



August 3, 2015

Mr. Andrew Drury  
Air Quality Division – Permit Section  
Michigan Department of Environmental Quality  
Constitution Hall, 3<sup>rd</sup> Floor North  
525 West Allegan Street  
Lansing, MI 48933

**RE: SUPPLEMENTAL INFORMATION SUPPORTING PERMIT TO INSTALL APPLICATION NO. 122-15 COVERING THE LPG STORAGE AND TRANSFER PROJECT AT THE MARATHON PETROLEUM COMPANY LP REFINERY IN DETROIT, MICHIGAN (SRN: A9831)**

Dear Mr. Drury,

On June 17, 2015, Marathon Petroleum Company LP (“MPC”) submitted a Permit to Install application and supporting documentation covering the proposed LPG Storage and Transfer Project at its refinery in Detroit, Michigan. A minor design change to the project has occurred since the submittal of the application package. Specifically, MPC proposes to install a twelve spot railcar load rack rather than the originally proposed ten spot railcar load rack. This submittal provides supplemental information supporting the proposed design change.

For purposes of estimating emissions, MPC has conservatively estimated that the addition of two loading spots will result in a 20 percent increase in the estimated number of valves and flanges associated with the proposed load rack. Accordingly, **Table 1** from the original application has been updated to reflect the increase in components and resultant change in estimated fugitive volatile organic compound (“VOC”) emissions. As shown in the table, fugitive VOC emissions associated with the project now total 2.71 tpy, which is only a 0.13 tpy increase above what was originally estimated. The small increase in toxic air contaminant (“TAC”) impacts due to the addition of the two railcar loading spots is shown in **Table 2**. Modeled TAC impacts remain well below applicable AQD-published screening levels.

If you have any questions regarding this submittal or require any additional information supporting the Permit to Install application, please do not hesitate to contact me at (616) 554-3210 or Jeff Bruestle of MPC at (313) 297-6068.

Sincerely,  
**HORIZON ENVIRONMENTAL CORPORATION**

A handwritten signature in cursive script that reads "Brian Leahy".

Brian E. Leahy  
Senior Meteorologist

c: Jeffery L. Bruestle, P.E., MPC

Enclosure

**TABLE 1**  
**LPG TANK FARM AND RAILCAR LOADING - COMPONENT COUNT AND VOC EMISSIONS**  
**Marathon Petroleum Company LP, Detroit Refinery**

Emission Factor List

Equipment	Factor (lb/hr-comp)	Factor Basis (Reference)	Hours
LL/G valves	6.400E-05	Facility Average (based on 2013 & 2014 SV data)	8,760
HL valves	1.800E-04	Ave Emsn Factor (API Pub343)	8,760
LL Pumps	1.165E-03	Facility Average (based on 2013 & 2014 SV data)	8,760
HL Pumps	1.050E-03	Facility Specific Factor	8,760
Compressors	2.103E-01	Ave Emsn Factor w/ 85% control (EPA Protocol Doc)	8,760
LL/G flanges	5.510E-04	Ave Emsn Factor (EPA Protocol Doc)	8,760
LL/G flanges - monitored	1.653E-05	Ave Emsn Factor (EPA Protocol Doc and TCEQ Doc <sup>3</sup> )	8,760
LL/G flanges - monitored	2.985E-05	Facility Average (based on 2013 & 2014 SV data)	8,760
HL flanges	8.160E-05	Ave Emsn Factor (API Pub 343)	8,760
PRVs	3.530E-01	Ave Emsn Factor (EPA Protocol Doc)	8,760
PRVs - monitored	6.310E-03	Facility Average (based on 2013 & 2014 SV data)	8,760
Drains (continuous)	5.174E-03	Facility Specific Factor	8,760

10.00% percentage of unmonitored flanges  
90.00% percentage of monitored flanges

LPG Tank Farm and Railcar Loading - Component Count Summary

	Stream Name	VOC wt%	LL/G Valves	HL Valves	LL Pumps	HL Pumps	Com-pressors	LL/G Flanges	HL Flanges	PRVs	Drains		Totals
New for LPG Tank Farm	all	100	640	0	7	0	0	1,921	0	8	4		2,581
New for Railcar Loading	all	100	284	0	8	0	0	1,021	0	0	0		1,313
New for Propane Dryers	all	100	31	0	0	0	1	94	0	0	2		128
New Components Total	all	100	955	0	15	0	1	3,036	0	8	6		4,022

LPG Tank Farm and Railcar Loading - Estimated Fugitive VOC Emissions (in pounds unless otherwise noted)

	Stream Name	VOC wt%	LL/G Valves	HL Valves	LL Pumps	HL Pumps	Com-pressors	LL/G Flanges	HL Flanges	PRVs	Drains		Total (lb/yr)	Total (tons/yr)
New for LPG Tank Farm	all	100	359	0	71	0	0	1,380	0	442	181		2,434	1.22
New for Railcar Loading	all	100	159	0	86	0	0	733	0	0	0		978	0.49
New for Propane Dryers	all	100	17	0	0	0	1,842	67	0	0	91		2,018	1.01
New Components Total	all	100	536	0	157	0	1,842	2,180	0	442	272	0	5,429	2.71

**LL/G EMISSIONS**

Total (lb/yr)	Total (tons/yr)
<b>5,157</b>	<b>2.58</b>

**HL EMISSIONS**

Total (lb/yr)	Total (tons/yr)
<b>0</b>	<b>0.00</b>

**DRAIN EMISSIONS**

Total (lb/yr)	Total (tons/yr)
<b>272</b>	<b>0.14</b>

New Components Total

New Components Total

New Components Total

New Components Total

Total (lb/yr)	Total (tons/yr)
<b>5,429</b>	<b>2.71</b>

**Notes:**

- (1) "Facility Average" emission factors are based on the emission rates and component counts from the GuideWare database for the years 2013 & 2014.
- (2) "Facility Specific Factor" emission factors are from a study "Fugitive VOC Emission Calculations" conducted by NTH Consultants, Ltd. (Sept 2002).
- (3) EPA Protocol Document - Protocol for Equipment Leak Emission Estimates Nov. 1995 (EPA-453/R-93-026)
- (4) TCEQ Document - Equipment Leak Fugitives Oct. 2000

**TABLE 2**  
**LPG STORAGE AND LOAD RACK EMISSION SOURCES AND EXHAUST PARAMETERS**  
**Marathon Petroleum Company LP, Detroit Refinery**

Fugitive Component	Southwest Coordinate UTM		Rate (g/s)	Release Height (m)	X Dimension (m)	Y Dimension (m)	Orientation (deg)	Sigma Z (m)	Component Area (m2)	Emission Rate (g/s/m2)
	Easting	Northing								
LPG Storage Area 1	322196.4	4683045.6	0.50	4.27	20.0	3.0	32	0.142	60.0	8.33E-03
LPG Storage Area 2	322207.5	4683077.0	0.50	4.27	20.0	3.0	32	0.142	60.0	8.33E-03
LPG Railcar Loading Area 1	321453.3	4682722.6	0.25	4.57	20.0	2.0	-70	0.142	40.0	6.25E-03
LPG Railcar Loading Area 2	321437.5	4682710.1	0.25	4.57	20.0	2.0	-70	0.142	40.0	6.25E-03
LPG Railcar Loading Area 3	321421.6	4682698.5	0.25	4.57	20.0	2.0	-70	0.142	40.0	6.25E-03
LPG Railcar Loading Area 4	321405.7	4682686.3	0.25	4.57	20.0	2.0	-70	0.142	40.0	6.25E-03

AERMOD Concentrations, ug/m <sup>3</sup> (based on a 1 g/s emission rate)		
Averaging Period	LPG Storage Area	LPG Railcar Loading Area
8-hour	586.1	2,782.2
24-hour	242.0	1,001.8
annual	29.8	180.3

**Emission**

TAC	CAS Number	LPG Storage Area		LPG Railcar Loading Area		Screening Level (ug/m <sup>3</sup> )	Avg. Time	ITSL / IRSL
		Emission Rate (g/s)	Maximum Modeled Impact (ug/m <sup>3</sup> )	Emission Rate (g/s)	Maximum Modeled Impact (ug/m <sup>3</sup> )			
Propylene	115-07-1	0.064	15.5	0.014	14.1	1,500	24-Hour	ITSL
Butane	106-97-8	0.064	37.5	0.014	39.1	23,800	8-Hour	ITSL
Isobutane	75-28-5	0.064	37.5	0.014	39.1	23,800	8-Hour	ITSL
Isobutylene	115-11-7	0.064	1.9	0.014	2.5	21	Annual	ITSL
Amylene	513-35-9	0.064	1.9	0.014	2.5	106	Annual	ITSL

**Notes:**

1. Model simulations of the LPG Storage Area conducted conservatively assuming that 100% of the emissions will occur in the row of storage vessels located nearest the fenceline.
2. Model simulations of the LPG Railcar Area conducted conservatively assuming that 100% of the emissions will occur in the load bay located nearest the fenceline.
3. TAC-specific emission rates conservatively based on the assumption that the potential VOC emission rate is composed entirely of that TAC.