	External Floating Roof Tank	Tucson, AZ	9,610.29
T-06 2011	SFPP, L.P.	External Floating Roof Tank	Tucson, AZ	9,660.96
T-07 2011	SFPP, L.P.	External Floating Roof Tank	Tucson, AZ	9,265.77
T-08 2011	SFPP, L.P.	External Floating Roof Tank	Tucson, AZ	9,280.49
T-09 2011	SFPP, L.P.	Vertical Fixed Roof Tank	Tucson, AZ	4,981.78
T-10 2011	SFPP, L.P.	Vertical Fixed Roof Tank	Tucson, AZ	4,733.51
T-11 2011	SFPP, L.P.	External Floating Roof Tank	Tucson, AZ	21,543.21
T-12 2011	SFPP, L.P.	Vertical Fixed Roof Tank	Tucson, AZ	4,630.61
T-13 2011	SFPP, L.P.	External Floating Roof Tank	Tucson, AZ	9,858.12
T-14 2011	SFPP, L.P.	External Floating Roof Tank	Tucson, AZ	9,264.16
T-15 2011	SFPP, L.P.	Internal Floating Roof Tank	Tucson, AZ	3,593.98
T-16 2011	SFPP, L.P.	Internal Floating Roof Tank	Tucson, AZ	2,169.15
T-17 2011	SFPP, L.P.	External Floating Roof Tank	Tucson, AZ	7,173.01
T-18 2011	SFPP, L.P.	Internal Floating Roof Tank	Tucson, AZ	8,498.83

T-19 2011	SFPP, L.P.	External Floating Roof Tank	Tucson, AZ	9,435.47
T-20 2011	SFPP, L.P.	Internal Floating Roof Tank	Tucson, AZ	12,476.32
T-23 2011	SFPP, L.P.	Internal Floating Roof Tank	Tucson, AZ	7,013.27
T-25 2011	SFPP, L.P.	Internal Floating Roof Tank	Tucson, AZ	6,701.08
T-26 2011	SFPP, L.P.	Internal Floating Roof Tank	Tucson, AZ	9,620.89
T-27 2011	SFPP, L.P.	Vertical Fixed Roof Tank	Tucson, Arizona	5,055.74
T-28 2011	SFPP, L.P.	Domed External Floating Roof Tank	Tucson, Arizona	4,374.86
T-29 2011	SFPP, L.P.	Internal Floating Roof Tank	Tucson, Arizona	8,371.47
T-30 2011	SFPP, L.P.	Internal Floating Roof Tank	Tucson, Arizona	5,894.49
T-33 2011	SFPP, L.P.	Domed External Floating Roof Tank	Tucson, Arizona	4,105.03
T-34 2011	SFPP, L.P.	Internal Floating Roof Tank	Tucson, Arizona	7,031.74
TC-21 2011	SFPP, L.P.	Internal Floating Roof Tank	Tucson, AZ	11,318.72
TC-22 2007 (out of ser.)	SFPP, L.P.	Vertical Fixed Roof Tank	Tucson, AZ	0.00
Total Emissions for all Tanks:				243,927.74

TANKS 4.0.9d
Emissions Report - Detail Format
Total Emissions Summaries - All Tanks in Report

Emissions Report for: Annual

Tank Identification				Losses (lbs)
T - 35	SFPP	External Floating Roof Tank	Tucson, Arizona	10,306.16
T - 36	SFPP	Internal Floating Roof Tank	Tucson, Arizona	7,638.37
T - 37	SFPP	Vertical Fixed Roof Tank	Tucson, Arizona	7,169.78
T - 38	SFPP	Vertical Fixed Roof Tank	Tucson, Arizona	7,003.63
T - 39	SFPP	Vertical Fixed Roof Tank	Tucson, Arizona	6,808.53
T - 40	SFPP	Vertical Fixed Roof Tank	Tucson, Arizona	7,502.71
T - 41	SFPP	External Floating Roof Tank	Tucson, Arizona	11,560.67
T - 42	SFPP	Domed External Floating Roof Tank	Tucson, Arizona	5,164.59
T - 43	SFPP	Internal Floating Roof Tank	Tucson, Arizona	5,962.81
TA - 600	SFPP	Vertical Fixed Roof Tank	Tucson, Arizona	0.00
Waste Water Tank R5-OWS	SFPP	Vertical Fixed Roof Tank	Tucson, Arizona	5,174.65
Total Emissions for all Tanks:				74,291.89

KINDER MORGAN
ENERGY PARTNERS, L.P.
SFPP, L.P.

August 1, 2012

Mr. Mukonde Chama
Pima County Department of Environmental Quality – Air Program
33 N. Stone Avenue, Suite 700
Tucson, Arizona 85701-1429

Subject: **Amendment to Title V Renewal Application to Include a Portable Thermal Oxidizer at SFPP, L.P. Tucson Terminal, 3841 East Refinery Way, Tucson, Arizona, Permit No. 1674**

Dear Mr. Chama:

SFPP, L.P. (SFPP) requests to add a portable thermal oxidizer to Permit No. 1674 for the SFPP Tucson Terminal. The purpose of the change is to allow use of a portable thermal oxidizer to control emissions of volatile organic compounds (VOCs) during tank degassing at the facility.

Previously SFPP has requested this change on a case by case basis. However, SFPP decide to permit a portable thermal oxidizer to control emissions of VOC on the facility permit to allow for operational flexibility.

The portable thermal oxidizer will be used to minimize excess emissions during the degassing operation. This portable thermal oxidizer will be operated by a contractor, to control VOC emissions. The unit will be rated at a maximum of 50 million BTUs per hour and is expected to be operated for a period of a few hours at a time. The annual operating hours from this equipment will be limited to approximately 293 hours per year to stay within 1 ton of emissions per year for all criteria pollutants. Please refer to the attached emissions calculations. Estimates of actual emissions will be made following the use of the portable unit and will be included in the facility's emission inventory.

If you have any questions regarding this request, please call Paul Liao at (714) 560-4991 or Ms. Therese Tuazon at (714) 560-4905.

I certify that based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete.

Sincerely,

Philip L. Vasquez
Director of Operations
for SFPP, L.P.

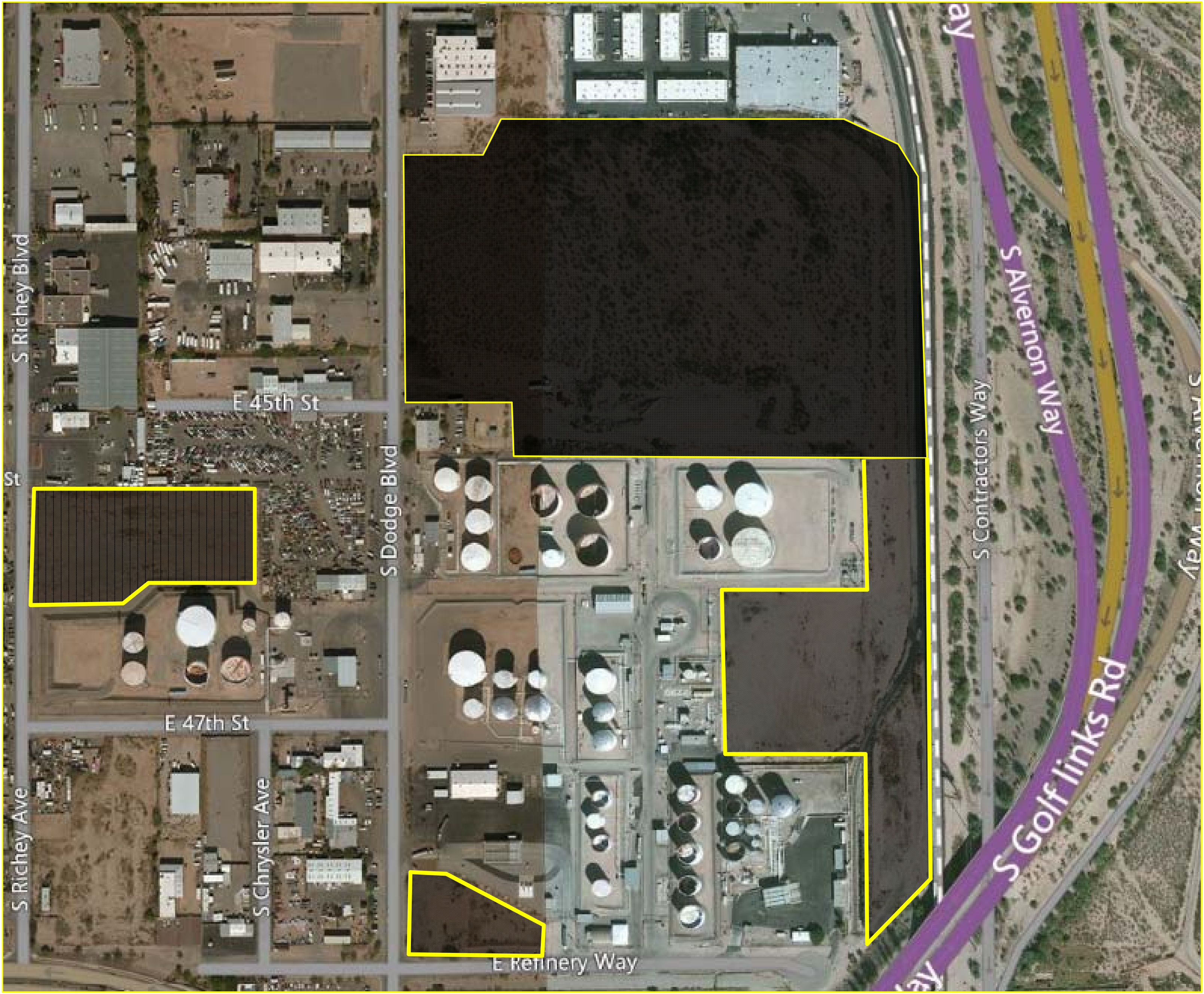
RECEIVED BY
PIMA COUNTY
AUG 07 2012
DEPARTMENT OF
ENVIRONMENTAL QUALITY

	Fuel Type (fuel unit)	Organic Gases (lb/1000 gal)	Nitrogen Oxides (lb/1000 gal)	Sulfur Oxides (lb/1000 gal)	Carbon Monoxide (lb/1000 gal)	Particulate Matter (lb/1000 gal)
50 mmBTU/hr	LPG, Propane, Butane (1000 gal.)	0.26	12.8	4.6	3.2	0.28
	Hourly Emissions (lbs/hr)	0.14	6.81	2.45	1.7	0.15
293 hr/year	Annual Emissions (lbs/yr)	41.02	1995.33	717.85	498.1	43.95
	Annual Emissions (tons/yr)	0.02051	0.997665	0.358925	0.24905	0.021975

Note: Emissions Factor from South Coast Air Quality Management District Annual Emissions Reporting Progam
Assumed 94 mmBTU/1000 gal per South Coast Air Quality Management District Rule 2012, Appendix A, Chapter 5

Attachment 2

Identified Vacant Lots or Open Spaces Contiguous to the Facility



S Richey Blvd
E 45th St
St
S Dodge Blvd
E 47th St
S Chrysler Ave
S Richey Ave
E Refinery Way
S Contractors Way
S Alvernon Way
S Golf links Rd