Preliminary Determination Summary

Magellan Terminals Holdings, L.P.
Permit Numbers 145717 and PSDTX1516

I. Applicant

Magellan Terminals Holdings, L.P.
1 Williams CTR
Tulsa, OK 74172-0140

II. Project Location

from the intersection of Cantwell Lane and Up River Road in Corpus Christi, head north along Cantwell Lane for 1.2 miles. To your left will be a sign labeled "Magellan." Turn left at the Dirt Road to enter the Magellan Corpus Christi Waterfront Terminal.
Nueces County
Corpus Christi, Texas 78407

III. Project Description

Magellan Terminal holdings, L.P. (Magellan) proposed to construct a greenfield marine terminal in Corpus Christi, Nueces County (Corpus Christi Waterfront Terminal). This site will be a new, major source with the Prevention of Significant Deterioration (PSD) permit (Permit PSDTX1516, Project No. 266483) for volatile organic compounds (VOC) and carbon monoxide (CO). The Corpus Christi Waterfront Terminal will transport and store crude oil and condensate, gasolines and gasoline blendstocks (including naphthas, alkylate, reformate, and raffinate), distillate fuels, and additional chemical materials, such as methanol, ethanol, cumene, toluene, and xylene. The proposed construction and authorization include product storage tanks, marine docks for barge and ship loading, permanent and portable vapor combustors, fire water pumps, and emergency generators. Maintenance, Startup, and Shutdown Activities (MSS) emissions are authorized by this permit as well.

The Corpus Christi Waterfront Terminal is a bulk petroleum storage terminal used to store and transfer crude oil and associated oil and raw materials. Petroleum products will be received and loaded out at four marine docks controlled by eight vapor combustor units. Product will be stored in 35 internal floating roof (IFR) storage tanks. Tank roof landings will be performed on the IFR storage tanks due to the transfer of products to and from the tanks, as well as during tank cleaning activities. One permanent vapor combustor and one portable vapor combustion device will be used at the terminal to control emissions from storage tank roof landing and storage tank cleaning activities. Two emergency generators and two fire water pumps are powered by diesel engines. Fugitive emissions are included equipment leaks from piping components, connections, flanges and valves. MSS activities are performed periodically on process units.

IV. Emissions

Air Contaminant	Proposed Allowable Emission Rates (tpy)
VOC	711.84
NO_x	34.77
CO	114.69
PM	4.28
PM_{10}	4.28
$PM_{2.5}$	4.28
SO_2	35.35
H_2S	9.58
CO_2 equivalents (CO_2e)	70,704.40

All applicable federally regulated pollutants have been reviewed, as discussed in Section V below. Startup and shutdown emissions for sources are included within the unit's estimated emissions as specified in the Maximum Allowable Emission Rate Table (MAERT). Separate maintenance emissions activities are identified and quantified in the MAERT.

V. Federal Applicability

This site is a new major source located in an attainment area. No further NA review applicability is required.

The project increases of all criteria air contaminant were calculated by summing the proposed emission increases (without considering decreases) and subtracting an assumed baseline of zero tons per year. Projected increases of PM, PM_{10}, $PM_{2.5}$, NO_x, SO_2, H_2S and GHG do not exceed PSD significant emission rates as shown in the table below. PSD review for PM, PM_{10}, $PM_{2.5}$, NO_x, SO_2 and H_2S is not required. However, project increases of VOC and CO exceed the applicable significance thresholds as shown in the following table as well; therefore, PSD review is required for VOC and CO.

Pollutant	Project Emissions (tpy)	PSD Significant Trigger (tpy)	PSD Review Triggered (Y/N)
PM	4.28	25	N
PM_{10}	4.28	15	N
$PM_{2.5}$	4.28	10	N
VOC	711.84	40	Y
NO_x	34.77	40	N
CO	114.69	100	Y

SO_2	35.35	40	N
H_2S	9.58	10	N
GHG (CO_2e)	70,704.40	75,000	N

VI. Control Technology Review

All new facilities authorized by this permitting action are subject to a control technology review. For VOC and CO, PSD BACT is applied. State minor NSR BACT is applied for all other pollutants. The controls described in this section were determined to satisfy BACT requirements, based on a review of recently issued permits from Texas and other states, and consideration of RACT/BACT/LAER Clearinghouse (RBLC) data provided by the applicant.

Marine vapor combustion units (EPNs VCU10, VCU11, VCU12, VCU13, VCU14, VCU15, VCU16, and VCU17):

EPNs VCU10, VCU11, VCU12, VCU13, VCU14, VCU15, VCU16, and VCU17 are used to control the marine loading emissions from the four loading docks. The vapor combustor has a 99.5% destruction efficiency for VOC. The emission factor for NO_x (0.06 lb/MMBtu) and CO (0.20 lb/MMBtu) are both based on a vendor guarantee. H_2S emissions are estimated by the maximum weight concentrations of H_2S in products. The stack testing is required in Special Condition No. 19. Recordkeeping and operating requirements for marine vapor combustion units are in Special Condition Nos. 5, 18, and 28.

Permanent vapor combustion unit (EPN MSSVCU10):

EPN MSSVCU10 is not only used to control emissions from 35 IFR storage tanks during the routine roof landings but also used to control MSS emissions at the site. The vapor combustor has a minimum destruction efficiency of 99% for VOC. Emission factors of NO_x (0.06 lb/MMBtu) and CO (0.20 lb/MMBtu) for the permanent vapor combustion unit (EPN MSSVCU10) are referred by TCEQ guidance. The temperature of the combustion chamber is monitored. The stack testing for permanent vapor combustion unit (EPN MSSVCU10) is required in Special Condition No. 19. Recordkeeping and operation requirements for the permanent vapor combustion unit are in Special Condition No. 5, 18, and 28. Recordkeeping and operation requirements for MSS activities are addressed in Special Condition Nos. 20-28. BACT is satisfied for the vapor combustor.

Internal Floating Roof (IFR) storage tanks (EPNs T211-T214, T221-224, T231, T233-235, T241-243, T251-252, T261-262, T271, T232, T244, T245, T253, T254, T272, T281, T311, T321, T331, T341, and T351-T354):

All 35 IFR storage tanks have capacities greater than 25,000 gallons and used to contain products with a true vapor pressure below 11 psia. All IFR tanks will be painted white or aluminum uninsulated exterior surface exposed to the sun and equipped with mechanical shoe primary seals. The drain-dry design is required in Special Condition Nos. 8(D) and 8(E). H_2S emissions are estimated by the maximum weight concentrations of H_2S (1000 ppmw) in the crude oil. In addition, emissions from IFR storage tanks during routine tank roof landings and refilling are controlled by a vapor combustion unit with a 99% DRE for VOC. Recordkeeping and operation for IFR storage tanks are required in Special Condition Nos. 6-11 and 28. BACT is satisfied for the internal floating tank.

Fugitives (EPN FUG10):
EPN FUG10 is used to represent fugitive emissions from piping components. Uncontrolled sitewide VOC fugitive emissions are greater than 25 tpy. The VOC fugitive emissions will be monitored with the 28VHP LDAR programs in Special Condition Nos.12 and 28. BACT is satisfied for the fugitive emissions.

Marine loading (EPN LOADFUG10, LOADFUG11, LOADFUG12, and LOADFUG13):
Emissions generated during the loading of product liquids into marine vessels are controlled by the vapor combustion units (EPNs VCU10, VCU11, VCU12, VCU13, VCU14, VCU15, VCU16, and VCU17) with a 99.5% destruction efficiency for VOC. The vapor pressure of loaded products is greater than 0.5 psia and the capture efficiency is 99% and 100% for submerged ship and barge loading. H_2S emissions are estimated by the average and maximum mass ratio of H_2S in crude oil. The maximum weight concentrations of H_2S (100 ppmw) in the crude oil is required in Special Condition No. 10. Recordkeeping and operating requirements for loading activities are addressed in Special Condition Nos. 13-16, 28. BACT is satisfied for the marine loading.

Fire water pump engines (EPNs FWP10 and FWP11) and emergency generators (EPNs EMGEN10 and EMGEN11):
Two fire water pump engines and two emergency generators will be used for emergency purpose. Emission factor is 0.002 lb/hp-hr and 0.0057 lb/hp-hr for VOC and CO, respectively. The emergency generators and fire water pup diesel engines will operate 100 hours in a year as the maximum. The operating and recordkeeping limitations are addressed in Special Condition No. 17. BACT is satisfied for emergency generators and fire water pump engines.

Miscellaneous sumps (EPNs S1-S8) and diesel tank (EPN T1):
Eight horizontal sumps and a diesel tank have capacities less than 25,000 gallons. The estimated true vapor pressure of stored materials is 11 psia, and the true vapor pressure of diesel is 0.022 psia. These fixed roof tanks are painted white and equipped with the submerged fill piping. The recordkeeping and operating requirements are addressed in Special Condition Nos. 6, 7, 8(F), 8(G), and 28. BACT is satisfied for the miscellaneous sumps and diesel tank.

MSS Activities:
Portable flare (EPN PCTRL10):
The portable flare is used to control emissions from tank landings and cleaning during MSS activities. The vapor combustor has a minimum destruction efficiency of 99% for VOC. Emission factors of NO_x (0.138 lb/MMBtu) and CO (0.275 lb/MMBtu) for the portable flare (EPN PCTRL10) are based on TCEQ guidance. Recordkeeping and operation requirements for the portable vapor combustion unit during MSS activities are addressed in Special Condition Nos. 19-26. BACT is satisfied for the portable vapor combustion unit during MSS activities.

Tank cleaning operation (EPN MSSTANK):
MSS emissions associated with the IFR storage tank cleaning consist of tank standing idle losses, tank vapor space purging, and tank refilling. Emissions from the tank cleaning activities are controlled by vapor combustion units (EPNs MSSVCU10 and PCTRL10) with a minimum destruction efficiency of 99% for VOC. Operating and recordkeeping requirements for the tank cleaning during MSS activities are addressed in Special Condition No. 22. The rest of MSS activities associated requirements are also in Special Condition No. 20-26. BACT is satisfied for the tank cleaning during MSS activities.

Vacuum truck loading (EPN VTRUCK10):
Emissions generated the loading of product liquids into vacuum trucks during MSS activities, which are controlled by a carbon adsorption system with 100 ppm breakthrough concentration. Operating and recordkeeping requirements for the vacuum truck loading during MSS activities are addressed in Special Condition No. 23. The rest of MSS activities associated requirements are in Special Condition No. 20-26. BACT is satisfied for vacuum truck loading during MSS activities.

Frac Tank (EPN FRTANK10):
Emissions from the frac tank (EPN FRTANK10) during MSS activities were estimated the worst-case emission scenario. Operating and recordkeeping requirements for the frac tank during MSS activities are addressed in Special Condition No. 24. The rest of MSS activities associated requirements are in Special Condition No. 20-26. BACT is satisfied for the frac tank during MSS activities.

Miscellaneous maintenance Activities (EPN MSS):
EPN MSS is used to represent the emissions from miscellaneous maintenance activities including pigging and low emitting MSS activities. The recordkeeping and operating associated limitations during MSS activities are required in Special Condition Nos. 20-26. BACT is satisfied for miscellaneous maintenance activities during MSS activities.

VII. Air Quality Analysis

Site-wide modeling was conducted for all pollutants emitted at the site. The AERMOD modeling report was audited, and approved, by the Air Dispersion Modeling Team (ADMT). Additional details regarding the site-wide modeling analysis may be found in the ADMT Memo dated August 24, 2018.

Table 1. Modeling Results for PSD De Minimis Analysis in Micrograms Per Cubic Meter (µg/m^3)

Pollutant	Averaging Time	GLCmax (µg/m^3)	De Minimis (µg/m^3)
CO	1-hr	805	2000
CO	8-hr	251	500

Table 2. Modeling Results for PSD Monitoring Significance Levels

Pollutant	Averaging Time	GLCmax (µg/m^3)	Significance (µg/m^3)
CO	8-hr	251	575

Table 3. PSD Ambient Air Quality Analysis for Ozone

Pollutant	Monitor	Averaging Time	Background (ppb)	Standard (ppb)
O_3	483550025	8-hr	62	70

Table 4. Site-wide Modeling Results for State Property Line

Pollutant	Averaging Time	GLCmax (µg/m^3)	Standard (µg/m^3)
SO_2	1-hr	284.6	1021
H_2S	1-hr	76.9	108
H_2S	1-hr	161.7	162

Table 5. Modeling Results for Minor NSR De Minimis

Pollutant	Averaging Time	GLCmax (µg/m^3)	De Minimis (µg/m^3)
SO_2	1-hr	74.6	7.8
SO_2	3-hr	149.7	25
SO_2	24-hr	58	5
SO_2	Annual	1.4	1
PM_{10}	24-hr	4.1	5
$PM_{2.5}$	24-hr	4.1	1.2
$PM_{2.5}$	Annual	0.29	0.3
NO_2	1-hr	96.9	7.5
NO_2	Annual	2.55	1

Table 6. Total Concentrations for Minor NSR NAAQS (Concentrations > De Minimis)

Pollutant	Averaging Time	GLCmax (µg/m³)	Background (µg/m³)	Total Conc. = [Background + GLCmax] (µg/m³)	Standard (µg/m³)
SO_2	1-hr	74.6	10	84.6	196
SO_2	3-hr	149.7	10	159.7	1300
SO_2	24-hr	58	2	60	365
SO_2	Annual	1.4	< 0.01	< 1.41	80
$PM_{2.5}$	24-hr	4.1	22	26.1	35
NO_2	1-hr	84.2	88	172.2	188
NO_2	Annual	2.55	18	20.55	100

Table 7. Minor NSR Site-wide Modeling Results for Health Effects Over Land

Pollutant & CAS#	Averaging Time	GLCmax (µg/m³)	GLCmax Location	GLCni (µg/m³)	GLCni Location	ESL (µg/m³)
Mid-range Products #2 64741-64-6	1-hr	14,783	Property Line	4141.0	35m NE	1750
mid-range Products #2 64741-64-6	Annual	484.09	Property Line	--	--	175
cumene 98-82-8	1-hr	5,376	Property Line	1369.3	640m SW	650
cumene 98-82-8	Annual	47.5	Property Line	--	--	250
diesel fuel #2 68476-34-6	1-hr	6713.7	80m N	2822.6	530m SW	1000
mid-range products #1 64741-68-0	1-hr	10,063	Property Line	2984.2	290m SW	1250
mid-range products #1 64741-68-0	Annual	305.58	Property Line	--	--	125
natural gas condensates, petroleum 64741-47-5	1-hr	19,223	Property Line	7067.4	640m SW	3500
natural gas condensates, petroleum 64741-47-5	Annual	725	80m N	--	80m N	350

Table 8. Minor NSR Site-wide Modeling Results for Health Effects Over Water

Pollutant & CAS#	Averaging Time	GLCmax (µg/m^3)	GLCmax Location	GLCni (µg/m^3)	GLCni Location	ESL (µg/m^3)
Mid-range Products #2 64741-64-6	1-hr	7211	Property Line	2414.4	272m N	1750
cumene 98-82-8	1-hr	3429.1	Property Line	1101.2	778m N	650
diesel fuel #2 68476-34-6	1-hr	9029.8	25m N	2056.5	630m N	1000
diesel fuel #2 68476-34-6	Annual	127.3	25m N	11.1	825m N	100
mid-range products #1 64741-68-0	1-hr	5233.32	Property Line	1903.2	850m N	1250
natural gas condensates, petroleum 64741-47-5	1-hr	10720.3	50m N	4913.1	817m N	3500

Table 9. Minor NSR Hours of Exceedance for Health Effects Over Land

Pollutant	Averaging Time	1 X ESL GLCni	2 X ESL GLCmax	4 X ESL GLCmax
mid-range products #2	1-hr	12	75	26
cumene	1-hr	21	121	53
diesel fuel #2	1-hr	32	25	9
mid-range products #1	1-hr	12	72	24
natural gas condensates, petroleum	1-hr	12	29	1

The GLCmax and the GLCni locations are listed in Table 7 and 8 above. The locations are listed by their approximate distance and direction from the property line of the project site. The applicant did not provide a GLCni for annual natural gas condensates, petroleum; cumene; mid-range products #1; and mid-range products #2.

The model predicted hours of exceedance for 2x ESL GLCmax for cumene determined from the worst-case MSS source group associated with storage tank post-control degassing operations(T213MS02) is 196. However, per the applicant, the MSS storage tank post-control degassing operations can only occur 120 hours per year. To evaluate the predicted hours of exceedance for 2x

ESL for cumene for non-MSS operation, the ADMT supplemented the analysis utilizing modeling provided by the applicant. The hours of exceedance for 2x ESL for cumene reported above in Table 9 reflect the combined hours for worst-case MSS operation (196 hours - capped to 120) and non-MSS operation (1 hour).

For the health effects analysis, the applicant categorized all products as either high vapor pressure or low vapor pressure based on how the products are controlled/uncontrolled during ship or barge loading and during tank MSS. All low vapor pressure products are represented by their worse-case modeled pollutant: diesel. The high vapor pressure products were evaluated in one of four categories based on ESL: condensate/crude oil, mid-range products #1(representing jet naphtha and reformate), mid-range products #2 (representing alkylate and xylene), and cumene. The modeling analysis utilized the worst-case emission rate from each site-wide operation across all products represented under each category. The results were compared against the lowest ESL within each category.

Thus, the applicant has demonstrated that the proposed project's emissions will not adversely affect public health and welfare, which includes the NAAQS, additional impacts, minor new source review of regulated pollutants without a NAAQS, and air toxics review. Therefore, the proposed increases in health effects pollutants will not cause or contribute to any federal or state exceedances. Therefore, emissions from the facility are not expected to have an adverse impact on public health or the environment.

VIII. Conclusion

The applicant has demonstrated the project meets all applicable rules, regulations, and requirements of the Texas and Federal Clean Air Acts. The proposed facilities and control represent BACT (and MACT where applicable) for the proposed facility. Modeling analysis indicated that the proposed project will not violate the NAAQS or any PSD increment, nor have any adverse impacts on the public health, soils, vegetation, or Class I areas. The Executive Direct makes a preliminary recommendation to issue Permit Nos. 145717 and PSDTX 1516.