



January 12, 2021

Certified Mail: 7019 0700 0000 6197 0281

Permit Administrative Review Division - MC 161
Office of Air Quality
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Re: Lyondell Chemical Company - Lyondell Chemical Channelview
TCEQ Air Quality Permits No. 2993
Permit Amendment Application
Channelview, Texas Harris County
TCEQ Account ID No. HG-1575-W; RN 100633650; CN 600344402

Lyondell Chemical (Lyondell) operates the Propylene Oxide/Styrene Monomer 1 (POSMI) Unit under Texas Commission on Environmental Quality (TCEQ) Air Quality Permit No. 2993. Lyondell requests the renewal and amendment of this permit. The proposed changes to the existing permit include:

- Update tank emission calculations due to a change of software platform from TANKS 4.09 to AP-42 Tank Calculation Tool;
- Update fugitive component counts to reflect current operating configuration;
- Add operating scenarios with updated service data, stock speciation, and properties for tanks and loading;
- Update emission factors and calculation methodology for emission sources; and
- Roll in Standard Permit and Permit-By-Rule Registrations.

A copy of the NSR Workbook, copies of the supporting documentation, and air dispersion modeling documentation in the EMEW Workbook have been submitted electronically. Relevant documents including emissions details, process description, flow diagrams, BACT and/or LAER analysis, area map, plot plan are included in this application submittal to assist in TCEQ's review. The renewal and amendment application fees are sent via electronic funds transfer. If you have any questions regarding this application submittal, please contact Teresa Peneguy at (281) 452-8330.

Sincerely,

Darren Gaspard
Environmental Manager – Air

Enclosure

cc: Director
Harris County Pollution Control Services
101 South Richey, Suite H
Pasadena, TX 77506
Certified Mail: 7019 0700 0000 6197 0298

Air Section Manager
TCEQ Region 12
5425 Polk Street, Suite H
Houston, TX 77023-1452
Certified Mail: 7019 0700 0000 6197 0304

Lyondell Chemical Company Tel +1 281 862 4000
2502 Sheldon Road Fax +1 281 862 4006
Channelview, TX 77530 lyb.com
P.O. Box 30 (77530-0030)
USA

**NEW SOURCE REVIEW PERMIT
RENEWAL/AMENDMENT APPLICATION**

Permit No. 2993

Submitted by:

Lyondell Chemical - Channelview

TCEQ Account Number HG-1575-W

Submitted to:

**Texas Commission on Environmental Quality (TCEQ)
Air Permits Initial Review Team (APIRT)
Air Permits Division, MC-161
P.O. Box 13087
Austin, Texas 78711-3087**

January 2021

TABLE OF CONTENTS

SECTION 1 Introduction	1-1
1.1 Purpose	1-1
1.2 Permit History.....	1-2
1.3 Facility Information.....	1-2
1.4 PSD and Non-attainment Review.....	1-3
1.5 Application Contents	1-4
SECTION 2 Process Description	2-1
2.1 Process Description	2-1
SECTION 3 Emission Calculation Methodology	3-1
3.1 Fugitive emissions	3-1
3.2 Storage Tanks	3-1
3.3 Heaters	3-1
3.4 Catalytic Incinerators.....	3-1
3.5 Flare Emissions.....	3-2
3.6 Cooling Tower Emissions.....	3-2
3.7 Loading Emissions.....	3-3
SECTION 4 Best Available Control Technology	4-1
4.1 Storage Tanks	4-1
4.2 Thermal Control Devices.....	4-2
4.3 Fugitives	4-2
4.4 Loading.....	4-2
SECTION 5 Regulatory Applicability	5-1
5.1 General Application Requirements - §116.311	5-1
5.2 General Application Requirements - §116.111	5-2

LIST OF FIGURES

Figure 1-1 Area Map.....	1-5
Figure 1-2 Plot Plan	1-6
Figure 2-1 POSM1 Production Unit Process Flow Diagram.....	2-2

LIST OF APPENDICES

Appendix A Administrative Considerations and Application Forms

Appendix B Technical Application Tables
Appendix C Emission Calculations

SECTION 1 INTRODUCTION

Lyondell Chemical (Lyondell) operates a Propylene Oxide/Styrene Monomer Production Unit (POSM1) under Texas Commission on Environmental Quality (TCEQ) Air Quality Permit No. 2993.

1.1 Purpose

Lyondell requests the renewal of this permit, and is submitting this renewal application as required under 30 TAC 116.315. In addition, Lyondell proposes to amend the permit for those items that are changes in representation from the existing permit. The proposed changes to the existing permit are as follows:

- Change software platform from Tanks4.09 to EPA AP-42 2019 version based calculation tool;
- Add additional operating scenarios with updated service data, stock speciation, and properties for tanks and loading;
- Update calculation methodology and process vent speciation for Catalytic Incinerator/Thermal Oxidizer (EPN EF64170);
- Update calculation methodology for the deepwell flare (EPN EFL68910);
- Rename ECT68420 to ECT68421;
- Update fugitive component counts to include existing non-traditional components not previously required to be included in MAERT;
- Remove the thermal combustor (EPN EF64175) as this piece of equipment is no longer operational;
- Remove Special Condition 25, “Backup Control Device” as the piece of equipment this condition refers to is no longer in service;
- Remove references to the thermal combustor in Special Conditions 20 and 21 (regarding stack sampling);
- Remove the former PEA tank ETK60830 as it is no longer in the previously permitted service and has been disconnected from the process covered by this permit;
- Remove the polyols barge export tank ETK60311B as it has been moved to another permit (NSR 20416);
- Remove the following tanks that store materials (excluding water) with a vapor pressure at storage conditions (not to exceed 104 F) less than 0.01 mmHg and are therefore not considered to store an air contaminant per the September 19, 1996 TCEQ NSR Guidance Memo “When should a compound be considered an air contaminant”:
 - Caustic tanks (EPNs ED64100, ETK60788, ETK60410, ETK68525),
 - Sulfuric acid tanks (EPNs ED68734A, ED68734B, ETK68540),
 - para-Toluenesulfonic acid tank (EPN ETK65601),
 - Styrex tank (ETK65639),
 - Bleach tanks (ED68547A, ED68547B);

- Remove the following tanks that are not part of the permitted process:
 - Diesel tanks (EPNs ETK60550A, ETK60550B, ETK68485B, ETK68485D),
 - Stormwater tanks (ETK68225A, ETK68225B);
- Remove Special Condition 11. The spent toluene recovery facility has been constructed per the requirements of this special condition. This special condition is therefore no longer applicable;
- Rename EFUGPO1 to EPSM1DRTR;
- Roll in the Permit By Rule Authorization No. 108163 (TK-60561 only); and
- Roll in the Standard Permit No. 158688 (deepwell flare EFL68910 unassisted operation);
- Incorporate by reference 106.472 for the alternative storage scenario for TK-60225 (EPN ETK60225).

The calculations and representations used in this permit renewal/amendment are based on best available estimates and should not be considered absolute values for all operating scenarios.

1.2 Permit History

Lyondell currently operates a POSMI Production Unit at their Channelview, Texas manufacturing complex under TCEQ Air Permit No. 2993. The construction of the POSMI Unit and associated facilities was authorized in 1975 by the Texas Air Board Permit C-2993 and subsequent start of operation occurred in 1977. The following is a historical breakdown for Permit No. 2993 and the POSMI Production Unit since the permit was last renewed:

January 13, 2011 – Lyondell receives approval of renewal/amendment of Air Permit No. 2993.

July 18, 2011 – Lyondell receives approval of alteration of Air Permit No. 2993.

June 29, 2017 – Lyondell receives approval of amendment of Air Permit No. 2993.

February 20, 2019 – Lyondell receives approval of amendment of Air Permit No. 2993.

April 3, 2019 - Lyondell receives approval of alteration of Air Permit No. 2993.

July 28, 2020 – Lyondell receives approval of alteration of Air Permit No. 2993.

1.3 Facility Information

The project described in this application will include increases in annual and hourly emissions at the Lyondell Channelview Facility. The regulated entity number for the facility is RN100633650. The Channelview Facility includes multiple process units; however, only the POSM1 Unit and Utilities Area are affected by this amendment. The Lyondell

Channelview Facility is located on Sheldon Road, Channelview, TX. All units operate under a single Federal Operating Permit, Permit No. O1387.

Figure 1.1 shows the location of the Channelview Facility on the Area Map. A detailed plot plan of the Facility showing the estimated locations of emissions units at the site is also provided in Figure 1.2.

1.4 PSD and Non-attainment Review

The Prevention of Significant Deterioration (PSD) regulations define a “major modification” as a physical change or a change in the method of operation of a major stationary source that would result in a significant emissions increase and a contemporaneous significant net emissions increase of any regulated pollutant. This application includes incorporating historical emissions from non-traditional fugitive components and cooling tower particulate emissions that are existing and associated with prior projects authorized by permit 2993. New actual emissions increases from sources proposed are being evaluated under this project. The facility is located in Harris County which is classified as serious non-attainment status for ozone. The project is not a major modification and is not subject to PSD or Non-attainment review for Volatile Organic Compounds (VOC), Oxides of Nitrogen (NOx), Carbon Monoxide (CO), or sulfur dioxide (SO2). A summary of the emissions increases for this project are below.

Table 1-1 PSD and NNSR Review

Contaminants	Emissions Increases	PSD Applicability		Non- Attainment Applicability	
		Limit	Netting?	Limit	Netting?
VOC	2.5	100	No	5	No
SO2	2.88	40	No	100	No
CO	11.12	100	No	100	No
NOx	1.45	40	No	5	Yes

1.5 Application Contents

Key components of this application are organized as follows:

- An area map and a plot plan are provided at the end of Section 1.
- A process description, project description, and process flow diagram are included in Section 2.
- Emissions calculations methodologies are included in Section 3.
- Best Available Control Technology (BACT) is addressed in Section 4.
- Regulatory applicability and compliance strategies are addressed in Section 5.
- Appendix A contains completed TCEQ administrative forms and PI-1 signature page from the NSR Workbook.
- Appendix B contains summary of the TCEQ Tables submitted electronically.
- Appendix C contains summary of emission rate calculations for all Emissions Points submitted electronically.
- Appendix D contains the TCEQ approval letter for the Standard Permit.
- Appendix E contains the TCEQ approval letters for the Registered Permits by Rule.

Figure 1-1
Area Map

Figure 1-1 Area Map
Lyondell Chemical Company
Lyondell Chemical Channelview

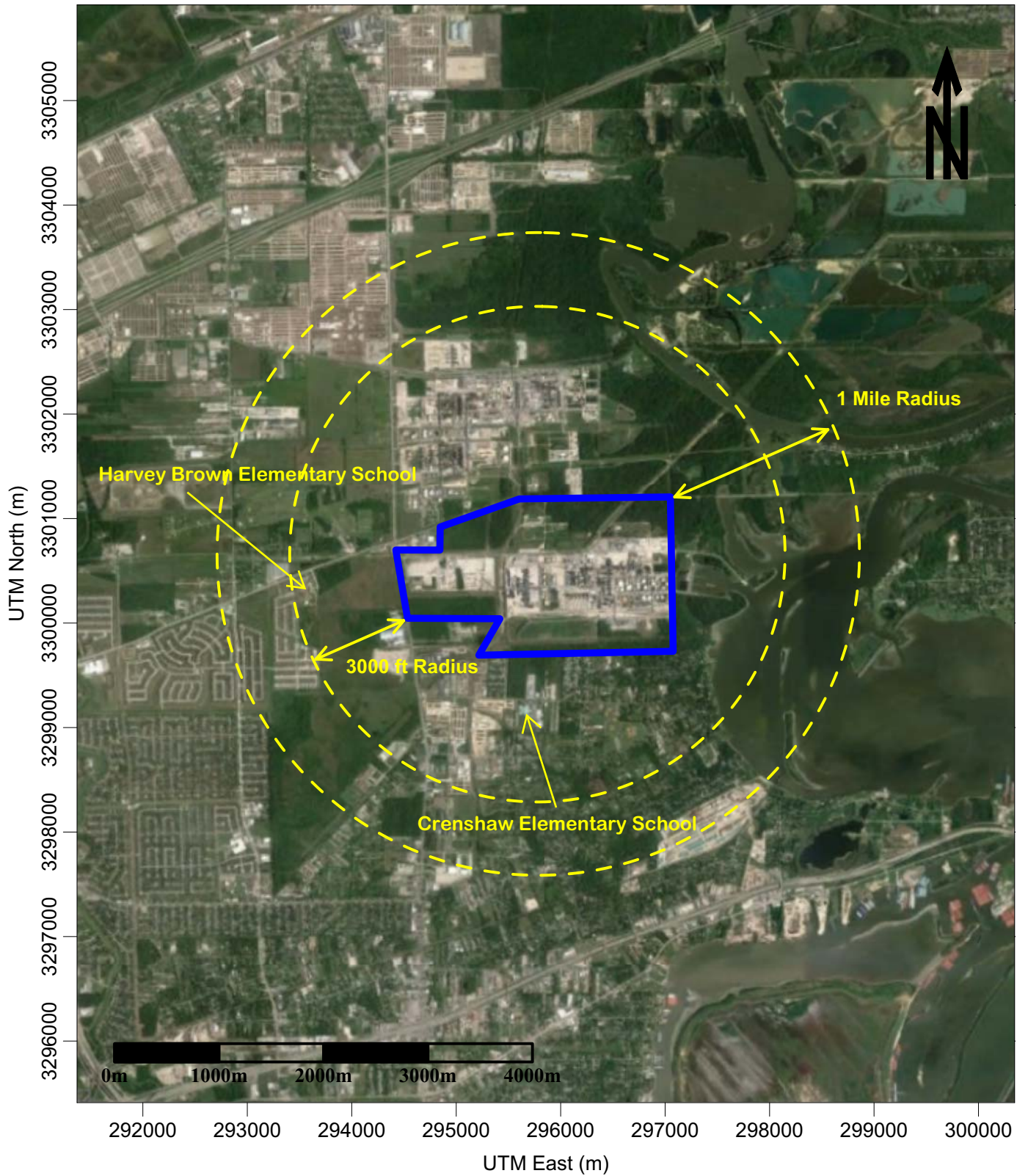
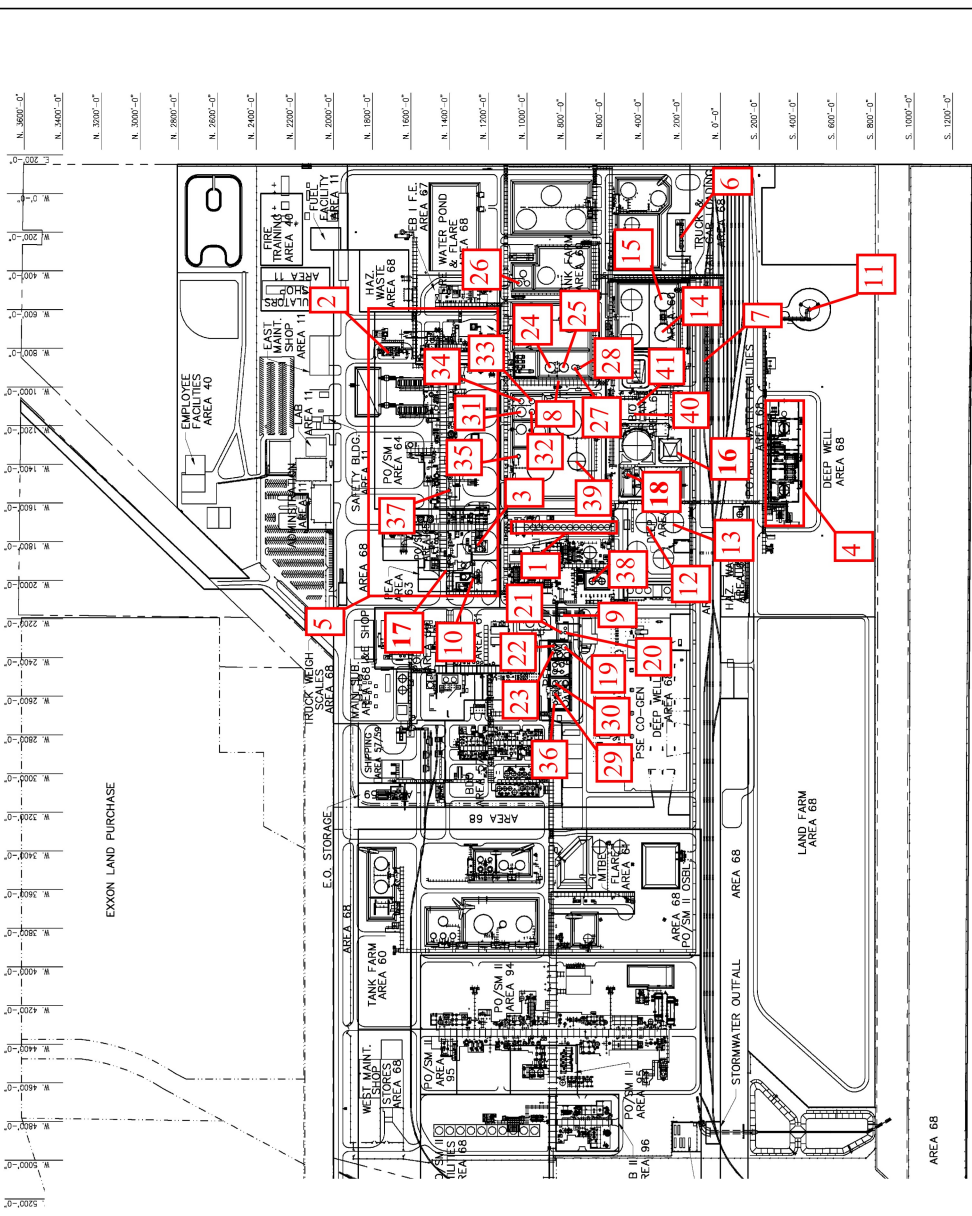


Figure 1-2
Plot Plan

- Legend**
1. PO/SM 1 Cooling Tower (EPN: ECOOL1)
 2. Catalytic Converter (EPN: EF64170)
 3. Hot Oil Heater (EPN: EF65630)
 4. Deep Well Fugitives (EPN: EFUGDW)
 5. PO/SM 1 Fugitives (EPN: EFUGOSMI) & PO/SM 1 Analyzers (EPN: EANAOSMI)
 6. HAS Truck Loading (EPN: ELHASTRK)
 7. HAS Rail Loading (EPN: ELHASRL)
 8. MBA Loading (EPN: ELMBA)
 9. PE/A Loading (EPN: ELPEA)
 10. RFO 635/637 Loading (EPN: ELRFO635/ELRFO637)
 11. Deep Well Flare (EPN: EFL68910)
 12. Aeration Tank 127 (EPN: ETK68127)
 13. Aeration Tank 128 (EPN: ETK68128)
 14. Equalization Tank 898 (EPN: ETK60898)
 15. Equalization Tank 897 (EPN: ETK60897)
 16. AB4 Fugitives Bioplant (EPN: EFUGBIO4)
 17. PE/A Test Tanks A/B (EPN: ED6312A/ED6312B)
 18. Stormwater tank TK-6802 (EPN: ETK6802)
 19. PE/A Intermediate Storage tank (EPN: ETK60001)
 20. Toluene Storage Tank (EPN: ETK60003)
 21. MPG Storage Tank (EPN: ETK60004)
 22. PE/A Storage Tank (EPN: ETK60005)
 23. PE/A Storage Tank (EPN: ETK60006)
 24. Dehydration Feed Tank (EPN: ETK60220)
 25. Crude ACP Tank (EPN: ETK60221)
 26. HAS Storage Tank (EPN: ETK60223)
 27. Octane Storage Tank (EPN: ETK60225)
 28. Octanoic Acid Tank (EPN: ETK60226)
 29. PE/A Feed Tank (EPN: ETK60285A)
 30. PE/A Feed Tank (EPN: ETK60285B)
 31. Styrene Surge Tank (EPN: ETK60320)
 32. Styrene Test Tank (EPN: ETK60321A)
 33. Styrene Test Tank (EPN: ETK60321B)
 34. Styrene Test Tank (EPN: ETK60321C)
 35. HAS Storage Tank (EPN: ETK60631)
 36. PE/A Storage Tank (EPN: ETK60561)
 37. Catalyst Preparation tank (EPN: ETK64305)
 38. RFO637 Tank (EPN: ETK68632A)
 39. Wastewater Tank (EPN: ETK68784)
 40. Bioplant cooling tower (EPN: ECT68421)
 41. Thermal oxidizer A/B (EPN: EF68154A/B)



PROPERTY OF
ARCO Chemical Company
CONFIDENTIAL
INFORMATION

ARCO Chemical Company
LOCATION: CHANNELVIEW PLANT
TCD: R.P.T.

PLANT PLAN
OVERALL PLANT FACILITIES

REV	DATE	BY	CHKD	APP'D	DESCRIPTION
1	07/19/11				ISSUED FOR PERMITS
2	07/19/11				REVISED FOR PERMITS
3	07/19/11				REVISED FOR PERMITS
4	07/19/11				REVISED FOR PERMITS
5	07/19/11				REVISED FOR PERMITS
6	07/19/11				REVISED FOR PERMITS
7	07/19/11				REVISED FOR PERMITS
8	07/19/11				REVISED FOR PERMITS
9	07/19/11				REVISED FOR PERMITS
10	07/19/11				REVISED FOR PERMITS
11	07/19/11				REVISED FOR PERMITS
12	07/19/11				REVISED FOR PERMITS
13	07/19/11				REVISED FOR PERMITS
14	07/19/11				REVISED FOR PERMITS
15	07/19/11				REVISED FOR PERMITS
16	07/19/11				REVISED FOR PERMITS
17	07/19/11				REVISED FOR PERMITS
18	07/19/11				REVISED FOR PERMITS
19	07/19/11				REVISED FOR PERMITS
20	07/19/11				REVISED FOR PERMITS
21	07/19/11				REVISED FOR PERMITS
22	07/19/11				REVISED FOR PERMITS
23	07/19/11				REVISED FOR PERMITS
24	07/19/11				REVISED FOR PERMITS
25	07/19/11				REVISED FOR PERMITS
26	07/19/11				REVISED FOR PERMITS
27	07/19/11				REVISED FOR PERMITS
28	07/19/11				REVISED FOR PERMITS
29	07/19/11				REVISED FOR PERMITS
30	07/19/11				REVISED FOR PERMITS
31	07/19/11				REVISED FOR PERMITS
32	07/19/11				REVISED FOR PERMITS
33	07/19/11				REVISED FOR PERMITS
34	07/19/11				REVISED FOR PERMITS
35	07/19/11				REVISED FOR PERMITS
36	07/19/11				REVISED FOR PERMITS
37	07/19/11				REVISED FOR PERMITS
38	07/19/11				REVISED FOR PERMITS
39	07/19/11				REVISED FOR PERMITS
40	07/19/11				REVISED FOR PERMITS
41	07/19/11				REVISED FOR PERMITS

SECTION 2

PROCESS DESCRIPTION

2.1 Process Description

The PO/SM I Facility includes seven major process areas. The PO/SM Facility process units and areas are as follows:

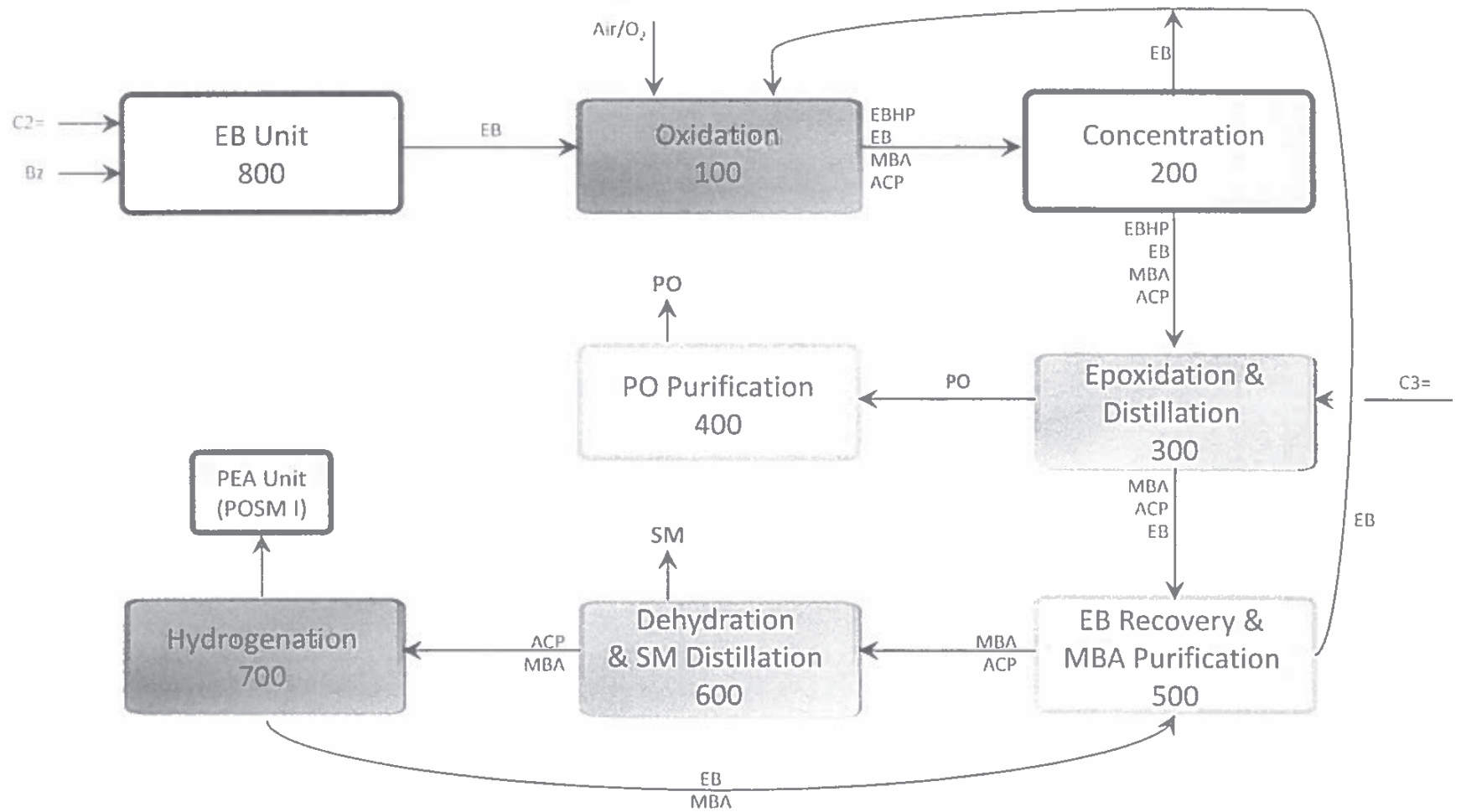
- PO/SM I Unit
 - Oxidation and Concentration
 - Epoxidation
 - PO Purification
 - EB Recovery / Methylbenzyl Alcohol (MBA) Distillation
 - MBA Dehydration / Styrene Monomer (SM) Refining
 - Acetophenone (ACP) Hydrogenation
 - Phenylethyl Alcohol (PEA) refining

PO and SM are produced by first combining EB and air in an oxidation reaction system to produce ethylbenzene hydroperoxide (EBHP). The EBHP is reacted with propylene in the epoxidation section to form MBA, PO, and ACP. MBA and ACP can be directed forward in the process or stored in the POSMI Unit Tanks (EPNs: ETK60220 and ETK60221, respectively). The PO is purified and either used within the Channelview Plant as feed to other facilities or sold. In the MBA dehydration and SM refining section, the MBA is dehydrated to form SM. The ACP is hydrogenated to form more MBA for subsequent production of SM. The SM is sent to storage (EPNs: ETK60320 and ETK60321A/B/C) prior to being loaded for shipping off-site. Vents from the PO and SM sections can be controlled by either the Continuous Flare (NSR permit 4121) or Catalytic Incinerator (EPN EF64170).

Process residues are handled on site in the existing plant fuel systems or sold as fuel. Process and maintenance wastewater is treated in the facility wastewater system (EPNs ETK68784, ETK60897, ETK60898, ETK68127, ETK68128, EFUGBIO4) or injected into the deepwell.

Figure 2-1
POSM1 Production Unit Process Flow Diagram

POSM By Area



SECTION 3

EMISSION CALCULATION METHODOLOGY

This section describes the methodology used to calculate Potential-to-Emit (PTE) emissions from the sources affected by this project using Best Available Control Technology (BACT) level controls. Emissions calculations are being provided electronically per TCEQ guidance. Emission calculations are being submitted electronically with this application.

3.1 Fugitive emissions

The 28VHP fugitive emissions monitoring program is used to control traditional fugitive emissions from components in greater than 10% VOC service in the POSMI Unit and Utilities Area. The fugitive emissions from equipment in this area are estimated using the 28VHP program control efficiencies. Additionally, a control efficiency of 75% is used for connectors and valves that are monitored annually, and a control efficiency of 97% is used for connectors and valves that are monitored quarterly. The process streams that include both streams that contain ethylene and process streams that do not contain ethylene are affected, therefore SOCFI with ethylene, SOCFI average, and SOCFI without ethylene factors are used in the fugitive emission estimation calculations as appropriate for each stream based on the potential to contain ethylene. Emissions from equipment such as caps, plugs, heat exchanger heads, site glasses, flanges, and connectors were calculated using the appropriate emission factor identified in TCEQ EI Guidance Appendix A Table A-6 for non-traditional fugitive components and control efficiency for connectors per monitoring frequency. Emissions are calculated per the TCEQ Air Permit Technical Guidance for Chemical Sources Fugitive Guidance issued June 2018. The counts are based on current fugitive emissions monitoring system data.

3.2 Storage Tanks

The storage tank emissions are estimated by using the emissions calculation methodology specified in EPA AP-42 Chapter 7, effective March 2020. The electronic emissions calculation workbook contains a summary of operation and tank conditions used to estimate emissions.

3.3 Heaters

Annual and short-term emission estimates for the heaters are based on gas fuel rates and emission factors. The NO_x emission factor is derived from test data and best engineering practices. Emission factors from AP-42, Chapter 1, Tables 1.4-1 and 1.4-2 were used to determine emissions of CO, SO₂, and PM for combustion of natural gas and/or fuel gas and VOC for combustion of natural gas. VOC emissions from fuel gas are based on historical fuel sampling and engineering knowledge.

3.4 Catalytic Incinerators

The VOC emissions are estimated based on stream flows and composition. The composition of the vent stream is derived from historical process data and process knowledge. The NO_x

emission factor was provided by the manufacture for design. Emission factors from AP-42, Chapter 1, Tables 1.4-1 and 1.4-2 were used to determine emissions for CO, SO₂, and PM for combustion of fuel and process gas.

Emission represented from the Incinerator include: emissions resulting from the activation of pressure relief devices specifically designed to direct gases from units as part of normal operations; venting through control valves by procedure; emissions resulting from the implementation of procedures specifically designed to direct gases from units as part of normal operations, maintenance, shutdown or startup; and emissions resulting from the automatic or manual activation of interlocks and process safety systems specifically designed to direct gasses from units as part of normal operations, shutdown or startup.

3.5 Flare Emissions

The VOC emissions are estimated based on stream flows and composition. The composition of the streams is derived from historical process data and process knowledge. NO_x and CO emissions are estimated using emissions factors provided in TCEQ publication RG-360A/11, Appendix A: Technical Supplement, Table A-6, “Air Permit Flare Emissions Factors,” revised February 2012. SO₂ emissions are estimated using worst-case maximum natural gas flow rates and emission factor for Natural Gas combustion identified in EPA AP-42 Chapter 1.4, effective July 1998 and worst-case flow rate of sulfur containing process streams.

Flare emission limits from the Deepwell Flare (EPN EFL68910) include: emissions resulting from the activation of pressure relief devices specifically designed to direct gases from units as part of normal operations; venting through control valves by procedure; emissions resulting from the implementation of procedures specifically designed to direct gases from units as part of normal operations, maintenance, shutdown or startup; and emissions resulting from the automatic or manual activation of interlocks and process safety systems specifically designed to direct gasses from units as part of normal operations, shutdown or startup. Venting from to the Deepwell Flare is minimized to the extent practicable. The Deepwell Flare is designed to ensure that EPN EFL68910 maintains compliance with NSR Permit No. 2993 and with applicable NSPS, MACT and State regulations.

3.6 Cooling Tower Emissions

The hourly VOC emissions rate is based on the emission factor per EPA AP-42 Chapter 5, Table 5.1-2 Cooling Tower Controlled Emissions Factor, and cooling tower circulation rate. The permitted annual VOC emissions factor was derived from actual historical measurement data from a HRVOC cooling tower water analyzer.

The PM emissions are calculated based on measured Total Dissolved Solids (TDS) and estimated Drift Eliminator percentage. The PM₁₀/PM_{2.5} ratio is calculated based on “Calculating Realistic PM₁₀ Emissions from Cooling Towers”, by Joel Reisman and Gordon Frisbie, 2000.

3.7 Loading Emissions

The VOC emissions are estimated based on TCEQ guidance for Loading Operations and the EPA AP-42 Chapter 5.2 loading equation. VOC emissions are based on historical operation and engineering process knowledge.

SECTION 4

BEST AVAILABLE CONTROL TECHNOLOGY

In accordance with 30 TAC Chapter 116, §116.111(a)(2)(C), any new or modified facility must utilize best available control technology (BACT), with consideration given to the technical practicability and economic reasonableness of reducing or eliminating the emissions from the facility. Below is a BACT evaluation of the POSMI Production Unit emission sources being modified. BACT is not being reevaluated for existing sources where no physical modification of equipment is occurring with this project, change in calculation methodology or update in AP-42 version factors.

4.1 Storage Tanks

Tier I BACT for a tank that is less than 25,000 gallons or is storing material with a vapor pressure less than 0.5 psia is a fixed roof tank with submerged fill (FR with SF) that is white or aluminum in color. The operating conditions during tank filling to minimize emissions, in addition to storing low vapor pressure material demonstrate that the tanks meet Tier III for fill pipe design BACT. For all other tanks storing material with a vapor pressure less than 11 psia is to install an internal floating roof (IFR), external floating roof (EFR) or vent the tank to control. Additionally, no physical modifications or changes in service for the permitted tanks are associated with this application, except as noted below. Tank speciation has been updated based on historical operating data. The following modified tanks meet BACT as shown:

Tank No.	EPN	Tank Type	VP>0.5 psia (Y/N)	Size > 25 kgal (Y/N)	BACT
TK-60321A/B/C	ETK60321A/B/C	Fixed Roof	N	Y	White in color, tank fill line at or below drain line
TK-60221	ETK60221	Fixed Roof	N	Y	White in color, tank fill line at or below drain line
TK-60223	ETK60223	Internal Floating Roof	Y	Y	IFR with mechanical shoe seal, painted white
TK-68784	ETK68784	Fixed Roof	N	Y	White in color, tank fill line at or below drain line
D-6312A/B	ED6312A/B	Fixed Roof	N	N	White in color, tank fill line at or below drain line
TK-60001	ETK60001	Fixed Roof	N	N	White in color, tank fill line at or below drain line
TK-60004	ETK60004	Fixed Roof	N	N	White in color, tank fill line at or below drain line
TK-60006	ETK60006	Fixed Roof	N	Y	White in color, tank fill line at or below drain line
TK-60226	ETK60226	Fixed Roof	N	N	White in color, tank fill line at or below drain line
TK-60631	ETK60631	Fixed Roof	N	Y	White in color, tank fill line at or below drain line
TK-60561	ETK60561	Fixed Roof	N	Y	White in color, tank fill line at or below drain line
TK-64305	ETK64305	Fixed Roof	N	N	White in color, tank fill line at or below drain line

Tank No.	EPN	Tank Type	VP>0.5 psia (Y/N)	Size > 25 kgal (Y/N)	BACT
TK-68632A	ETK68632A	Fixed Roof	N	Y	White in color, tank fill line at or below drain line

4.2 Thermal Control Devices

The flares are operated with at least 98% destruction efficiency for organic compounds. No halogenated compounds are flared. Vents from MSS activities sent to the flare will comply with BACT requirements.

The Catalytic Incinerator operates with an exhaust gas VOC concentration less than 20 ppmv or with a VOC destruction efficiency of at least 98%.

4.3 Fugitives

The BACT for fugitive emissions are based on the emission factors for the various equipment components at the facility as defined in the TCEQ Air Permit Technical Guidance for Chemical Sources Fugitive Guidance. All traditional fugitive piping component in > 10% VOC service, authorized in this permit renewal, will meet the more stringent TCEQ BACT standards by using the 28VHP with AVO Leak Detection and Repair (LDAR) program, to comply with current TCEQ BACT guidelines for fugitive piping component emissions, as appropriate. Non-traditional components and components in < 10% VOC service will be verified for leaks through audio, visual and olfactory inspections and repaired as required, unless a more stringent regulatory monitoring required by a regulation.

4.4 Loading

Tier I BACT for a loading operation is that loading material with a vapor pressure less than 0.5 psia is submerged fill or bottoms loading. The operating conditions during tank filling to minimize emissions, in addition to storing low vapor pressure material demonstrate that the loading operation meets Tier III BACT.

Material Loaded	EPN	VP>0.5 psia (Y/N)	BACT
Heavy Aromatic Solvent	ELHASTRK/EL HASRL	N	Submerged Fill or Bottoms Loaded
MBA	ELMBA	N	Submerged Fill or Bottoms Loaded
PEA	ELPEA	N	Submerged Fill or Bottoms Loaded
RFO-637	ELRFO637	N	Submerged Fill or Bottoms Loaded

SECTION 5

REGULATORY APPLICABILITY

Pursuant to TCEQ 30 TAC §116.311, Lyondell will meet all rules and regulations of the TCEQ and the intent of the TCAA for the emission sources and activities addressed in this permit renewal application, as follows:

- §116.311(a)(1) through (a)(6) – These items are addressed individually below. A completed Form PI-1R has been signed by an authorized representative of Lyondell and is included in Appendix A.
- §116.311(b)(1) through (b)(2) – These items are addressed individually below.
- §116.311(c) – This item is addressed below.

Pursuant to TCEQ 30 TAC §116.111, Lyondell will meet all rules and regulations of the TCEQ and the intent of the TCAA for the emission sources and activities addressed in this permit amendment application, as follows:

- §116.111(a)(1) – A completed Form PI-1 has been signed by an authorized representative of Lyondell and is included in Appendix A.
- §116.111(a)(2)(A) through (L) – These items are addressed individually below.
- §116.111(b) – Lyondell will comply with applicable 30 TAC 39 and 30 TAC 55 public notice and public participation requirements for this permit amendment application.

5.1 General Application Requirements - §116.311

30 TAC 116.311(a) – Permit Renewal Application:

30 TAC 116.311(a)(1) – Dockside vessel Emissions: There are no dockside vessel emissions in the POSMI Production Unit.

30 TAC 116.311(a)(2) – Operating in Accordance with Existing Permit: This unit is being operated in accordance with all the requirements and conditions of the existing permit.

30 TAC 116.311(a)(3) – New Source Performance Standards (NSPS): The Title V permit will provide relevant New Source Performance Standards applicability for the POSMI Production Unit. Please refer to the Title V permit for any NSPS applicability requirements. Lyondell will meet all applicable controls, recordkeeping, reporting, monitoring, and testing requirements.

30 TAC 116.311(a)(4) – National Emissions Standards for Hazardous Air Pollutants (NESHAP): The Title V permit will provide relevant National Emissions Standards for Hazardous Air Pollutants applicability for the POSMI Production Unit. Please refer to the

Title V permit for any NESHAP applicability requirements. Lyondell will meet all applicable controls, recordkeeping, reporting, monitoring, and testing requirements.

30 TAC 116.311(a)(5) – Maximum Achievable Control Technology (MACT): The Title V permit will provide relevant Maximum Achievable Control Technology applicability for the POSMI Production Unit. Please refer to the Title V permit for any MACT applicability requirements. Lyondell will meet all applicable controls, recordkeeping, reporting, monitoring, and testing requirements.

30 TAC 116.311(a)(6) – Regulation Governing Constructed or Reconstructed Major Sources: This provision does not apply to the proposed facilities under consideration in this permit application.

30 TAC 116.311(b) – Compliance with Federal or State Air Quality Control Requirements

30 TAC 116.311(b)(1) – Additional Information: Lyondell will provide additional information about the emissions from the facility and their impact on their surrounding area at the request of the TCEQ. Air dispersion modeling is being submitted with this application.

30 TAC 116.311(c) – Compliance History: Lyondell is an existing site greater than 5-years old. Lyondell requests that TCEQ compile the history of the site.

5.2 General Application Requirements - §116.111

The emissions associated with the proposed POSM1 Production Unit project will comply with all applicable air quality rules and regulations and with the intent of the TCAA, including protection of the health and the physical property of people, as required by §116.111(a)(2)(A)(i). Following is a summary of rules and regulations as they apply to the proposed project:

30 TAC 101 - General Rules: The facility will be operated in accordance with the General Rules relating to circumvention, nuisance, traffic hazard, notification requirements for major upset, notification requirements for unplanned maintenance, sampling, sampling ports, emission inventory requirements, sampling procedures and terminology, compliance with Environmental Protection Agency (EPA) Standards, emissions fees, and all other applicable General Rules.

30 TAC 111 - Visible Emissions and Particulate Matter: Lyondell will comply with all applicable requirements under this chapter.

30 TAC 112 - Sulfur Compounds: Lyondell will comply with all applicable requirements under this chapter.

30 TAC 113 - Toxic Materials: TCEQ has incorporated MACT standards (40 CFR 63) into Chapter 113 by reference. The proposed facility will comply with all applicable provisions of Chapter 113 concerning control, recordkeeping, reporting, and monitoring requirements.

30 TAC 114 - Motor Vehicles: This provision of the rule controls the emissions from motor vehicles and does not apply to the facilities under consideration in this permit application.

30 TAC 115 - Volatile Organic Compounds: The proposed facility is located in Harris County and is regulated by the following Rules that are applicable to this permit application:

Subchapter B Division 1 - Storage of VOC

Lyondell will comply with all the applicable control, monitoring, inspection, testing, and recordkeeping requirement listed in this Subchapter and Division.

Subchapter B Division 2 – Vent Gas Control

Lyondell will comply with all the applicable control, monitoring, inspection, testing, and recordkeeping requirement listed in this Subchapter and Division.

Subchapter C Division 1 – Loading and Unloading of VOC

Lyondell will comply with all the applicable control, monitoring, and inspection requirements listed in this Subchapter and Division.

Subchapter D Division 3 - Fugitive Emission Control in Petrochemical Process in Ozone Nonattainment Areas

Lyondell will use TCEQ's 28VHP Leak Detection and Repair (LDAR) Program to comply with the requirements of Regulation V Subchapter D Division 3 for traditional fugitive components for Harris County for all unit components in VOC service, and will comply with the monitoring and inspection requirements in this division.

30 TAC 116 - Permits for New Construction or Modification: Lyondell is complying with the requirements of Chapter 116 by submitting this permit application and as outlined below for each of the following sections:

Rule 116.111(a)(2)(A) Protection of public health and welfare

As outlined below, the emissions from Lyondell will comply with all air quality rules and regulations and with the intent of the TCAA, including protection of the health and physical property of the people.

Rule 116.111(a)(2)(B) Measurement of Emissions

The proposed facility will have provisions for measuring the emission of significant air contaminants as determined by the Executive Director.

Rule 116.111(a)(2)(C) Best Available Control Technology (BACT)

Section 4 of this application presents a discussion of BACT for the modified facilities associated with this application.

Rule 116.111(a)(2)(D) Federal New Source Performance Standards (NSPS)

Lyondell will comply with all applicable 40 CFR Part 60 controls, recordkeeping, reporting, and monitoring requirements.

Rule 116.111(a)(2)(E) National Emission Standards for HAPs (NESHAP)

Lyondell will comply with all applicable 40 CFR Part 61 controls, recordkeeping, reporting, and monitoring requirements.

Rule 116.111(a)(2)(F) Maximum Achievable Control Technology (MACT)

Lyondell will comply with all applicable 40 CFR Part 63 controls, recordkeeping, reporting, and monitoring requirements.

Rule 116.111(a)(2)(G) Performance Demonstration

The proposed facilities are expected to perform as represented in this application.

Rule 116.111(a)(2)(H) Nonattainment Review

The facility is located in a nonattainment area for VOC and NO_x. See Section 1.4, PSD and Non-attainment Review, for details.

Rule 116.111(a)(2)(I) Prevention of Significant Deterioration (PSD) review

The facility is located in an attainment area for SO₂, PM₁₀, CO, and lead.

See Section 1.4, PSD and Non-attainment Review, for details.

Rule 116.111(a)(2)(J) Air Dispersion Modeling

Air dispersion modeling is being submitted with this application.

Rule 116.111(a)(2)(K) Hazardous Air Pollutants

Lyondell will comply with all applicable requirements under Subchapter E of this chapter.

Rule 116.111(a)(2)(L) Mass Cap and Trade Allowances

Lyondell Channelview Facility is located in the Houston/Galveston/Brazoria area. Lyondell has sufficient NOx allowances to demonstrate compliance with the mass emissions cap and trade program.

30 TAC 117 - Nitrogen Compounds: Lyondell will comply with all applicable subchapters and divisions contained in Chapter 117.

30 TAC 118 - Air Pollution Episodes: The facility will be operated in compliance with the rules relating to generalize a localized air pollution episode. An Emissions Reduction Plan is maintained as required by §118.5.

30 TAC 122 - Federal Operating Permits: The Channelview Facility operates under Federal Operating Permit No. O1387. The Title V Permit will be revised to reference the changes in applicable requirements resulting from the amendment to the NSR permit.

APPENDIX A

ADMINISTRATIVE CONSIDERATIONS AND APPLICATION FORMS

Permit Fee Calculation

The amendment application fee is calculated according to 30 TAC §116.141(a), Determination of Fees, which specifies that the fee for an amendment is based on the capital cost of the project. The permit application fee is calculated and summarized on the TCEQ Table 30 included in the NSR Workbook.

The permit amendment fee of \$9,632.60 is provided with this application. The fee payment is being submitted as an electronic fund transfer from Lyondell Chemical Company to TCEQ.

The permit renewal fee is calculated according to 30 TAC §116.313, Renewal Fee Schedule, which calculates the fee based on the total annual allowable emissions. In addition to the permit renewal fee, the amendment application fee is calculated according to 30 TAC §116.141(a), Determination of Fees, which specifies that the fee for an amendment is based on the capital cost of the project. TCEQ Tables 30 and 30-R are included in the NSR Workbook submitted electronically with this application.

The permit renewal fee of \$8,732.60 in addition to the permit amendment fee of \$900 is being submitted through electronic transfer for this application.

Compliance History

Lyondell is an existing site greater than 5-years old. Lyondell requests that TCEQ compile the history of the site.

Administratively Application Forms

The administrative information has been completed in the NSR Workbook and sent electronically to the Air Permit Initial Review Team. Additionally the project EMEW workbook containing the modeling review information has been provided electronically.

Texas Commission on Environmental Quality
Form PI-1 General Application
General

Date: 1/7/2021
Permit #: 2993
Company: Lyondell

I. Is a list of MSS activities attached?	N/A
J. Is a discussion of state regulatory requirements attached, addressing 30 TAC Chapters 101, 111, 112, 113, 115, and 117?	Yes
For all applicable chapters, does the discussion include how the facility will comply with the requirements of the chapter?	Yes
For all not applicable chapters, does the discussion include why the chapter is not applicable?	Yes
K. Are all other required tables, calculations, and descriptions attached?	Yes

VII. Signature

The owner or operator of the facility must apply for authority to construct. The appropriate company official (owner, plant manager, president, vice president, or environmental director) must sign all copies of the application. The applicant's consultant cannot sign the application. **Important Note: Signatures must be original in ink, not reproduced by photocopy, fax, or other means, and must be received before any permit is issued.**

The signature below confirms that I have knowledge of the facts included in this application and that these facts are true and correct to the best of my knowledge and belief. I further state that to the best of my knowledge and belief, the project for which application is made will not in any way violate any provision of the Texas Water Code (TWC), Chapter 7; the Texas Health and Safety Code, Chapter 382; the Texas Clean Air Act (TCAA); the air quality rules of the Texas Commission on Environmental Quality; or any local governmental ordinance or resolution enacted pursuant to the TCAA. I further state that I understand my signature indicates that this application meets all applicable nonattainment, prevention of significant deterioration, or major source of hazardous air pollutant permitting requirements. The signature further signifies awareness that intentionally or knowingly making or causing to be made false material statements or representations in the application is a criminal offense subject to criminal penalties.

Name:	Christopher M Cain
Signature:	<i>Christopher M. Cain</i>
<i>Original signature is required.</i>	
Date:	1/7/2021

APPENDIX B

TECHNICAL APPLICATION TABLES

Technical Application Tables

The following table is included in the electronic NSR workbook:

Table 1(a)- Emission Point Summary for all new and modified sources

The following tables are included in the electronic emissions calculation workbook:

Table 2- Material Balance

Table 6- Boilers and Heaters

Table 7(a)- Vertical Fixed Roof Storage Tank Summary

Table 7(d)- Internal Floating Roof Storage Tank Summary

Table 8- Flares

APPENDIX C

EMISSION CALCULATIONS

Included in this application is a summary of all emission sources affected by this project including their speciated emissions. In addition, any calculation that has been updated to add additional operating scenario has been included. All calculations have been submitted electronically with this application.

APPENDIX D

STANDARD PERMIT APPROVAL LETTERS

Included in this appendix are the TCEQ approval letter for the following Standard Permit Registration numbers:

- Standard Permit Registration No. 158688

Jon Niermann, *Chairman*
Emily Lindley, *Commissioner*
Bobby Janecka, *Commissioner*
Toby Baker, *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

October 28, 2019

MR TOM WARNEMENT
ENVIRONMENTAL MANAGER - AIR
LYONDELL CHEMICAL COMPANY
PO BOX 777
CHANNELVIEW TX 77530-0777

Re: Pollution Control Projects Air Quality Standard Permit
(Effective 2/9/2011)
Standard Permit Registration Number: 158688
Standard Permit Expiration Date: October 28, 2029
Lyondell Chemical Company
Lyondell Chemical Channelview
Affected Permit: 2993
Channelview, Harris County
Regulated Entity Number: RN100633650
Customer Reference Number: CN600344402

Dear Mr. Warnement:

Lyondell Chemical Company submitted an application on October 7, 2019 to register construction related to Pollution Control Projects to be located at 2502 Sheldon Rd, Channelview, Harris County. We understand that this registration is for emissions associated with the Deepwell Flare.

The Texas Commission on Environmental Quality (TCEQ) has determined that your proposed emissions are authorized by this standard permit pursuant to Title 30 Texas Administrative Code § 116.602 and Texas Health and Safety Code § 382.05195, if constructed and operated as described in your registration. Authorized emissions are listed on the attached table.

You must begin construction or modification of these facilities in accordance with this standard permit no later than 18 months after the date of this letter. After completion of construction or modification, the appropriate TCEQ Regional Office must be notified prior to commencing operation and the facility shall be operated in compliance with all applicable conditions of the claimed standard permit.

You are reminded that 30 TAC § 116.615 requires that any construction or change authorized by this standard permit be administratively incorporated into the affected facilities' permit(s) at the next amendment or renewal.

You are also reminded that these facilities must comply with all rules and regulations of the TCEQ and of the U.S. Environmental Protection Agency at all times.

If you need further information or have any questions, please contact Ms. Nancy Akintan at (713) 767-3773 or write to the Texas Commission on Environmental Quality, Office of Air, Air Permits Division, MC-163, P.O. Box 13087, Austin, Texas 78711-3087.

Mr. Tom Warnement

Page 2

October 28, 2019

Re: Standard Permit Registration Number 158688

Sincerely,

A handwritten signature in black ink that reads "Kristyn Campbell". The signature is written in a cursive, flowing style.

Kristyn Campbell, Manager

Rule Registrations Section

Air Permits Division

Texas Commission on Environmental Quality

cc: Director, Harris County, Pollution Control Services, Pasadena
Air Section Manager, Region 12 - Houston

Project Number: 307668

Standard Permit Maximum Emission Rates Table
Permit Number 158688

The facilities and emissions included in this table have been represented and reviewed as the maximum emissions authorized by this standard permit registration.

Emission Point No.	Source Name	NSR Permit	Pollutant	Authorized PCP Emissions	
				lbs/hr	tpy
EFL68910	Deep Well Flare	2993	CO	32.49	35.01

CO - carbon monoxide

**Fugitive emissions are an estimate only and should not be considered as a maximum allowable

Date: October 28, 2019

APPENDIX E

PERMIT BY RULE APPROVAL LETTERS

Included in this appendix are the TCEQ approval letter for the following Permit by Rule Registration numbers:

- PBR Registration No. 108163

Jon Niermann, *Chairman*
Emily Lindley, *Commissioner*
Toby Baker, *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

May 7, 2019

Mr. Tom Warnement
Environmental Manager - Air
Lyondell Chemical Company
PO BOX 777
Channelview, TX 77530

Permit by Rule Registration Number: 108163
Lyondell Chemical Company
Project Description/Unit: Lyondell Chemical Channelview
City: Channelview, Harris County
Regulated Entity Number: RN100633650
Customer Reference Number: CN600344402
30 TAC § 106.478
Affected Permit(s): 2993

This is in response to your Permit by Rule (PBR) registration submitted through the online ePermits process for your facility located near Channelview, Harris County. Based on the information submitted and review completed by the Rule Registration Section, this is an acknowledgement that Lyondell Chemical Company has certified emissions associated with Lyondell Chemical Channelview under the Permit By Rule(s) listed above. For rule information see: www.tceq.texas.gov/permitting/air/nav/numerical_index.html. Records must be maintained in accordance with Title 30 Texas Administrative Code § 106.8 to demonstrate compliance with the claimed PBRs.

As referenced in 30 TAC § 116.116(d)(2), all changes authorized under Chapter 106 to a permitted facility shall be incorporated into the NSR Permit No. 2993 when it is amended or renewed.

As a reminder, regardless of the authorization mechanism, all facilities must be in compliance and operate in accordance with all rules and regulations of the TCEQ and the U.S. Environmental Protection Agency. Facilities not operating in accordance with these rules and regulations, or that misrepresented or failed to fully disclose all relevant facts in obtaining this authorization may be subject to formal enforcement action.

This action is taken under authority delegated by the Executive Director of the TCEQ. If you need further information or have questions, please contact the Rule Registrations Section at (512) 239-1250 or write to the Texas Commission on Environmental Quality, Office of Air, Air Permits Division, MC-163, P.O. Box 13087, Austin, Texas 78711-3087.

Sincerely,

A handwritten signature in black ink that reads "Mark T. Meyer".

Mark Meyer, Manager

Rule Registrations Section
Air Permits Division
Texas Commission on Environmental Quality

[Project Number: 299944]

TABLE 2

**MATERIAL BALANCE
for the POSM I unit**

This material balance table is used to quantify possible emissions of air contaminants and special emphasis should be placed on potential air contaminants, for example: If feed contains sulfur, show distribution to all products. Please relate each material (or group of materials) listed to its respective location in the process flow diagram by assigning point numbers (taken from the flow diagram) to each material. The representations in this table are based on best estimates and should not be considered absolute values for all operating scenarios.

LIST EVERY MATERIAL INVOLVED IN EACH OF THE FOLLOWING GROUPS	Point No. from Flow Diagram	Process Rate (lbs/hr or SCFM) standard conditions: 70°F / 14.7 PSIA. Check appropriate column at right for each process.	Measurement	Estimation	Calculation
1. Raw Materials - Input Air/Oxygen Ethylbenzene Propylene Hydrogen		3,160 MM 1,869 MM 580 MM 10.5 MM		X X X X	
2. Fuels - Input Natural Gas		1,321 MM		X	
3. Products & By-Products - Output Propylene Oxide Styrene Monomer RFO Vapor purge Phenyl Ethyl Alcohol		719 MM 1,650 MM 188.97 MM 45.4 MM 5.265 MM		X X X X X	
4. Solid Wastes - Output Spent Catalyst		252 M		X	
5. Liquid Wastes - Output Wastewater Glycolic Fuel Liquid Waste to Deepwell		5,332 MM 61.43 MM 3,068 MM		X X X	
6. Airborne Waste (Solid) – Output Particulate		SEE TABLE 1(a)		X	
7. Airborne Wastes (Gaseous) - Output SEE TABLE 1(a)	FOR ALL EMISSION SOURCES	SEE TABLE 1(a)		X	

Note that the Total Products annual mass rate represented on this table is the only maximum expected annual value and the other represented annual mass rate values may vary as required.

*Miscellaneous wastes are listed in the annual waste summary report.

Analyzer emission summary

No of Analyzers	Flow Rate while sampling (SCFH)	Sample Duration min	Sample stream properties					Hourly Flow		Analyzer House emission speciation		Mass flow	Mass flow
			Composition	Wt%	MW	1/MW	Mol%	scfh	lbs/hr	Composition	Wt%	lb/hr	tpy
1	0.3	5	Ethylbenzene	100%	106.17	0.009	100%	0.03	0.01	Ethylbenzene	100.00%	0.007	0.031
1	0.2	5	Propylene	100%	42.08	0.024	100%	0.02	0.00	Propylene	69.47%	0.004	0.017
1	0.2	5	Propylene	100%	42.08	0.024	100%	0.02	0.00	Propane	26.02%	0.001	0.006
1	0.2	5	Propane	75%	44.10	0.023	76%	0.01	0.00	Acetaldehyde	1.73%	0.000	0.000
			Propylene	12%	42.08	0.024	13%	0.00	0.00	Propylene Oxide	2.78%	0.000	0.001
			Acetaldehyde	5%	44.05	0.023	5%	0.00	0.00				
			Propylene Oxide	8%	58.08	0.017	6%	0.00	0.00				
2	0.3	5	Propylene Oxide	100%	58.08	0.017	100%	0.05	0.01	Propylene Oxide	55.25%	0.012	0.052
1	0.3	5	Propylene Oxide	100%	58.08	0.017	100%	0.03	0.00	Acetaldehyde	12.56%	0.003	0.012
1	0.3	5	Acetaldehyde	90%	44.05	0.023	92%	0.02	0.00	Styrene	32.19%	0.007	0.030
			Propylene Oxide	10%	58.08	0.017	8%	0.00	0.00				
1	0.3	5	Styrene	100%	104.15	0.010	100%	0.03	0.01				
1	1.5	5	Styrene	1%	104.15	0.010	0.27%	0.00	0.00	Styrene	1.00%	0.001	0.006
			Non VOC	99%	28.00	0.036	99.73%	0.12	0.01	Non VOC	99.00%	0.141	0.619
1	1.5	5	Styrene	1%	104.15	0.010	0.27%	0.00	0.00				
			Non VOC	99%	28.00	0.036	99.73%	0.12	0.01				
1	6	5	Styrene	1%	104.15	0.010	0.27%	0.00	0.00				
			Non VOC	99%	28.00	0.036	99.73%	0.50	0.04				
1	6	5	Styrene	1%	104.15	0.010	0.27%	0.00	0.00				
			Non VOC	99%	28.00	0.036	99.73%	0.50	0.04				
1	6	5	Styrene	1%	104.15	0.010	0.27%	0.00	0.00				
			Non VOC	99%	28.00	0.036	99.73%	0.50	0.04				
1	2	5	Styrene	1%	104.15	0.010	0.27%	0.00	0.00				
			Non VOC	99%	28.00	0.036	99.73%	0.17	0.01				
1	0.5	5	Styrene	10%	104.15	0.010	3%	0.00	0.00	Styrene	10.00%	0.000	0.002
			Propylene Oxide	10%	58.08	0.02	6%	0.00	0.00	Propylene Oxide	10.00%	0.000	0.002
			Non VOC	80%	28.00	0.04	91%	0.04	0.00	Non VOC	80.00%	0.003	0.012
1	60	5	Non VOC	100%	28.00	4%	100%	5.00	0.37	Non VOC	100%	0.370	1.620

Emissions	lb/hr	TPY
Propylene	0.00	0.02
Propane	0.00	0.01
Ethylbenzene	0.01	0.03
Styrene	0.01	0.04
Acetaldehyde	0.00	0.01
Propylene Oxide	0.01	0.05
Total VOC	0.04	0.16

Bioplant Toxchem Input Parameters

EPN: Various

POSM Wastewater Feed Flows and Concentrations for Hourly and Annual Emissions Estimates

Compound Names	Max Hourly	Annual Average
Flow Rates (GPM)	1267.96	1012.91
	Waste Stream Concentrations (ppmw)	
Acetone	82.0	11.9
Acetophenone	56.0	8.0
Allyl Alcohol	27.0	5.4
Benzene	16.0	0.5
p-Diethylbenzene	55.0	1.8
Ethylbenzene	357.0	9.0
Methanol	2,202.0	689.3
alpha-METHYLBENZYL ALCOHOL	212.0	24.0
Phenol	455.0	12.3
1-PROPANOL	118.0	55.0
Propionaldehyde	90.0	41.9
1,2-PROPYLENE GLYCOL	1,420.0	120.0
Propylene Oxide	71.0	9.0
Styrene	45.0 *	5.4
Toluene	10.0	4.4
Cumene	19.0	0.6
Methyl Tert-Butyl Ether	18.0	0.6
Methyl Ethyl Ketone	164.0	30.8
TERT BUTYL ALCOHOL	592.0	20.0
1,4-BUTANEDIOL	862.0	27.0
N-METHYL-2-PYRROLIDONE	115.0	9.0
2-PHENYLETHANOL	1,702.0	11.4
gamma-Butyrolactone	721.0	16.0
Ethanol	95.0	29.0
m-Diethylbenzene	51.0	1.0
o-Diethylbenzene	19.0	0.7
Isopropyl Alcohol	227.0	11.0
Isobutanol	27.0	7.0
n-Butanol	25.0	9.0
Tetrahydrofuran	95.0	16.0
Acetaldehyde	6.0	1.1
tert-BUTYL ETHYL ETHER	23.0	0.6
n-PropylBenzene	11.0	0.7

*Styrene feed set to 24 ppm when one aeration tank is out of service.

Bioplant Emissions Summary

EPN: Various

Toxchem Model Results Summary

Pollutant Category	ETK60897		ETK60898		ETK68127	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Acetone	0.77	0.49	0.77	0.49	0.03	0.02
Acetophenone	0.23	0.15	0.23	0.15	0.05	0.02
Allyl Alcohol	0.09	0.08	0.09	0.08	0.04	0.03
Benzene	0.20	0.03	0.20	0.03	0.30	0.03
p-Diethylbenzene	0.34	0.05	0.34	0.05	1.81	0.21
Ethylbenzene	3.64	0.40	3.64	0.40	10.59	0.93
Methanol	9.37	12.86	9.37	12.86	0.15	0.16
alpha-METHYLBENZYL ALCOHOL	1.09	0.54	1.09	0.54	0.12	0.05
Phenol	0.28	0.03	0.28	0.03	0.00	0.00
1-PROPANOL	0.17	0.36	0.17	0.36	0.07	0.11
Propionaldehyde	0.68	1.39	0.68	1.39	0.67	1.11
1,2-PROPYLENE GLYCOL	1.65	0.61	1.65	0.61	1.26	0.39
Propylene Oxide	0.92	0.51	0.92	0.51	3.47	1.57
Styrene	0.47	0.25	0.47	0.25	6.74	5.43
Toluene	0.11	0.22	0.11	0.22	0.42	0.65
Cumene	0.13	0.02	0.13	0.02	0.55	0.06
Methyl Tert-Butyl Ether	0.22	0.03	0.22	0.03	0.36	0.04
Methyl Ethyl Ketone	1.80	1.48	1.80	1.48	1.18	0.79
TERT BUTYL ALCOHOL	0.92	0.14	0.92	0.14	0.61	0.08
1,4-BUTANEDIOL	0.00	0.00	0.00	0.00	0.00	0.00
N-METHYL-2-PYRROLIDONE	0.00	0.00	0.00	0.00	0.00	0.00
2-PHENYLETHANOL	0.14	0.00	0.14	0.00	0.00	0.00
gamma-Butyrolactone	0.05	0.00	0.05	0.00	0.02	0.00
Ethanol	0.40	0.54	0.40	0.54	0.04	0.04
m-Diethylbenzene	0.20	0.02	0.20	0.02	1.68	0.12
o-Diethylbenzene	0.15	0.03	0.15	0.03	0.62	0.08
Isopropyl Alcohol	1.49	0.32	1.49	0.32	1.60	0.28
Isobutanol	0.04	0.05	0.04	0.05	0.03	0.03
n-Butanol	0.11	0.18	0.11	0.18	0.09	0.11
Tetrahydrofuran	0.93	0.68	0.93	0.68	0.20	0.12
Acetaldehyde	0.07	0.05	0.07	0.05	0.00	0.00
tert-BUTYL ETHYL ETHER	0.28	0.03	0.28	0.03	0.47	0.04
n-PropylBenzene	0.09	0.02	0.09	0.02	0.74	0.15
Dipropylene Glycol	0.00	0.00	0.00	0.00	0.00	0.00
Tripropylene Glycol	0.00	0.00	0.00	0.00	0.00	0.00
Acrolein	0.00	0.00	0.00	0.00	0.00	0.00
ISOBUTANE	0.00	0.00	0.00	0.00	0.00	0.00
Isobutylene	0.00	0.00	0.00	0.00	0.00	0.00
Methyl Formate	0.00	0.00	0.00	0.00	0.00	0.00
Butane	0.00	0.00	0.00	0.00	0.00	0.00
Propylene	0.00	0.00	0.00	0.00	0.00	0.00
Butanol,sec-	0.00	0.00	0.00	0.00	0.00	0.00
Ethylene Glycol Monobutyl Ether	0.00	0.00	0.00	0.00	0.00	0.00
Tertiary Butyl Hydroperoxide (TBHP)	0.00	0.00	0.00	0.00	0.00	0.00
Isobutylene Oxide (dimethyloxirane)	0.00	0.00	0.00	0.00	0.00	0.00
Total VOC	26.26	21.07	26.26	21.07	33.88	12.66

Pollutant Category	ETK68128		EFUGBIO4		Total Emissions	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Acetone	0.03	0.02	0.01	0.02	1.57	1.00
Acetophenone	0.05	0.02	0.01	0.00	0.52	0.32
Allyl Alcohol	0.04	0.03	0.01	0.01	0.24	0.20
Benzene	0.30	0.03	0.00	0.00	0.69	0.09
p-Diethylbenzene	1.81	0.21	0.01	0.00	2.48	0.31
Ethylbenzene	10.59	0.93	0.04	0.00	17.68	1.71
Methanol	0.15	0.16	0.05	0.06	18.88	25.84
alpha-METHYLBENZYL ALCOHOL	0.12	0.05	0.03	0.01	2.32	1.13
Phenol	0.00	0.00	0.00	0.00	0.57	0.07
1-PROPANOL	0.07	0.11	0.02	0.04	0.44	0.86
Propionaldehyde	0.67	1.11	0.42	0.59	2.43	4.43
1,2-PROPYLENE GLYCOL	1.26	0.39	0.86	1.33	5.49	2.97
Propylene Oxide	3.47	1.57	0.58	0.65	5.84	3.21
Styrene	6.74	5.43	0.22	0.14	14.34	6.14
Toluene	0.42	0.65	0.00	0.00	0.64	1.07
Cumene	0.55	0.06	0.00	0.00	0.80	0.10
Methyl Tert-Butyl Ether	0.36	0.04	0.02	0.00	0.81	0.11
Methyl Ethyl Ketone	1.18	0.79	0.31	0.27	5.03	3.97
TERT BUTYL ALCOHOL	0.61	0.08	0.21	0.03	2.68	0.38
1,4-BUTANEDIOL	0.00	0.00	0.00	0.00	0.00	0.00
N-METHYL-2-PYRROLIDONE	0.00	0.00	0.00	0.00	0.00	0.00
2-PHENYLETHANOL	0.00	0.00	0.00	0.00	0.28	0.01
gamma-Butyrolactone	0.02	0.00	0.01	0.00	0.12	0.01
Ethanol	0.04	0.04	0.01	0.01	0.85	1.13
m-Diethylbenzene	1.68	0.12	0.02	0.00	2.08	0.15
o-Diethylbenzene	0.62	0.08	0.00	0.00	0.92	0.13
Isopropyl Alcohol	1.60	0.28	0.63	0.17	5.23	1.09
Isobutanol	0.03	0.03	0.02	0.02	0.13	0.15
n-Butanol	0.09	0.11	0.03	0.03	0.34	0.51
Tetrahydrofuran	0.20	0.12	0.04	0.02	2.07	1.49
Acetaldehyde	0.00	0.00	0.00	0.00	0.14	0.11
tert-BUTYL ETHYL ETHER	0.47	0.04	0.03	0.00	1.03	0.11
n-PropylBenzene	0.74	0.15	0.00	0.00	0.92	0.20
Dipropylene Glycol	0.00	0.00	0.00	0.01	0.00	0.01
Tripropylene Glycol	0.00	0.00	0.00	0.00	0.00	0.00
Acrolein	0.00	0.00	0.00	0.00	0.00	0.00
ISOBUTANE	0.00	0.00	0.00	0.00	0.00	0.00
Isobutylene	0.00	0.00	0.00	0.00	0.00	0.00
Methyl Formate	0.00	0.00	0.00	0.01	0.00	0.01
Butane	0.00	0.00	0.00	0.00	0.00	0.00
Propylene	0.00	0.00	0.00	0.00	0.00	0.00
Butanol,sec-	0.00	0.00	0.00	0.01	0.00	0.01
Ethylene Glycol Monobutyl Ether	0.00	0.00	0.00	0.01	0.00	0.01
Tertiary Butyl Hydroperoxide (TBHP)	0.00	0.00	0.00	0.00	0.00	0.00
Isobutylene Oxide (dimethyloxirane)	0.00	0.00	0.00	0.00	0.00	0.00
Total VOC	33.88	12.66	3.60	3.43	95.79	54.64

*Emissions are calculated using Toxchem, an EPA approved software platform for estimating volatile air emissions from

Dearator Summary
EPN: EPSM1DRTR

Recirc. Rate (gpm)	Ems. Factor (lbs/MMgals)	VOC (lbs/hr)	VOC (tons/yr)
5,000.00	0.70	0.21	0.92

VOC Hourly Emissions = Emission Factor * Steam Recirculation Rate

$$\frac{0.700 \text{ lb}}{\text{MMgals}} \times \frac{1 \text{ MMgal}}{1,000,000 \text{ gal}} \times \frac{5000.00 \text{ gal}}{\text{min}} \times \frac{60 \text{ min}}{\text{hr}} = \frac{0.21 \text{ lb VOC}}{\text{hr}}$$

VOC Annual Emissions = Emission Factor * Steam Recirculation Rate

$$\frac{0.700 \text{ lb}}{\text{MMgals}} \times \frac{1 \text{ MMgal}}{1,000,000 \text{ gal}} \times \frac{5000.00 \text{ gal}}{\text{min}} \times \frac{60 \text{ min}}{\text{hr}} \times 8760 \text{ hr/yr} = \frac{0.92 \text{ tons VOC}}{\text{yr}}$$

Cooling Water Tower Summary

EPN: ECOOL1

Calculation Basis	
Density of Water	8.34 lb/gal
Hours of Operation	8,760.00 hrs
Maximum Circulation Rate	220,000.00 gpm
Average Circulation Rate	200,000.00 gpm
Hourly VOC Emission Factor ¹	0.70 lb/MMgal
Annual VOC Emission Factor ²	0.70
Total Dissolved Solids (TDS)	6,380.00 mg/L (ppm)
Drift Eliminator	0.000010
PM/PM ₁₀ Ratio	0.215
PM/PM _{2.5} Ratio	0.001

¹AP-42 Table 5.1-3.

²AP-42 Table 5.1-3

Emissions Calculations

Pollutant	Total Drift	Hourly Flowrate	Annual Flowrate	Estimated Emissions	
	lb/hr	(gpm)	(gpm)	(lbs/hr)	(tpy)
VOC	-	220,000	200,000	9.24	36.79
PM	1101	220,000	200,000	7.02	27.97
PM ₁₀	1101	220,000	200,000	1.51	6.02
PM _{2.5}	1101	220,000	200,000	0.01	0.04

Total Drift (lb/hr) = (Circulation Rate [gpm]) * (60 min/hr) * (Drift % [%])*(Density of Water [lb/gal]).

Example Calculation for Total Drift

$$\text{Total Drift (lb/hr)} = \frac{220,000 \text{ gal}}{\text{min}} \times \frac{60 \text{ min}}{\text{hr}} \times \frac{0.001 \%}{100} \times \frac{8.34 \text{ lb}}{\text{gal}} \implies \frac{1,101 \text{ lbs}}{\text{hr}}$$

Hourly VOC Emissions (lb/hr) = (Circulation Rate [gpm]) * (60 min/hr) * (Max hourly VOC Emission Factor [lb/MMgal]).

Example Calculation for Hourly VOC Emissions

$$\text{VOC Emissions (lb/hr)} = \frac{220,000 \text{ gal}}{\text{min}} \times \frac{60 \text{ min}}{\text{hr}} \times \frac{0.7 \text{ lb}}{10^6 \text{ gal}} \implies \frac{9.24 \text{ lbs}}{\text{hr}}$$

Annual VOC Emissions (tpy) = (Hourly VOC emissions [lb/hr])*(1/10⁶ [MMgal/gal])*(Hours of Operation [hr/yr])*(2000 lb/ton).

Example Calculation for Annual VOC Emissions

$$\text{VOC Emissions (tpy)} = \frac{220,000 \text{ gal}}{\text{min}} \times \frac{60 \text{ min}}{\text{hr}} \times \frac{0.7 \text{ lb}}{10^6 \text{ gal}} \times \frac{8760 \text{ hrs}}{\text{year}} \times \frac{\text{ton}}{2000 \text{ lbs}} \implies \frac{36.79 \text{ tons}}{\text{yr}}$$

Hourly PM₁₀ Emissions (lb/hr) = (TDS [ppm]) * (1/10⁶ parts) * (Total Drift [lb/hr]) * (PM₁₀/PM Ratio [0.5]).

Example Calculation for Hourly PM Emissions

$$\text{PM Emissions (lb/hr)} = \frac{6380 \text{ ppmw}}{\quad} \left| \frac{1 \text{ part}}{10^6 \text{ parts}} \right| \left| \frac{1,101 \text{ lbs}}{\text{hr}} \right| \left| \frac{0.5 \text{ PM Ratio}}{1 \text{ PM Total}} \right| \implies \frac{1.51 \text{ lbs PM10}}{\text{hr}}$$

Annual PM₁₀ Emissions (tpy) = (Hourly PM emissions [lb/hr])*(Hours of Operation [hr/yr]) * (2000 lb/ton).

Example Calculation for Annual PM Emissions

$$\text{PM Emissions (tpy)} = \frac{1.51 \text{ ton}}{\text{hr}} \left| \frac{8760 \text{ hr}}{\text{yr}} \right| \left| \frac{\text{ton}}{2000 \text{ lb}} \right| \implies \frac{6.02 \text{ ton PM10}}{\text{yr}}$$

PM Ratio Calculation Method¹

EPRI Droplet Diameter ²	Droplet Volume ³	Droplet Mass ⁴	Solid Particle Mass ⁵	Solid Particle Volume ⁶	Solid Particle Diameter ⁷	EPRI % Mass Smaller ²	PM ₁₀ /PM Ratio ⁸	PM _{2.5} /PM Ratio ⁹
(μm)	(μm ³)	(μg)	(μg)	(μm ³)	(μm)	(%)		
10	524	5.24E-04	3.34E-06	1.52	1.43	0	0.215	0.001
20	4189	4.19E-03	2.67E-05	12.15	2.85	0.196		
30	14137	1.41E-02	9.02E-05	41.00	4.28	0.226		
40	33510	3.35E-02	2.14E-04	97.18	5.70	0.514		
50	65450	6.54E-02	4.18E-04	189.80	7.13	1.816		
60	113097	1.13E-01	7.22E-04	327.98	8.56	5.702		
70	179594	1.80E-01	1.15E-03	520.82	9.98	21.348		
80	259996	2.59E-01	1.78E-03	750.00	11.31	49.812		
90	351704	3.82E-01	2.44E-03	1106.94	12.83	49.812		

¹ PM₁₀ and PM_{2.5}/PM ratio is calculated based on *Calculating Realistic PM₁₀ Emissions from Cooling Towers*, by Joel Reisman and Gordon Frisbie, 2000.

² Data obtained from *Calculating Realistic PM₁₀ Emissions from Cooling Towers*, by Joel Reisman and Gordon Frisbie, 2000.

³ Droplet Volume (volume of a sphere) = (4/3)*π*[(EPRI Droplet Diameter [μm])/2]³.

⁴ Droplet Mass = (Droplet Volume)*(Density of Water = 1*10⁻⁶ μg/μm³).

⁵ Solid Particle Mass = (Total Dissolved Solids [ppm])/(10⁶)*(Droplet Mass [μg]).

⁶ Solid Particle Volume = (Solid particle Mass)*(Density of TDS). Density of TDS assumed to have the same density as NaCl (i.e. 2.2g/cm³).

⁷ Solid Particle Diameter = {(Solid Particle Volume)/[(4/3)*π]}^{1/3}*2.

⁸ Ratio calculated by interpolating between solid particle diameter points for 10 μm (see Figure 1. PM₁₀/PM Interpolation).

⁹ Ratio calculated by interpolating between solid particle diameter points for 2.5 μm (see Figure 1. PM_{2.5}/PM Interpolation).

Catalytic Incinerator (EPN: EF64170)

Pollutant	Emission Factor ¹	Emission Factor Units	Emission Factor Basis	Hourly Emissions lbs/hr	Annual Emissions TPY
NOx	0.10	lbs/MMBtu	Manufacturer	2.45	6.40
CO	84	lb/MMscf	AP-42	2.02	5.27
SO ₂	0.60	lb/MMscf	AP-42	0.01	0.04
PM, PM ₁₀ , PM _{2.5} ²	7.60	lb/MMscf	AP-42	0.18	0.48
Total VOC ³	98%	DRE	Manufacturer	24.30	55.18

(1) Per AP-42 instructions, AP-42 based emissions corrected to fuel gas with 1020 Btu/Scf heat content.

(2) All PM (total, condensable, and filterable) is assumed to be less than 1.0 micrometer in diameter per AP-42 Section 1.4 (7/98) Table 1.4-2, footnote c. Therefore PM₁₀ = PM_{2.5} emissions.

(3) VOC is controlled to 98% DRE or 20 ppmv.

Conditions

Max Firing Rate:	25	MMBtu/Hr
Avg Firing Rate:	15	MMBtu/Hr
Fuel Net Heating Value:	1,020	Btu/scf
Potential Annual Run hours:	8,760	Hrs/Yr
Max Vent Flow to Incin	260,000	lb/hr
Avg Vent Flow to Incin	232,000	lb/hr

Speciated VOC Emissions	Stream Weight %		Emissions	
	Max	Avg	lb/hr	tpy
Acetaldehyde	0.053%	0.023%	2.77	4.64
Acetophenone	0.065%	0.025%	3.36	5.05
Benzaldehyde	0.004%	0.002%	0.19	0.41
Benzene	0.060%	0.024%	3.12	4.86
Ethylbenzene	0.140%	0.106%	7.28	21.48
alpha-METHYLBENZYL ALCOHOL	0.036%	0.025%	1.86	5.05
2-PHENYLETHANOL	0.001%	0.000%	0.05	0.10
Propylene	0.005%	0.002%	0.27	0.45
Propylene Oxide	0.006%	0.003%	0.31	0.69
Styrene	0.022%	0.015%	1.13	3.01
Toluene	0.034%	0.030%	1.77	6.03
Cat Converter Heavies	0.039%	0.012%	2.03	2.51
n-Octane	0.000%	0.000%	0.01	0.02
n-Heptane	0.000%	0.000%	0.01	0.02
Butane	0.000%	0.000%	0.02	0.07
Propane	0.002%	0.002%	0.12	0.80

Components less than 0.01 % are excluded and considered impurities.

Non-VOCs including, but not limited to, methane, ethane, oxygen, or nitrogen may be present.

Representative worst case scenario identified, additional operating condition scenarios can occur.

Emissions of CO includes CO created from combustion of organics and uncombusted CO from fuel gas

Sample Emissions Calculations

NOx Hourly Emissions = Emission Factor * Firing Rate

$$\frac{0.10 \text{ lbs NOx}}{\text{MMBtu}} \times \frac{24.54 \text{ MMBtu}}{\text{hr}} = \frac{2.45 \text{ lbs NOx}}{\text{hr}}$$

NOx Annual Emissions = Emission Factor * Firing Rate * Hours of Operation * ton/lb conversion

$$\frac{0.10 \text{ lbs NOx}}{\text{MMBtu}} \times \frac{14.62 \text{ MMBtu}}{\text{hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{2000 \text{ lbs}} = \frac{6.40 \text{ ton NOx}}{\text{yr}}$$

CO Hourly Emissions from Combustion = Emission Factor ÷ Heat Value * Firing Rate

$$\frac{84.00 \text{ lbs CO}}{\text{MMscf}} \times \frac{\text{scf}}{1020 \text{ Btu}} \times \frac{24.54 \text{ MMBtu}}{\text{hr}} = \frac{2.02 \text{ lbs CO}}{\text{hr}}$$

CO Annual Emissions from Combustion = Emission Factor ÷ Heat Value * Firing Rate * Hours of Operation * ton/lb

$$\frac{84.00 \text{ lbs CO}}{\text{MMscf}} \times \frac{\text{scf}}{1020 \text{ Btu}} \times \frac{14.62 \text{ MMBtu}}{\text{hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{2000 \text{ lbs}} = \frac{5.27 \text{ ton CO}}{\text{yr}}$$

VOC Hourly Emissions = Vent Flow * Percent VOC * (1 - DRE)

$$\frac{260,000 \text{ lbs}}{\text{hr}} \times \frac{0.0047 \text{ lbs VOC}}{\text{lbs}} \times (1 - 0.98) = \frac{24.30 \text{ lbs VOC}}{\text{hr}}$$

VOC Annual Emissions = Vent Flow * Percent VOC * (1 - DRE) * Hours of Operation * ton/lb

$$\frac{232,000 \text{ lbs}}{\text{hr}} \times \frac{0.0027 \text{ lbs VOC}}{\text{lbs}} \times (1 - 0.98) \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{2000 \text{ lbs}} = \frac{55.18 \text{ ton VOC}}{\text{yr}}$$

Process Heater Calculations
Hot Oil Heater (EPN: EF65630)

Pollutant	Emission Factor ¹	Emission Factor Units	Emission Factor Basis	Hourly Emissions lbs/hr	Annual Emissions TPY
NOx (liquid fired)	0.077	lbs/MMBtu	Stack Test		
NOx (vapor fired)	0.065	lbs/MMBtu	Stack Test		
CO (liquid fired, hourly)	0.103	lbs/MMBtu		7	
CO (liquid fired, annual) ³	5	lbs/Mgal	AP-42		
CO (vapor fired, hourly)	0.301	lbs/MMBtu		8	
CO (vapor fired, annual) ³	84	lb/MMscf	AP-42		
Fuel Factor for CO calculation (liquid fuels)	9190	dscf/MMBtu			
Fuel Factor for CO calculation (vapor fuels)	8710	dscf/MMBtu			
SO ₂ (liquid fired) ^{3,5}	0.314	lbs/Mgal	AP-42		
SO ₂ (vapor fired) ⁶	0.60	lbs/MMscf	AP-42		
PM, PM ₁₀ , PM _{2.5} ² (liquid fired)	10.00	lbs/Mgal	AP-42		
PM, PM ₁₀ , PM _{2.5} ² (vapor fired)	7.60	lb/MMscf	AP-42		
VOC (natural gas) ⁶	5.50	lb/MMscf	AP-42		
VOC (process fuels)	99.99%	DRE	Manufacturer		

- (1) Per AP-42 instructions, AP-42 based emissions corrected to fuel gas with 1020 Btu/Scf heat content
(2) All PM (total, condensable, and filterable) is assumed to be less than 1.0 micrometer in diameter per AP-42 Section 1.4 (7/98) Table 1.4-2, footnote c. Therefore F₁₀ = PM_{2.5} emissions.
(3) Table 1.3-1 for Boilers (> 100 MMBTU/hr) for No. 5 Oil fired, normal firin
(4) AP-42 Table 1.4-1 for Large Wall-Fired Boilers (> 100 MMBTU/hr) with controlled - low NOx burners
(5) - Using 157 lbs/(Mgal * %sulfur) factor and 0.002% sulfur content
(6) AP-42 Table 1.4-2
(7) 130 ppm CO concentration converted using 9190 dscf/MMBTU F-factor (provided in EPA Method 19 for residual oil) with 3% oxyge
(7) 400 ppm CO concentration converted using 8710 dscf/MMBTU F-factor (provided in EPA Method 19 for gas fuels) with 3% oxyge

Pollutant	Hourly Emissions lbs/hr	Annual Emissions TPY
NOx	12.04	44.02
CO	50.13	50.21
SO ₂	0.27	1.00
PM, PM ₁₀ , PM _{2.5} ²	7.89	28.86
VOC	0.94	3.43

Operating Conditions

Max Hourly Firing Rate (total):	167	MMBtu/Hr
Max Hourly Firing Rate (vapor fuel):	167	MMBtu/Hr
Max Hourly Firing Rate (liquid fuel):	97	MMBtu/Hr
Annual Average Firing Rate (total):	139	MMBtu/Hr
Annual Average Rate (vapor fuel):	139	MMBtu/Hr
Annual Average Rate (liquid fuel):	81	MMBtu/Hr
Vapor Fuel Net Heating Value:	1,020	Btu/scf
Liquid Fuel Net Heating Value:	132	MMBtu/Mgal
Liquid Fuel Density:	7.62	lb/gal
Potential Annual Run hours:	8,760	Hrs/Yr

Speciated VOC Emissions	MW (lb/lbmol)	Max hourly wt% per component	Max annual wt% per component	lb/hr	tpy
Reaction byproducts (C8+ aromatic oxygenates)	104.15	58.81%	38.86%	0.55	1.33
2-PHENYLETHANOL	122.16	31.11%	9.85%	0.29	0.34
Phenyl Propanols	136.19	15.90%	4.08%	0.15	0.14
alpha-METHYLBENZYL ALCOHOL	122.16	44.69%	2.74%	0.42	0.09
Styrene Dimer	104.15	27.74%	1.79%	0.26	0.06
Methyl benzyl ether	122.16	8.74%	1.01%	0.08	0.03
o-ETHYLPHENOL	122.16	2.43%	0.66%	0.02	0.02
Benzyl Alcohol	108.14	2.74%	0.45%	0.03	0.02
Acetophenone	120.15	5.77%	0.43%	0.05	0.01
Phenol	94.11	2.15%	0.05%	0.02	0.00
1,2-PROPYLENE GLYCOL	76.09	1.98%	0.02%	0.02	0.00
Xylenes	106.17	0.22%	0.02%	0.00	0.00
Styrene	104.15	0.43%	0.01%	0.00	0.00
Toluene	92.14	0.18%	0.01%	0.00	0.00
Benzene	78.11	0.05%	0.01%	0.00	0.00
Benzaldehyde	106.12	0.03%	0.01%	0.00	0.00
Diethylbenzenes	134.22	0.01%	0.01%	0.00	0.00
Acetone	58.08	0.01%	0.01%	0.00	0.00
n-PropylBenzene	120.19	0.01%	0.01%	0.00	0.00
Propylene Oxide	58.08	58.92%	6.68%	0.55	0.23
Ethylbenzene	106.17	0.31%	0.27%	0.00	0.01
Acetaldehyde	44.05	33.04%	19.43%	0.31	0.67
Propylene	42.08	83.09%	22.91%	0.78	0.78
Butane	58.12	23.25%	2.44%	0.22	0.08
Propane	44.10	95.98%	95.98%	0.90	3.29

Components less than 0.01 % are excluded and considered impurities.
Non-VOCs including, but not limited to, methane, ethane, oxygen, or nitrogen may be present.
Representative worst case scenario identified, additional operating condition scenarios can occur.
Emissions of CO includes CO created from combustion of organics and uncombusted CO from fuel gas

Sample Emissions Calculations

NOx Hourly Emissions (worst case max liquid firing) = Emission Factor * Firing Rate

$$\frac{0.077 \text{ lbs NOx}}{\text{MMBtu (liquid)}} \times \frac{97.3 \text{ MMBtu (liquid)}}{\text{hr}} + \frac{0.065 \text{ lbs NOx}}{\text{MMBtu (vapor)}} \times \frac{69.50 \text{ MMBtu (vapor)}}{\text{hr}} = \frac{12.04 \text{ lbs NOx}}{\text{hr}}$$

NOx Annual Emissions (worst case max liquid firing) = Emission Factor * Firing Rate * Hours of Operation * ton/lb conversion

$$\left(\frac{0.077 \text{ lbs NOx}}{\text{MMBtu (liquid)}} \times \frac{81.2 \text{ MMBtu (liquid)}}{\text{hr}} + \frac{0.065 \text{ lbs NOx}}{\text{MMBtu (vapor)}} \times \frac{58.00 \text{ MMBtu (vapor)}}{\text{hr}} \right) \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{2000 \text{ lbs}} = \frac{44.02 \text{ ton NOx}}{\text{yr}}$$

CO Hourly Emissions from Combustion (worst case max vapor firing) = Emission Factor ÷ Heat Value * Firing Rate

$$\frac{0.301 \text{ lbs CO}}{\text{MMBTU}} \div \frac{166.80 \text{ MMBtu (vapor)}}{\text{hr}} = \frac{50.13 \text{ lbs CO}}{\text{hr}}$$

CO Annual Emissions from Combustion (worst case max vapor firing) = Emission Factor ÷ Heat Value * Firing Rate * Hours of Operation * ton/lb

$$\frac{84.000 \text{ lbs CO}}{\text{MMscf}} \div \frac{1020 \text{ Btu}}{\text{hr}} \times \frac{139.20 \text{ MMBtu (vapor)}}{\text{hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{2000 \text{ lbs}} = \frac{50.21 \text{ ton CO}}{\text{yr}}$$

SO₂ Hourly Emissions (worst case max liquid firing) = Emission Factor * Firing Rate

$$\frac{0.314 \text{ lbs SO}_2}{\text{Mgal (liquid)}} \times \frac{131.90 \text{ MMBTU}}{\text{hr}} + \frac{97.3 \text{ MMBtu (liquid)}}{\text{hr}} + \frac{0.600 \text{ lbs SO}_2}{\text{MMscf (vapor)}} \times \frac{1020 \text{ Btu}}{\text{hr}} + \frac{69.50 \text{ MMBtu (vapor)}}{\text{hr}} = \frac{0.27 \text{ lbs SO}_2}{\text{hr}}$$

SO₂ Annual Emissions (worst case max liquid firing) = Emission Factor * Firing Rate * Hours of Operation * ton/lb conversion

$$\left(\frac{0.314 \text{ lbs SO}_2}{\text{Mgal (liquid)}} \times \frac{131.90 \text{ MMBTU}}{\text{hr}} + \frac{97.3 \text{ MMBtu (liquid)}}{\text{hr}} + \frac{0.600 \text{ lbs SO}_2}{\text{MMscf (vapor)}} \times \frac{1020 \text{ Btu}}{\text{hr}} + \frac{58.00 \text{ MMBtu (vapor)}}{\text{hr}} \right) \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{2000 \text{ lbs}} = \frac{1.00 \text{ tons SO}_2}{\text{yr}}$$

VOC Hourly Emissions (worst case max liquid firing with supplemental natural gas) = Emission Factor

$$\frac{97.3 \text{ MMBtu (liquid)}}{\text{hr}} \times \frac{7.62 \text{ lb}}{\text{gal}} \times \frac{1000 \text{ lb}}{\text{Mlb}} \times (1-99.99\%) + \frac{69.50 \text{ MMBtu (natural gas)}}{\text{hr}} \times \frac{\text{scf}}{1020 \text{ Btu}} \times \frac{5.500 \text{ lbs VOC}}{\text{MMscf (natural gas)}} = \frac{0.94 \text{ lbs VOC}}{\text{hr}}$$

VOC Annual Emissions (worst case max liquid firing with supplemental natural gas) = Emission Factor * Hours of Operation * ton/lb

$$\left(\frac{81.2 \text{ MMBtu (liquid)}}{\text{hr}} \times \frac{7.62 \text{ lb}}{\text{gal}} \times \frac{1000 \text{ lb}}{\text{Mlb}} \times (1-99.99\%) + \frac{58.00 \text{ MMBtu (natural gas)}}{\text{hr}} \times \frac{\text{scf}}{1020 \text{ Btu}} \times \frac{5.500 \text{ lbs VOC}}{\text{MMscf (natural gas)}} \right) \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{2000 \text{ lbs}} = \frac{3.43 \text{ tons VOC}}{\text{yr}}$$

PM Hourly Emissions (worst case max liquid firing) = Emission Factor * Firing Rate

$$\frac{10.000 \text{ lbs PM}}{\text{Mgal (liquid)}} \times \frac{131.90 \text{ MMBTU}}{\text{hr}} + \frac{97.3 \text{ MMBtu (liquid)}}{\text{hr}} + \frac{7.600 \text{ lbs PM}}{\text{MMscf (vapor)}} \times \frac{1020 \text{ Btu}}{\text{hr}} + \frac{69.50 \text{ MMBtu (vapor)}}{\text{hr}} = \frac{7.89 \text{ lbs PM}}{\text{hr}}$$

PM Annual Emissions (worst case max liquid firing) = Emission Factor * Firing Rate * Hours of Operation * ton/lb conversion

$$\left(\frac{10.000 \text{ lbs PM}}{\text{Mgal (liquid)}} \times \frac{131.90 \text{ MMBTU}}{\text{hr}} + \frac{97.3 \text{ MMBtu (liquid)}}{\text{hr}} + \frac{7.600 \text{ lbs PM}}{\text{MMscf (vapor)}} \times \frac{1020 \text{ Btu}}{\text{hr}} + \frac{58.00 \text{ MMBtu (vapor)}}{\text{hr}} \right) \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{2000 \text{ lbs}} = \frac{28.86 \text{ tons PM}}{\text{yr}}$$

Flare Summary
EPN: EFL68910

Pollutant	Total Emission	
	lb/hr	tpy
VOC	33.07	13.31
NO _x	10.44	12.28
CO	89.52	105.31
SO ₂	1.09	2.88

Note: Flare emission limits from the Deep Well Flare (EPN EFL68910) include: emissions resulting from the activation of pressure relief devices specifically designed to direct gasses from units as part of normal operations; venting through control valves by procedure; emissions resulting from the implementation of procedures specifically designed to direct gasses from units as part of normal operations, shutdown or startup; and emissions resulting from the automatic or manual activation of interlocks and process safety systems specifically designed to direct gasses from units as part of normal operations, shutdown or startup. Venting from the Deep Well Flare is minimized to the extent practicable. The Deep Well Flare is designed to ensure that EPN EFL68910 maintains compliance with permit NSR Permit #2993 and with applicable NSPS, and State regulations.

Emission Factors

	Factor	Unit
Unassisted, Low BTU NO _x Emission Factor	0.0641	lb/MMBTU
Unassisted, Low BTU CO Emission Factor	0.5496	lb/MMBTU
Max Flaring Rate	162.88	MMBTU/hr
Avg Flaring Rate	383,229.14	MMBTU/yr
Natural Gas	76296	scf/hr
Natural Gas	403,347,106.98	scf/yr
Sulfur	5	grain/100 dscf

VOC Emissions

Chemical	Max Flow to Flare (lb/hr)	Avg Flow to Flare (lb/yr)	DRE	VOC Emission (lb/hr)	VOC Emission (tpy)
Acetone	9.76	8,527	98%	0.20	0.09
Methanol	44.11	28,078	99%	0.44	0.14
ISOBUTANOL	4.09	8,241	98%	0.08	0.08
Propylene Oxide	3.66	3,967	99%	0.04	0.02
TERT BUTYL ALCOHOL	2.04	1,784	98%	0.04	0.02
Acetaldehyde	0.95	3,438	98%	0.02	0.03
1-PROPANOL	1.52	2,998	98%	0.03	0.03
Allyl Alcohol	4.13	4,258	98%	0.08	0.04
Tetrahydrofuran	1.29	8,897	98%	0.03	0.09
METHYL ETHYL KETONE	0.71	1,452	98%	0.01	0.01
Ethanol	2.22	6,278	99%	0.02	0.03
1,2-PROPYLENE GLYCOL	46.59	205,774	98%	0.93	2.06
n-BUTANOL	0.47	1,572	98%	0.01	0.02
Isopropyl Alcohol	0.77	1,604	99%	0.01	0.01
N-METHYL-2-PYRROLIDONE	0.01	58	98%	0.00	0.00
gamma-BUTYROLACTONE	0.13	117	98%	0.00	0.00
1,4-Butanediol	0.01	1	98%	0.00	0.00
Cumene	0.45	371	98%	0.01	0.00
tert-BUTYL ETHYL ETHER	0.71	4,565	98%	0.01	0.05
Methyl Tert-Butyl Ether	3.88	5,860	98%	0.08	0.06
Propionaldehyde	0.14	374	98%	0.00	0.00
DIETHYLBENZENES	74.29	145,953	98%	1.49	1.46
Benzene	210.53	52,436	98%	4.21	0.52
Ethylbenzene	297.80	249,835	98%	5.96	2.50
Styrene	217.40	15,906	98%	4.35	0.16
Toluene	150.22	1,191	98%	3.00	0.01
Phenol	35.61	46,820	98%	0.71	0.47
n-PROPYLBENZENE	12.70	933	98%	0.25	0.01
2-PHENYLETHANOL	1.21	534	98%	0.02	0.01
alpha-METHYLBENZYL ALCOHOL	99.53	95,294	98%	1.99	0.95
Acetophenone	70.15	14,260	98%	1.40	0.14

o-ETHYLPHENOL	4.02	4	98%	0.08	0.00
Phenyl Propanols	2.56	2	98%	0.05	0.00
BENZYL ALCOHOL	2.78	2	98%	0.06	0.00
BENZALDEHYDE	90.21	32	98%	1.80	0.00
Xylenes	39.42	25	98%	0.79	0.00
MBA ether	0.94	0	98%	0.02	0.00
Styrene dimer	0.07	0	98%	0.00	0.00
2,3-DIMETHYLBUTANE	0.79	1,324	98%	0.02	0.01
2,4-DIMETHYLPENTANE	0.91	1,775	98%	0.02	0.02
3-METHYLPENTANE	11.69	29,062	98%	0.23	0.29
1-BUTENE	10.22	10,720	98%	0.20	0.11
1,3-BUTADIENE	8.86	8,275	98%	0.18	0.08
PROPANE	101.75	143,780	99%	1.02	0.72
PROPYLENE	20.95	40,334	99%	0.21	0.20
CIS-2-BUTENE	8.17	7,765	98%	0.16	0.08
CYCLOHEXENE	0.75	1,625	98%	0.01	0.02
HEXANE	54.17	135,217	98%	1.08	1.35
ISO-BUTANE	14.10	41,478	98%	0.28	0.41
ISO-PENTANE	21.86	22,241	98%	0.44	0.22
METHYL CYCLOPENTANE	8.73	22,351	98%	0.17	0.22
METHYL CYCLOHEXANE	3.75	3,505	98%	0.08	0.04
BUTANE	32.70	41,913	98%	0.65	0.42
PENTANE	11.58	14,038	98%	0.23	0.14
HEPTANE	1.09	2,648	98%	0.02	0.03
1,3-PENTADIENE	0.63	1,687	98%	0.01	0.02
Total VOC				33.07	13.31

Emissions represent worst case scenario for criteria pollutants, other operating scenrios can occur.
Chemicals such as methane, ethane and impurities less than 1% of stream composition may be present.

Sample Emissions Calculations

NOx Hourly Emissions = Emission Factor * Vent stream heating value

$$\frac{0.064 \text{ lb}}{\text{MMBtu}} \times \frac{162.88 \text{ MMBtu}}{\text{hr}} = \frac{10.44 \text{ lb Nox}}{\text{hr}}$$

NOx Annual Emissions = Emission Factor * Vent stream heating value * ton/lb conversion

$$\frac{0.064 \text{ lb}}{\text{MMBtu}} \times \frac{383,229.14 \text{ MMBtu}}{\text{yr}} \times \frac{\text{ton}}{2000 \text{ lbs}} = \frac{12.28 \text{ ton Nox}}{\text{yr}}$$

CO Hourly Emissions = Emission Factor * Vent stream heating value

$$\frac{0.550 \text{ lb}}{\text{MMBtu}} \times \frac{162.88 \text{ MMBtu}}{\text{hr}} = \frac{89.52 \text{ lb CO}}{\text{hr}}$$

CO Annual Emissions = Emission Factor * Vent stream heating value * ton/lb conversion

$$\frac{0.550 \text{ lb}}{\text{MMBtu}} \times \frac{383,229.14 \text{ MMBtu}}{\text{yr}} \times \frac{\text{ton}}{2000 \text{ lbs}} = \frac{105.31 \text{ ton CO}}{\text{yr}}$$

SO2 Hourly Emissions = Natural Gas rate * S content in gas ÷ grain/dscf ÷ S MW * S/SO2 molar ratio * SO2 MW

$$\frac{76,296.19 \text{ scf}}{\text{hr}} \times \frac{5 \text{ grain S}}{100 \text{ dscf}} \times \frac{\text{lbmol}}{7000 \text{ grain}} \times \frac{\text{mol SO2}}{\text{mol S}} \times \frac{64.06 \text{ lb/lbmol SO2}}{32.07 \text{ lb/lbmol S}} = \frac{1.09 \text{ lb SO2}}{\text{hr}}$$

SO2 Annual Emissions = Natural Gas rate * S content in gas ÷ grain/dscf ÷ S MW * S/SO2 molar ratio * SO2 MW * ton/lbs

$$\frac{403,347,106.98 \text{ scf}}{\text{yr}} \times \frac{5 \text{ grain S}}{100 \text{ dscf}} \times \frac{\text{lbmol}}{7000 \text{ grain}} \times \frac{\text{mol SO2}}{\text{mol S}} \times \frac{64.06 \text{ lb/lbmol SO2}}{32.07 \text{ lb/lbmol S}} \times \frac{\text{ton}}{2000 \text{ lbs}} = \frac{2.88 \text{ ton SO2}}{\text{yr}}$$

POSMI Permit Renewal/Amendment - Section C-6-1: Fugitive Summary
EPN: EFUGDW

VOC emissions

3.02 lb/hr
8.55 tpy

Component Class	Chemical State	SOCMI without C ₂ Factor ¹	28VHP Control Efficiency ²	Count	Emissions Estimate (lb/hr)	Emissions Estimate (tpy)
Flange / Connector	GV	0.00290	30%	2	0.00	0.02
Flange / Connector	GV	0.00290	97%	1106	0.10	0.42
Flange / Connector	LL	0.00050	30%	2	0.00	0.00
Flange / Connector	LL	0.00050	97%	560	0.01	0.04
Other1 Component	GV	0.00290	30%	226	0.46	2.01
Other1 Component	GV	0.00290	75%	35	0.03	0.11
Other1 Component	LL	0.00050	30%	178	0.06	0.27
Other1 Component	LL	0.00050	75%	19	0.00	0.01
Other2 Components	GV	0.00580	30%	33	0.13	0.59
Other2 Components	GV	0.00580	75%	5	0.01	0.03
Other2 Components	LL	0.00100	30%	17	0.01	0.05
Other3 Components	LL	0.00050	30%	9	0.00	0.01
Pumps	LL	0.03860	85%	2	0.01	0.05
Pumps	LL	0.03860	100%	9	0.00	0.00
Relief Valves	GV	0.22930	97%	3	0.02	0.09
Relief Valves	GV	0.22930	100%	11	0.00	0.00
Relief Valves	LL	0.00350	100%	2	0.00	0.00
Valves	GV	0.00890	97%	865	0.23	1.01
Valves	LL	0.00350	97%	465	0.05	0.21
Flange / Connector - DTM	GV	0.00290	30%	40	0.08	0.36
Flange / Connector - DTM	GV	0.00290	75%	35	0.03	0.11
Flange / Connector - DTM	LL	0.00050	30%	32	0.01	0.05
Valves - DTM	GV	0.00890	75%	31	0.07	0.30
Valves - DTM	LL	0.00350	75%	37	0.03	0.14
Other1 Component - DTM	GV	0.00290	30%	18	0.04	0.16
Other1 Component - DTM	GV	0.00290	75%	19	0.01	0.06
Other1 Component - DTM	LL	0.00050	30%	14	0.00	0.02
Other1 Component - DTM	LL	0.00050	75%	6	0.00	0.00
Sampling -Max Hourly ³	-	0.033	0%	36	1.19	
Sampling -Annually ⁴	-	0.033	0%	30000		0.50
Total Component Count				3781		
Total Emissions					2.59	6.63
Total VOC Emissions					2.57	6.59

Notes:

1. Emissions Factors come from "Emissions Factors for Equipment Leak Fugitive Components-Addendum to RG-360A, January 2008-Table 3. Average Emission Factors-SOCMI." SOCMI without ethylene factors are used because there is no ethylene in the streams.
2. Control efficiencies come from 28VHP "TCEQ – Control Efficiencies for TCEQ Leak Detection and Repair Programs Revised 07/11 (APDG 6129v2)"
3. Max hourly sampling emissions are based on a maximum of 36 samples in one hour.
4. Annual Sampling emissions are based on 30,000 samples per year.

5. A 97% control efficiency for connectors is used when monitoring at 500 ppm quarterly.
6. A 75% control efficiency for connectors is used when monitoring at 500 ppm annually.
7. DTM = Difficult to monitor. Control efficiencies assigned are based on monitoring type and frequency of monitoring.
8. A 93% control efficiency for pumps is used when monitoring at 500 ppm monthly.
9. A 30% control efficiency for valves is used when monitored using organic vapor analyzer.
10. Fugitives emissions are an estimate only and should not be considered as a maximum allowable emission rate.
11. Other 1 Components (caps, plugs, & other non-traditional components) calculated using factors according to TCEQ EI Guidance Appendix A Table A-6.
12. Other 2 Components (sight glasses) calculated using factors according to TCEQ EI Guidance Appendix A Table A-6.
13. Other 3 Components (pump joins) calculated using the flange / connector factors.
14. Relief valves in light liquid service calculated using factors according to TCEQ EI Guidance Appendix A Table A-6.

<10% VOC

Component Class	Chemical State	SOCMI without C ₂ Factor ¹	28VHP Control Efficiency ²	Count	Emissions Estimate (lb/hr)	Emissions Estimate (tpy)
Flange / Connector	LL	0.0005	0%	1007	0.50	2.21
Other1 Component	LL	0.0005	0%	209	0.10	0.46
Pumps	LL	0.0386	0%	22	0.85	3.72
Relief Valves	LL	0.0035	0%	22	0.08	0.34
Valves	LL	0.0035	0%	841	2.94	12.89
Total Component Count				2101		
Total Emissions					4.48	19.61
Total VOC Emissions					0.45	1.96

Sample Calculations

Hourly Emissions Connector GV

*Hourly Estimated VOC Emission Rate (lb/hr) = (SOCMI w/o C₂) * Component Count * (1-Control Efficiency [%])*

$$\text{Hourly Controlled VOC Emission Rate for Gas/Vapor} = \frac{0.003 \text{ lb}}{\text{hr}} * 1,106 * (1 - 0.97) = \underline{\underline{0.10 \text{ lb/hr}}}$$

Annual Emissions Connector GV

*Annual Estimated VOC Emission Rate (tpy) = (SOCMI w/o C₂) * Component Count * (1-Control Efficiency [%]) * Conversion Factors*

$$\text{Annual Estimated VOC Emission Rate for Gas/Vapor} = \frac{0.003 \text{ lb}}{\text{hr}} * 1,106 * (1 - 0.97) * \frac{8760}{2000} = \underline{\underline{0.42 \text{ ton/yr}}}$$

POSMI Permit Renewal/Amendment - Section C-6-2: Fugitive Speciation
EPN: EFUGDW

Fugitive Speciated Emissions

Chemical	WT% for monitored components	WT% for all components	Emissions (lb/hr)	Emissions (TPY)
ETHYLBENZENE	55.51%	18.21%	1.69	4.78
n-OCTANE	32.79%	10.76%	1.00	2.82
BENZENE	5.90%	1.94%	0.18	0.51
STYRENE	4.03%	1.32%	0.12	0.35
TOLUENE	0.74%	0.24%	0.02	0.06
METHANOL	0.25%	0.08%	0.01	0.02
ACETOPHENONE	0.10%	0.03%	<0.01	0.01
Non-VOC	0.68%	67.42%	4.05	17.70
Total Estimated Emissions	100.00%	100.00%	7.07	26.25
Total Estimated VOC Emissions	99.32%	32.58%	3.02	8.55

Representative operating scenarios identified, additional scenarios may exist
 Possible constituents not identified above such as water, nitrogen, methane, ethane and impurities may be present.

Sample Calculations

*Styrene Emissions (lb/hr) = Total Emissions (lb/hr) * Styrene (wt%)*

7.07 lb	1.32 %	= 0.12 lb
hr		hr

*Styrene Emissions (tpy) = Total Emissions (tpy) * Styrene (wt%)*

26.25 ton	1.32 %	= 0.35 ton
yr		yr

POSMI Permit Renewal/Amendment - Section C-6-1: Fugitive Summary
 EPN: EFUGPOSMI

VOC emissions

10.73 lb/hr
 42.73 tpy

Component Class	Chemical State	SOCMI with C ₂ Factor ¹	28VHP Control Efficiency ²	Count	Emissions Estimate (lb/hr)	Emissions Estimate (tpy)
Other1 Component	GV	0.0053	97%	1	0.00	0.00
Other1 Component	LL	0.0052	97%	1	0.00	0.00
Valves	GV	0.0258	97%	1	0.00	0.00
Valves	LL	0.0459	97%	1	0.00	0.01
Flange / Connector - DTM	GV	0.0053	75%	5	0.01	0.03
Flange / Connector - DTM	LL	0.0052	75%	8	0.01	0.05
Valves - DTM	GV	0.0258	75%	2	0.01	0.06
Valves - DTM	LL	0.0459	75%	17	0.20	0.85
Other1 Component - DTM	LL	0.0052	75%	14	0.02	0.08

Component Class	Chemical State	SOCMI without C ₂ Factor ¹	28VHP Control Efficiency ²	Count	Emissions Estimate (lb/hr)	Emissions Estimate (tpy)
Agitator	HL	0.0161	100%	1	0.00	0.00
Agitator	LL	0.0386	100%	2	0.00	0.00
Compressor	GV	0.5027	100%	3	0.00	0.00
Flange / Connector	GV	0.0029	97%	5718	0.50	2.18
Flange / Connector	HL	0.0001	30%	4113	0.20	0.88
Flange / Connector	LL	0.0005	30%	16	0.01	0.02
Flange / Connector	LL	0.0005	97%	15370	0.23	1.01
Other1 Component	GV	0.0029	30%	573	1.16	5.09
Other1 Component	GV	0.0029	75%	106	0.08	0.34
Other1 Component	GV	0.0029	97%	131	0.01	0.05
Other1 Component	HL	0.0001	30%	772	0.04	0.17
Other1 Component	LL	0.0005	30%	2790	0.98	4.28
Other1 Component	LL	0.0005	75%	29	0.00	0.02
Other1 Component	LL	0.0005	97%	406	0.01	0.03
Other2 Components	GV	0.0058	30%	46	0.19	0.82
Other2 Components	GV	0.0058	75%	13	0.02	0.08
Other2 Components	GV	0.0058	97%	11	0.00	0.01
Other2 Components	HL	0.0001	30%	38	0.00	0.02
Other2 Components	LL	0.0010	30%	135	0.09	0.41
Other2 Components	LL	0.0010	75%	7	0.00	0.01
Other2 Components	LL	0.0010	97%	21	0.00	0.00
Other3 Components	HL	0.0001	30%	49	0.00	0.01
Other3 Components	LL	0.0005	30%	158	0.06	0.24
Other3 Components	LL	0.0005	97%	21	0.00	0.00
Pumps	HL	0.0161	30%	32	0.36	1.58
Pumps	HL	0.0161	100%	29	0.00	0.00
Pumps	LL	0.0386	85%	58	0.34	1.47
Pumps	LL	0.0386	93%	4	0.01	0.05
Pumps	LL	0.0386	100%	116	0.00	0.00
Relief Valves	GV	0.2293	97%	37	0.25	1.11
Relief Valves	GV	0.2293	100%	157	0.00	0.00
Relief Valves	HL	0.0007	30%	7	0.00	0.02
Relief Valves	HL	0.0007	100%	13	0.00	0.00
Relief Valves	LL	0.0035	97%	9	0.00	0.00
Relief Valves	LL	0.0035	100%	32	0.00	0.00
Valves	GV	0.0089	97%	2703	0.72	3.16
Valves	HL	0.0007	30%	2274	1.11	4.88
Valves	LL	0.0035	97%	8355	0.88	3.84
Flange / Connector - DTM	GV	0.0029	30%	155	0.31	1.38
Flange / Connector - DTM	GV	0.0029	75%	369	0.27	1.17
Flange / Connector - DTM	HL	0.0001	30%	117	0.01	0.03
Flange / Connector - DTM	LL	0.0005	30%	409	0.14	0.63
Flange / Connector - DTM	LL	0.0005	75%	98	0.01	0.05
Relief Valves - DTM	GV	0.2293	100%	8	0.00	0.00
Relief Valves - DTM	HL	0.0007	100%	2	0.00	0.00
Relief Valves - DTM	LL	0.0035	100%	3	0.00	0.00
Valves - DTM	GV	0.0089	75%	280	0.62	2.73
Valves - DTM	HL	0.0007	30%	145	0.07	0.31
Valves - DTM	LL	0.0035	75%	616	0.54	2.36
Other1 Component - DTM	GV	0.0029	30%	34	0.07	0.30
Other1 Component - DTM	GV	0.0029	75%	46	0.03	0.15
Other1 Component - DTM	HL	0.0001	30%	57	0.00	0.01
Other1 Component - DTM	LL	0.0005	30%	310	0.11	0.48
Other1 Component - DTM	LL	0.0005	75%	46	0.01	0.03
Other2 Components - DTM	GV	0.0058	30%	2	0.01	0.04
Sampling -Max Hourly ³	-	0.033	0%	36	1.19	
Sampling -Annually ⁴	-	0.033	0%	30000		0.50
Total Component Count				47102		
Total Emissions					10.89	43.01
Total VOC Emissions					9.93	39.19

Notes:

- Emissions Factors come from "Emissions Factors for Equipment Leak Fugitive Components-Addendum to RG-360A, January 2008-Table 3. Average Emission Factors-SOCMI." SOCMI without ethylene factors are used because there is no ethylene in the streams.
- Control efficiencies come from 28VHP "TCEQ – Control Efficiencies for TCEQ Leak Detection and Repair Programs Revised 07/11 (APDG 6129v2)"
- Max hourly sampling emissions are based on a maximum of 36samples in one hour.
- Annual Sampling emissions are based on 30,000 samples per year.
- A 97% control efficiency for connectors is used when monitoring at 500 ppm quarterly.
- A 75% control efficiency for connectors is used when monitoring at 500 ppm annually.
- DTM = Difficult to monitor. Control efficiencies assigned are based on monitoring type and frequency of monitoring.
- A 93% control efficiency for pumps is used when monitoring at 500 ppm monthly.
- A 30% control efficiency for valves is used when monitored using organic vapor analyzer.
- Fugitives emissions are an estimate only and should not be considered as a maximum allowable emission rate.
- Other 1 Components (caps, plugs, & other non-traditional components) calculated using factors according to TCEQ EI Guidance Appendix A Table A-6.
- Other 2 Components (sight glasses) calculated using factors according to TCEQ EI Guidance Appendix A Table A-6.
- Other 3 Components (pump joins) calculated using the flage / connector factors.
- Relief valves in light liquid service calculated using factors according to TCEQ EI Guidance Appendix A Table A-6.

<10% VOC

Component Class	Chemical State	SOCMI without C ₂ Factor ¹	28VHP Control Efficiency ²	Count	Emissions Estimate (lb/hr)	Emissions Estimate (tpy)
Agitator	HL	0.0161	0%	1	0.02	0.07
Agitator	LL	0.0386	0%	1	0.04	0.17
Compressor	GV	0.5027	0%	1	0.50	2.20
Flange / Connector	GV	0.0029	0%	313	0.91	3.98
Flange / Connector	HL	0.0001	0%	212	0.01	0.06
Flange / Connector	LL	0.0005	0%	796	0.40	1.74
Other1 Component	GV	0.0029	0%	45	0.13	0.57
Other1 Component	HL	0.0001	0%	42	0.00	0.01
Other1 Component	LL	0.0005	0%	180	0.09	0.39
Other2 Components	GV	0.0058	0%	4	0.02	0.10
Other2 Components	HL	0.0001	0%	2	0.00	0.00
Other2 Components	LL	0.0010	0%	9	0.01	0.04
Other3 Components	HL	0.0001	0%	3	0.00	0.00
Other3 Components	LL	0.0005	0%	9	0.00	0.02
Pumps	HL	0.0161	0%	4	0.06	0.28
Pumps	LL	0.0386	0%	9	0.35	1.52
Relief Valves	GV	0.2293	0%	11	2.52	11.05
Relief Valves	HL	0.0007	0%	2	0.00	0.01
Relief Valves	LL	0.0035	0%	3	0.01	0.05
Valves	GV	0.0089	0%	150	1.33	5.85
Valves	HL	0.0007	0%	121	0.08	0.37
Valves	LL	0.0035	0%	450	1.58	6.90
Total Component Count				2368		
Total Emissions					8.08	35.39
Total VOC Emissions					0.81	3.54

Sample Calculations

Hourly Emissions Connector GV

Hourly Estimated VOC Emission Rate (lb/hr) = (SOCMI w/o C₂) * Component Count * (1-Control Efficiency [%])

$$\text{Hourly Controlled VOC Emission Rate for Gas/Vapor} = \frac{0.003 \text{ lb}}{\text{hr}} * 5,718 * (1 - 0.97) = 0.50 \text{ lb/hr}$$

Annual Emissions Connector GV

Annual Estimated VOC Emission Rate (tpy) = (SOCMI w/o C₂) * Component Count * (1-Control Efficiency [%]) * Conversion Factors

$$\text{Annual Estimated VOC Emission Rate for Gas/Vapor} = \frac{0.003 \text{ lb}}{\text{hr}} * 5,718 * (1 - 0.97) * \frac{8760}{2000} = 2.18 \text{ ton/yr}$$

POSMI Permit Renewal/Amendment - Section C-6-2: Fugitive Speciation
 EPN: EFUGOSM1

Fugitive Speciated Emissions

Chemical	WT% for monitored components	WT% for all components	Emissions (lb/hr)	Emissions (TPY)
STYRENE	18.04%	10.79%	2.12	8.46
ETHYLBENZENE	17.87%	10.69%	2.11	8.38
PROPYLENE OXIDE	15.71%	9.40%	1.85	7.37
alpha-METHYLBENZYL ALCOHOL	8.93%	5.34%	1.05	4.19
ACETOPHENONE	5.35%	3.20%	0.63	2.51
PROPYLENE	4.00%	2.39%	0.47	1.88
ETHYLENE	2.93%	1.75%	0.35	1.37
2-PHENYLETHANOL	2.53%	1.52%	0.30	1.19
n-OCTANE	2.36%	1.41%	0.28	1.11
TOLUENE	2.22%	1.33%	0.26	1.04
PROPANE	1.72%	1.03%	0.20	0.81
DECANE	1.27%	0.76%	0.15	0.60
ETHYLBENZENE HYDROGEN PEROXIDE	0.91%	0.54%	0.11	0.43
BENZENE	0.89%	0.53%	0.10	0.42
FORMIC ACID	0.87%	0.52%	0.10	0.41
ACETALDEHYDE	0.64%	0.38%	0.08	0.30
ETHYLENE OXIDE	0.61%	0.36%	0.07	0.28
1,2-PROPYLENE GLYCOL	0.59%	0.35%	0.07	0.28
BENZALDEHYDE	0.47%	0.28%	0.06	0.22
CUMENE	0.38%	0.23%	0.04	0.18
PHENYL PROPANOLS	0.36%	0.22%	0.04	0.17
ALPHA METHYL STYRENE	0.33%	0.20%	0.04	0.15
DIETHYLBENZENES	0.31%	0.19%	0.04	0.15
METHANOL	0.28%	0.17%	0.03	0.13
BENZYL ALCOHOL	0.27%	0.16%	0.03	0.13
NONANE	0.25%	0.15%	0.03	0.12
TERT BUTYL ALCOHOL	0.24%	0.15%	0.03	0.11
METHYL PENTANOL	0.22%	0.13%	0.03	0.10
OCTANOIC ACID	0.16%	0.09%	0.02	0.07
tert-BUTYL ETHYL ETHER	0.14%	0.08%	0.02	0.06
ETHANOL	0.13%	0.08%	0.02	0.06
ISOBUTYLENE	0.13%	0.08%	0.01	0.06
Non-VOC	8.88%	45.50%	8.24	35.67
Total Estimated Emissions	100.00%	100.00%	18.97	78.39
Total Estimated VOC Emissions	91.12%	54.50%	10.73	42.73

Representative operating scenarios identified, additional scenarios may exist
 Possible constituents not identified above such as water, nitrogen, methane, ethane and impurities may be present.

Sample Calculations

Styrene Emissions (lb/hr) = Total Emissions (lb/hr) * Styrene (wt%)

$$\frac{18.97 \text{ lb}}{\text{hr}} \times 10.79 \% = 2.12 \text{ lb/hr}$$

Styrene Emissions (tpy) = Total Emissions (tpy) * Styrene (wt%)

$$\frac{78.39 \text{ ton}}{\text{yr}} \times 10.79 \% = 8.46 \text{ ton/yr}$$

Loading Summary

Annual Loading Calculations											
Product Loaded	Loading Type	Saturation Factor	Vapor Pressure (psia)	Vapor Molecular Weight (lb/lb-mol)	Liquid Temperature (deg. F)	Liquid Temperature (deg. R)	Loading Loss (lb/Mgal)	Loading Rate (gal/yr)	Vapor to Atmosphere (lb/yr)	Vapor Composition (%VOC)	Average Annual VOC Emissions (TPY)
HAS	submerged - dedicated	0.60	0.04	134.4	101.0	560.7	0.07	1,861,500	123	100%	0.06
PEA	submerged - dedicated	0.60	0.00	122.2	100.0	559.7	0.01	639,733	5	100%	<0.01
MBA	submerged - dedicated	0.60	0.11	121.8	170.0	629.7	0.16	650,000	107	100%	0.05
RFO 635	submerged - dedicated	0.60	0.08	116.0	180.0	639.7	0.11	8,498,508	925	100%	0.46
RFO 637	submerged - dedicated	0.60	0.07	125.7	190.0	649.7	0.09	20,767,278	1,956	100%	0.98

Hourly Loading Calculations											
Product Loaded	Loading Type	Saturation Factor	Vapor Pressure (psia)	Vapor Molecular Weight (lb/lb-mol)	Liquid Temperature (deg. F)	Liquid Temperature (deg. R)	Loading Loss (lb/Mgal)	Loading Rate (gal/hr)	Vapor to Atmosphere (lb/hr)	Vapor Composition (%VOC)	Maximum Hourly VOC Emissions (lb/hr)
HAS	submerged - dedicated	0.60	0.07	134.5	120.0	579.7	0.12	6,600	0.80	100%	0.80
PEA	submerged - dedicated	0.60	0.03	122.3	151.0	610.7	0.05	9,000	0.42	100%	0.42
MBA	submerged - dedicated	0.60	0.16	121.7	180.0	639.7	0.22	7,683	1.71	100%	1.71
RFO 635	submerged - dedicated	0.60	0.24	112.8	195.0	654.7	0.31	7,000	2.17	100%	2.17
RFO 637	submerged - dedicated	0.60	0.49	118.9	265.0	724.7	0.60	12,000	7.21	100%	7.21

Based on AP-42 Chapter 5.2 Loading Equation $L = (12.46 \times S \times P \times M)/T$, where

L = loading loss (lbs emissions/ thousand gallons of liquid loaded)

S = saturation factor from AP-42 Chapter 5, Table 5.2-1

P = loaded liquid true vapor pressure (psia)

M = displaced vapor molecular weight (lb/lb-mol)

T = loaded liquid temperature (deg R = 460 + deg F)

Worst case operating scenarios identified, additional operating scenarios may occur.

Storage Tank Summary
 EPN: Various

Tank ID	EPN	Tank Type	Material Stored	Tank Volume	Max Hourly Throughput	Annual Throughput	Max Temperature	Average Temperature	Tank Color	Tank Insulated	Tank Emissions	
				gal	gal/hr	gal/yr	F	F			lb/hr	tpy
D-6312A	ED6312A	VFR	PEA Product	1,763	1,586	831,652	151	151	Aluminum Specular	Yes	0.13	0.01
D-6312B	ED6312B	VFR	PEA Product	1,763	1,586	831,652	151	151	Aluminum Specular	Yes	0.13	0.01
TK-6802	ETK6802	VFR	First Flush Stormwater	271,669	287,650	78,600,000	120	90	White	No	1.74	0.03
TK-60001	ETK60001	VFR	Crude PEA	180,674	8,400	7,078,894	150	101	Aluminum Specular	No	1.09	0.05
TK-60003	ETK60003	VFR	Toluene Solvent	19,829	7,800	1,992,992	120	100	White	No	21.47	0.92
TK-60004	ETK60004	VFR	MPG Solvent	17,273	6,900	3,242,606	150	105	White	No	7.14	<0.01
TK-60005	ETK60005	VFR	PEA Product	74,450	9,000	763,863	151	100	Aluminum Specular	No	0.73	0.01
TK-60006	ETK60006	VFR	PEA Product	36,097	13,706	770,259	151	100	Aluminum Specular	No	1.11	<0.01
TK-60220	ETK60220	VFR	Crude MBA	635,460	51,300	12,400,000	180	170	Aluminum Specular	Yes	19.95	1.40
TK-60221	ETK60221	VFR	Crude ACP	519,131	30,000	6,500,000	140	115	Aluminum Specular	Yes	13.62	1.26
TK-60223	ETK60223	IFR	Heavy Aromatic Solvent	128,972	18,000	1,861,500	120	101	White	No	0.82	0.05
TK-60225	ETK60225	VFR	Octane Solvent/isopar-e solvent	138,184	6,000	1,623,142	103.5	77	White	No	12.92	1.37
TK-60226	ETK60226	VFR	2-Ethyl Hexanoic Acid	10,152	10,000	18,000,000	120	100	Aluminum Specular	No	0.08	<0.01
TK-60285A	ETK60285A	VFR	PEA Unit Feed	211,137	1,350	4,748,423	151	130	Aluminum Specular	No	0.18	0.11
TK-60285B	ETK60285B	VFR	PEA Unit Feed	211,137	1,350	4,748,423	151	130	Aluminum Specular	No	0.18	0.11
TK-60320	ETK60320	VFR	Crude Styrene	587,519	47,546	245,483,681	115	95	Aluminum Specular	Yes	24.49	13.74
TK-60321A	ETK60321A	VFR	Styrene Product	138,184	28,000	265,234,667	75.63	70	Aluminum Specular	Yes	7.18	5.65
TK-60321B	ETK60321B	VFR	Styrene Product	138,184	28,000		75.63		Aluminum Specular	Yes	7.18	
TK-60321C	ETK60321C	VFR	Styrene Product	138,184	28,000		75.63		Aluminum Specular	Yes	7.18	
TK-60631	ETK60631	VFR	Heavy Aromatic Solvent	42,301	18,000	465,375	120	101	White	No	3.68	0.03
TK-60561	ETK60561	VFR	PEA Product	51,702	8,400	191,920	151	100	White	No	0.68	<0.01
TK-64305	ETK64305	VFR	Ethylbenzene	7,638	7,637	4,350,000	160	120	Aluminum Specular	No	29.24	0.51
TK-68632A	ETK68632A	VFR	RFO-637	244,502	10,000	20,767,278	320	190	White	No	11.11	0.28
TK-68784	ETK68784	VFR	Derivatives Wastewater	1,903,560	84,195	33,342,264	125	85	White	No	2.20	0.04

Worst case operating scenarios identified, additional operating scenarios may occur.

Tank		TK-60631	TK-60226
Material		Heavy Aromatic Solvent	2-Ethyl Hexanoic Acid
Working Loss			
Lw FRT	lb/yr	37.28	6.60
	tpy	0.02	0.00
Max Annual Rate	gal/yr	465375.00	18000000.00
Tank Volume	ft3	5654.87	1357.17
Kn		1.00	0.18
Kp		1.00	1.00
Standing Loss			
	lb/yr	28.92	0.23
	tpy	0.01	0.00
Diameter	ft	20.00	12.00
Height	ft	18.00	12.00
Vv vertical	ft3	3332.80	791.53
Wv	lb/ft3	0.00	0.00
Ke		0.04	0.06
Ks		0.99	1.00
Hvo vertical	ft	10.61	7.00
HI	ft	8.50	5.50
roof type		Dome	Cone
roof radius	ft	24.00	12.00
slope	ft/ft	0.06	0.25
Hr	ft	2.18	1.61
Hro	ft	1.11	0.50
Pva	psia	0.03	0.00
dTv	R	23.50	30.98
dPv	psia	0.01	0.00
dPb	psia	0.06	0.06
Mv	lb/lbmol	134.40	144.21
Shell Color		White	Aluminum Specular
Shell Paint Condition		average	average
Bulk Temperature Avg	F	101.00	100.00
Taa	F	69.63	69.63
Tax	F	79.11	79.11
Tan	F	60.15	60.15
Tla	R	550.03	550.34

Tank		TK-60631		TK-60226	
Material		Heavy Aromatic Solvent		2-Ethyl Hexanoic Acid	
Max Hourly					
Bulk Temperature Max	F	120.00		120.00	
Pmax	psia	0.07		0.00	
Mv max	lb/lbmol	134.47		144.21	
Max Hourly rate	gph	18,000.00		10,000.00	
Kn		1.00		0.18	
Kp hourly		1.00		1.00	
Total Hrly	lb/hr	3.68		0.08	
Speciated Emissions					
Material 1	tpy	DIPHENYLMETHANE	<0.01	2-ETHYL HEXANOIC ACID	<0.01
Material 2	tpy	heavy ends of polyethylbenzene residu	0.03	0.00	-
Material 3	tpy	0.00	-	0.00	-
Material 4	tpy	0.00	-	0.00	-
Material 5	tpy	0.00	-	0.00	-
Material 6	tpy	0.00	-	0.00	-
Material 7	tpy	0.00	-	0.00	-
Material 8	tpy	0.00	-	0.00	-
Material 9	tpy	0.00	-	0.00	-
Material 10	tpy	0.00	-	0.00	-
Material 11	tpy	0.00	-	0.00	-
Material 12	tpy	0.00	-	0.00	-
Material 13	tpy	0.00	-	0.00	-
Material 14	tpy	0.00	-	0.00	-
Material 15	tpy	0.00	-	0.00	-
Material 16	tpy	0.00	-	0.00	-
Material 17	tpy	0.00	-	0.00	-
Material 18	tpy	0.00	-	0.00	-
Material 19	tpy	0.00	-	0.00	-
Material 20	tpy	0.00	-	0.00	-
Material 21	tpy	0.00	-	0.00	-
Material 22	tpy	0.00	-	0.00	-
Material 23	tpy	0.00	-	0.00	-
Material 24	tpy	0.00	-	0.00	-
Material 25	tpy	0.00	-	0.00	-
Total Annual VOC	tpy		0.03		<0.01
Material 1	lb/hr	DIPHENYLMETHANE	0.06	2-ETHYL HEXANOIC ACID	0.08
Material 2	lb/hr	heavy ends of polyethylbenzene residu	3.68	0.00	-
Material 3	lb/hr	0.00	-	0.00	-
Material 4	lb/hr	0.00	-	0.00	-
Material 5	lb/hr	0.00	-	0.00	-
Material 6	lb/hr	0.00	-	0.00	-
Material 7	lb/hr	0.00	-	0.00	-
Material 8	lb/hr	0.00	-	0.00	-
Material 9	lb/hr	0.00	-	0.00	-
Material 10	lb/hr	0.00	-	0.00	-
Material 11	lb/hr	0.00	-	0.00	-
Material 12	lb/hr	0.00	-	0.00	-
Material 13	lb/hr	0.00	-	0.00	-
Material 14	lb/hr	0.00	-	0.00	-
Material 15	lb/hr	0.00	-	0.00	-
Material 16	lb/hr	0.00	-	0.00	-
Material 17	lb/hr	0.00	-	0.00	-
Material 18	lb/hr	0.00	-	0.00	-
Material 19	lb/hr	0.00	-	0.00	-
Material 20	lb/hr	0.00	-	0.00	-
Material 21	lb/hr	0.00	-	0.00	-
Material 22	lb/hr	0.00	-	0.00	-
Material 23	lb/hr	0.00	-	0.00	-
Material 24	lb/hr	0.00	-	0.00	-
Material 25	lb/hr	0.00	-	0.00	-
Total Hrly VOC			3.68		0.08

Tank		TK-64305	TK-60225	TK-60225
Material		Ethylbenzene	Octane Solvent	isopar-e solvent
Working Loss				
Lw FRT	lb/yr	945.68	1152.95	1702.71
	tpy	0.47	0.58	0.85
Max Annual Rate	gal/yr	4350000.00	1623142.24	1623142.24
Tank Volume	ft3	1021.02	18472.56	18472.56
Kn		0.22	1.00	1.00
Kp		1.00	1.00	1.00
Standing Loss				
	lb/yr	73.70	730.81	1032.60
	tpy	0.04	0.37	0.52
Diameter	ft	10.00	28.00	28.00
Height	ft	13.00	30.00	30.00
Vv vertical	ft3	584.85	10726.73	10726.73
Wv	lb/ft3	0.01	0.01	0.01
Ke		0.06	0.04	0.05
Ks		0.87	0.81	0.74
Hvo vertical	ft	7.45	17.42	17.42
HI	ft	6.00	14.50	14.50
roof type		Cone	Dome	Dome
roof radius	ft	10.00	28.00	28.00
slope	ft/ft	0.27	67.17	67.17
Hr	ft	1.34	3.75	3.75
Hro	ft	0.45	1.92	1.92
Pva	psia	0.39	0.26	0.39
dTv	R	30.98	23.50	23.50
dPv	psia	0.10	0.07	0.10
dPb	psia	0.06	0.06	0.06
Mv	lb/lbmol	106.17	114.23	114.23
Shell Color		Aluminum Specular	White	White
Shell Paint Condition		average	average	average
Bulk Temperature Avg	F	120.00	77.00	77.00
Taa	F	69.63	69.63	69.63
Tax	F	79.11	79.11	79.11
Tan	F	60.15	60.15	60.15
Tla	R	561.51	535.45	535.45

Tank		TK-64305		TK-60225		TK-60225	
Material		Ethylbenzene		Octane Solvent		isopar-e solvent	
Max Hourly							
Bulk Temperature Max	F	160.00		103.50		103.50	
Pmax	psia	1.73		0.60		0.85	
Mv max	lb/lbmol	106.17		114.23		114.23	
Max Hourly rate	gph	7,637.00		6,000.00		6,000.00	
Kn		0.22		1.00		1.00	
Kp hourly		1.00		1.00		1.00	
Total Hrly	lb/hr	29.24		9.07		12.92	
Speciated Emissions							
Material 1	tpy	ETHYLBENZENE	0.51	n-OCTANE	0.94	THA (PETROLEUM), LIGHT ALK	1.36
Material 2	tpy	0.00	-	0.00	-	2,2,4-TRIMETHYLPENTANE	0.01
Material 3	tpy	0.00	-	0.00	-	0.00	-
Material 4	tpy	0.00	-	0.00	-	0.00	-
Material 5	tpy	0.00	-	0.00	-	0.00	-
Material 6	tpy	0.00	-	0.00	-	0.00	-
Material 7	tpy	0.00	-	0.00	-	0.00	-
Material 8	tpy	0.00	-	0.00	-	0.00	-
Material 9	tpy	0.00	-	0.00	-	0.00	-
Material 10	tpy	0.00	-	0.00	-	0.00	-
Material 11	tpy	0.00	-	0.00	-	0.00	-
Material 12	tpy	0.00	-	0.00	-	0.00	-
Material 13	tpy	0.00	-	0.00	-	0.00	-
Material 14	tpy	0.00	-	0.00	-	0.00	-
Material 15	tpy	0.00	-	0.00	-	0.00	-
Material 16	tpy	0.00	-	0.00	-	0.00	-
Material 17	tpy	0.00	-	0.00	-	0.00	-
Material 18	tpy	0.00	-	0.00	-	0.00	-
Material 19	tpy	0.00	-	0.00	-	0.00	-
Material 20	tpy	0.00	-	0.00	-	0.00	-
Material 21	tpy	0.00	-	0.00	-	0.00	-
Material 22	tpy	0.00	-	0.00	-	0.00	-
Material 23	tpy	0.00	-	0.00	-	0.00	-
Material 24	tpy	0.00	-	0.00	-	0.00	-
Material 25	tpy	0.00	-	0.00	-	0.00	-
Total Annual VOC	tpy		0.51		0.94		1.37
Material 1	lb/hr	ETHYLBENZENE	29.24	n-OCTANE	9.07	THA (PETROLEUM), LIGHT ALK	12.92
Material 2	lb/hr	0.00	-	0.00	-	2,2,4-TRIMETHYLPENTANE	0.07
Material 3	lb/hr	0.00	-	0.00	-	0.00	-
Material 4	lb/hr	0.00	-	0.00	-	0.00	-
Material 5	lb/hr	0.00	-	0.00	-	0.00	-
Material 6	lb/hr	0.00	-	0.00	-	0.00	-
Material 7	lb/hr	0.00	-	0.00	-	0.00	-
Material 8	lb/hr	0.00	-	0.00	-	0.00	-
Material 9	lb/hr	0.00	-	0.00	-	0.00	-
Material 10	lb/hr	0.00	-	0.00	-	0.00	-
Material 11	lb/hr	0.00	-	0.00	-	0.00	-
Material 12	lb/hr	0.00	-	0.00	-	0.00	-
Material 13	lb/hr	0.00	-	0.00	-	0.00	-
Material 14	lb/hr	0.00	-	0.00	-	0.00	-
Material 15	lb/hr	0.00	-	0.00	-	0.00	-
Material 16	lb/hr	0.00	-	0.00	-	0.00	-
Material 17	lb/hr	0.00	-	0.00	-	0.00	-
Material 18	lb/hr	0.00	-	0.00	-	0.00	-
Material 19	lb/hr	0.00	-	0.00	-	0.00	-
Material 20	lb/hr	0.00	-	0.00	-	0.00	-
Material 21	lb/hr	0.00	-	0.00	-	0.00	-
Material 22	lb/hr	0.00	-	0.00	-	0.00	-
Material 23	lb/hr	0.00	-	0.00	-	0.00	-
Material 24	lb/hr	0.00	-	0.00	-	0.00	-
Material 25	lb/hr	0.00	-	0.00	-	0.00	-
Total Hrly VOC			29.24		9.07		12.92

Tank		TK-68632A	TK-68632A	TK-60220
Material		RFO-637	RFO-637	Crude MBA
Working Loss				
Lw FRT	lb/yr	473.20	473.20	1936.07
	tpy	0.24	0.24	0.97
Max Annual Rate	gal/yr	20767278.00	20767278.00	12400000.00
Tank Volume	ft3	32685.13	32685.13	84948.67
Kn		0.52	0.52	1.00
Kp		1.00	1.00	1.00
Standing Loss				
	lb/yr	80.02	80.02	863.93
	tpy	0.04	0.04	0.43
Diameter	ft	34.00	34.00	52.00
Height	ft	36.00	36.00	40.00
Vv vertical	ft3	18510.02	18510.02	44686.54
Wv	lb/ft3	0.00	0.00	0.00
Ke		0.04	0.04	0.06
Ks		0.98	0.98	0.94
Hvo vertical	ft	20.39	20.39	21.04
HI	ft	17.50	17.50	19.50
roof type		Dome	Dome	Cone
roof radius	ft	40.75	40.75	52.00
slope	ft/ft	0.06	0.06	0.06
Hr	ft	3.72	3.72	6.97
Hro	ft	1.89	1.89	0.54
Pva	psia	0.02	0.02	0.05
dTv	R	23.50	23.50	30.98
dPv	psia	0.00	0.00	0.01
dPb	psia	0.06	0.06	0.06
Mv	lb/lbmol	120.63	120.63	121.74
Shell Color		White	White	Aluminum Specular
Shell Paint Condition		average	average	average
Bulk Temperature Avg	F	190.00	190.00	146.86
Taa	F	69.63	69.63	69.63
Tax	F	79.11	79.11	79.11
Tan	F	60.15	60.15	60.15
Tla	R	602.64	602.64	606.86

Tank		TK-68632A		TK-68632A		TK-60220	
Material		RFO-637		RFO-637		Crude MBA	
Max Hourly							
Bulk Temperature Max	F	265.00		320.00		180.00	
Pmax	psia	0.49		0.49		0.16	
Mv max	lb/lbmol	118.91		120.61		121.71	
Max Hourly rate	gph	10,000.00		5,000.00		51,300.00	
Kn		0.52		0.52		1.00	
Kp hourly		1.00		1.00		1.00	
Total Hrly	lb/hr	11.11		5.38		19.95	
Speciated Emissions							
Material 1	tpy	ACETOPHENONE	<0.01	ACETOPHENONE	<0.01	ACETOPHENONE	0.27
Material 2	tpy	BENZYL ALCOHOL	<0.01	BENZYL ALCOHOL	<0.01	alpha-METHYLBENZYL ALCOHO	1.12
Material 3	tpy	alpha-METHYLBENZYL ALCOHO	0.03	alpha-METHYLBENZYL ALCOHO	0.03	2-PHENYLETHANOL	0.01
Material 4	tpy	PHENOL	<0.01	PHENOL	<0.01		0.00
Material 5	tpy	PHENYL PROPANOLS	0.01	PHENYL PROPANOLS	0.01		0.00
Material 6	tpy	2-PHENYLETHANOL	0.02	2-PHENYLETHANOL	0.02		0.00
Material 7	tpy	1,2-PROPYLENE GLYCOL	<0.01	1,2-PROPYLENE GLYCOL	<0.01		0.00
Material 8	tpy	STYRENE	<0.01	STYRENE	<0.01		0.00
Material 9	tpy	Styrene dimer	<0.01	Styrene dimer	<0.01		0.00
Material 10	tpy	TOLUENE	0.04	TOLUENE	0.04		0.00
Material 11	tpy	MBA ether	<0.01	MBA ether	<0.01		0.00
Material 12	tpy	Heavies (Phenyl ethers)	0.03	Heavies (Phenyl ethers)	0.03		0.00
Material 13	tpy	Heavies (Propylene glycol oligom	0.03	Heavies (Propylene glycol oligom	0.03		0.00
Material 14	tpy	Heavies (Alkylated phenols)	0.08	Heavies (Alkylated phenols)	0.08		0.00
Material 15	tpy	o-ETHYLPHENOL	0.01	o-ETHYLPHENOL	0.01		0.00
Material 16	tpy	0.00	-	0.00	-		0.00
Material 17	tpy	0.00	-	0.00	-		0.00
Material 18	tpy	0.00	-	0.00	-		0.00
Material 19	tpy	0.00	-	0.00	-		0.00
Material 20	tpy	0.00	-	0.00	-		0.00
Material 21	tpy	0.00	-	0.00	-		0.00
Material 22	tpy	0.00	-	0.00	-		0.00
Material 23	tpy	0.00	-	0.00	-		0.00
Material 24	tpy	0.00	-	0.00	-		0.00
Material 25	tpy	0.00	-	0.00	-		0.00
Total Annual VOC	tpy		0.28		0.28		1.40
Material 1	lb/hr	ACETOPHENONE	1.20	ACETOPHENONE	0.43	ACETOPHENONE	4.74
Material 2	lb/hr	BENZYL ALCOHOL	0.65	BENZYL ALCOHOL	0.27	alpha-METHYLBENZYL ALCOHO	16.96
Material 3	lb/hr	alpha-METHYLBENZYL ALCOHO	7.95	alpha-METHYLBENZYL ALCOHO	3.62	2-PHENYLETHANOL	0.20
Material 4	lb/hr	PHENOL	2.53	PHENOL	0.98		0.00
Material 5	lb/hr	PHENYL PROPANOLS	1.34	PHENYL PROPANOLS	0.53		0.00
Material 6	lb/hr	2-PHENYLETHANOL	4.08	2-PHENYLETHANOL	1.78		0.00
Material 7	lb/hr	1,2-PROPYLENE GLYCOL	2.69	1,2-PROPYLENE GLYCOL	1.17		0.00
Material 8	lb/hr	STYRENE	0.33	STYRENE	0.09		0.00
Material 9	lb/hr	Styrene dimer	0.28	Styrene dimer	0.14		0.00
Material 10	lb/hr	TOLUENE	1.82	TOLUENE	0.57		0.00
Material 11	lb/hr	MBA ether	1.42	MBA ether	0.72		0.00
Material 12	lb/hr	Heavies (Phenyl ethers)	1.90	Heavies (Phenyl ethers)	0.78		0.00
Material 13	lb/hr	Heavies (Propylene glycol oligom	7.33	Heavies (Propylene glycol oligom	3.68		0.00
Material 14	lb/hr	Heavies (Alkylated phenols)	3.66	Heavies (Alkylated phenols)	1.59		0.00
Material 15	lb/hr	o-ETHYLPHENOL	1.16	o-ETHYLPHENOL	0.44		0.00
Material 16	lb/hr	0.00	-	0.00	-		0.00
Material 17	lb/hr	0.00	-	0.00	-		0.00
Material 18	lb/hr	0.00	-	0.00	-		0.00
Material 19	lb/hr	0.00	-	0.00	-		0.00
Material 20	lb/hr	0.00	-	0.00	-		0.00
Material 21	lb/hr	0.00	-	0.00	-		0.00
Material 22	lb/hr	0.00	-	0.00	-		0.00
Material 23	lb/hr	0.00	-	0.00	-		0.00
Material 24	lb/hr	0.00	-	0.00	-		0.00
Material 25	lb/hr	0.00	-	0.00	-		0.00
Total Hrly VOC			11.11		5.38		19.95

Tank		TK-60220	TK-60320	TK-60321A/B/C
Material		Crude MBA	Crude Styrene	Styrene Product
Working Loss				
Lw FRT	lb/yr	1144.88	25384.91	11301.27
	tpy	0.57	12.69	5.65
Max Annual Rate	gal/yr	3468006.89	245483680.58	265234667.00
Tank Volume	ft3	84948.67	78539.82	18472.56
Kn		1.00	0.24	0.18
Kp		1.00	1.00	1.00
Standing Loss				
	lb/yr	1655.12	2095.09	0.00
	tpy	0.83	1.05	0.00
Diameter	ft	52.00	50.00	28.00
Height	ft	40.00	40.00	30.00
Vv vertical	ft3	44686.54	41274.31	10503.08
Wv	lb/ft3	0.00	0.00	0.00
Ke		0.06	0.05	0.00
Ks		0.89	0.84	0.92
Hvo vertical	ft	21.04	21.02	17.06
HI	ft	19.50	19.50	14.50
roof type		Cone	Cone	Dome
roof radius	ft	52.00	50.00	33.50
slope	ft/ft	0.06	0.06	0.06
Hr	ft	6.97	6.70	3.07
Hro	ft	0.54	0.52	1.56
Pva	psia	0.11	0.17	0.09
dTv	R	30.98	30.98	0.00
dPv	psia	0.01	0.04	0.00
dPb	psia	0.06	0.06	0.09
Mv	lb/lbmol	121.77	104.38	104.15
Shell Color		Aluminum Specular	Aluminum Specular	Aluminum Specular
Shell Paint Condition		average	average	average
Bulk Temperature Avg	F	170.00	95.00	70.00
Taa	F	69.63	69.63	69.63
Tax	F	79.11	79.11	79.11
Tan	F	60.15	60.15	60.15
Tla	R	630.00	555.00	530.00

Tank		TK-60220		TK-60320		TK-60321A/B/C	
Material		Crude MBA		Crude Styrene		Styrene Product	
Max Hourly							
Bulk Temperature Max	F	180.00		115.00		95.00	
Pmax	psia	0.16		0.23		0.20	
Mv max	lb/lbmol	121.71		104.77		104.20	
Max Hourly rate	gph	51,300.00		47,546.00		0.00	
Kn		1.00		0.24		0.18	
Kp hourly		1.00		1.00		1.00	
Total Hrly	lb/hr	19.95		24.49		0.00	
Speciated Emissions							
Material 1	tpy	ACETOPHENONE	0.29	ACETOPHENONE	0.18	STYRENE	5.65
Material 2	tpy	lpha-METHYLBENZYL ALCOHO	1.10	lpha-METHYLBENZYL ALCOHO	0.04	ACETOPHENONE	<0.01
Material 3	tpy	2-PHENYLETHANOL	0.01	2-PHENYLETHANOL	<0.01	lpha-METHYLBENZYL ALCOHO	<0.01
Material 4	tpy	0.00	-	STYRENE	13.52	0.00	-
Material 5	tpy	0.00	-	0.00	-	0.00	-
Material 6	tpy	0.00	-	0.00	-	0.00	-
Material 7	tpy	0.00	-	0.00	-	0.00	-
Material 8	tpy	0.00	-	0.00	-	0.00	-
Material 9	tpy	0.00	-	0.00	-	0.00	-
Material 10	tpy	0.00	-	0.00	-	0.00	-
Material 11	tpy	0.00	-	0.00	-	0.00	-
Material 12	tpy	0.00	-	0.00	-	0.00	-
Material 13	tpy	0.00	-	0.00	-	0.00	-
Material 14	tpy	0.00	-	0.00	-	0.00	-
Material 15	tpy	0.00	-	0.00	-	0.00	-
Material 16	tpy	0.00	-	0.00	-	0.00	-
Material 17	tpy	0.00	-	0.00	-	0.00	-
Material 18	tpy	0.00	-	0.00	-	0.00	-
Material 19	tpy	0.00	-	0.00	-	0.00	-
Material 20	tpy	0.00	-	0.00	-	0.00	-
Material 21	tpy	0.00	-	0.00	-	0.00	-
Material 22	tpy	0.00	-	0.00	-	0.00	-
Material 23	tpy	0.00	-	0.00	-	0.00	-
Material 24	tpy	0.00	-	0.00	-	0.00	-
Material 25	tpy	0.00	-	0.00	-	0.00	-
Total Annual VOC	tpy		1.40		13.74		5.65
Material 1	lb/hr	ACETOPHENONE	4.74	ACETOPHENONE	1.66	STYRENE	-
Material 2	lb/hr	lpha-METHYLBENZYL ALCOHO	16.96	lpha-METHYLBENZYL ALCOHO	2.69	ACETOPHENONE	-
Material 3	lb/hr	2-PHENYLETHANOL	0.20	2-PHENYLETHANOL	0.05	lpha-METHYLBENZYL ALCOHO	-
Material 4	lb/hr	0.00	-	STYRENE	24.30	0.00	-
Material 5	lb/hr	0.00	-	0.00	-	0.00	-
Material 6	lb/hr	0.00	-	0.00	-	0.00	-
Material 7	lb/hr	0.00	-	0.00	-	0.00	-
Material 8	lb/hr	0.00	-	0.00	-	0.00	-
Material 9	lb/hr	0.00	-	0.00	-	0.00	-
Material 10	lb/hr	0.00	-	0.00	-	0.00	-
Material 11	lb/hr	0.00	-	0.00	-	0.00	-
Material 12	lb/hr	0.00	-	0.00	-	0.00	-
Material 13	lb/hr	0.00	-	0.00	-	0.00	-
Material 14	lb/hr	0.00	-	0.00	-	0.00	-
Material 15	lb/hr	0.00	-	0.00	-	0.00	-
Material 16	lb/hr	0.00	-	0.00	-	0.00	-
Material 17	lb/hr	0.00	-	0.00	-	0.00	-
Material 18	lb/hr	0.00	-	0.00	-	0.00	-
Material 19	lb/hr	0.00	-	0.00	-	0.00	-
Material 20	lb/hr	0.00	-	0.00	-	0.00	-
Material 21	lb/hr	0.00	-	0.00	-	0.00	-
Material 22	lb/hr	0.00	-	0.00	-	0.00	-
Material 23	lb/hr	0.00	-	0.00	-	0.00	-
Material 24	lb/hr	0.00	-	0.00	-	0.00	-
Material 25	lb/hr	0.00	-	0.00	-	0.00	-
Total Hrly VOC			19.95		24.49		-

Tank		TK-60321A	TK-60321B	TK-60321C
Material		Styrene Product	Styrene Product	Styrene Product
Working Loss				
Lw FRT	lb/yr	0.00	0.00	0.00
	tpy	0.00	0.00	0.00
Max Annual Rate	gal/yr	0.00	0.00	0.00
Tank Volume	ft3	18472.56	18472.56	18472.56
Kn		1.00	1.00	1.00
Kp		1.00	1.00	1.00
Standing Loss				
	lb/yr	0.00	0.00	0.00
	tpy	0.00	0.00	0.00
Diameter	ft	28.00	28.00	28.00
Height	ft	30.00	30.00	30.00
Vv vertical	ft3	10503.08	10503.08	10503.08
Wv	lb/ft3	0.00	0.00	0.00
Ke		0.00	0.00	0.00
Ks		1.00	1.00	1.00
Hvo vertical	ft	17.06	17.06	17.06
HI	ft	14.50	14.50	14.50
roof type		Dome	Dome	Dome
roof radius	ft	33.50	33.50	33.50
slope	ft/ft	0.06	0.06	0.06
Hr	ft	3.07	3.07	3.07
Hro	ft	1.56	1.56	1.56
Pva	psia	0.01	0.01	0.01
dTv	R	0.00	0.00	0.00
dPv	psia	0.00	0.00	0.00
dPb	psia	0.09	0.09	0.09
Mv	lb/lbmol	104.15	104.15	104.15
Shell Color		Aluminum Specular	Aluminum Specular	Aluminum Specular
Shell Paint Condition		average	average	average
Bulk Temperature Avg	F	0.00	0.00	0.00
Taa	F	69.63	69.63	69.63
Tax	F	79.11	79.11	79.11
Tan	F	60.15	60.15	60.15
Tla	R	460.00	460.00	460.00

Tank		TK-60321A		TK-60321B		TK-60321C
Material		Styrene Product		Styrene Product		Styrene Product
Max Hourly						
Bulk Temperature Max	F	75.63		75.63		75.63
Pmax	psia	0.11		0.11		0.11
Mv max	lb/lbmol	104.19		104.19		104.19
Max Hourly rate	gph	28,000.00		28,000.00		28,000.00
Kn		1.00		1.00		1.00
Kp hourly		1.00		1.00		1.00
Total Hrly	lb/hr	7.18		7.18		7.18
Speciated Emissions						
Material 1	tpy	STYRENE	-	STYRENE	-	STYRENE
Material 2	tpy	ACETOPHENONE	-	ACETOPHENONE	-	ACETOPHENONE
Material 3	tpy	lpha-METHYLBENZYL ALCOHO	-	lpha-METHYLBENZYL ALCOHO	-	lpha-METHYLBENZYL ALCOHO
Material 4	tpy	0.00	-	0.00	-	0.00
Material 5	tpy	0.00	-	0.00	-	0.00
Material 6	tpy	0.00	-	0.00	-	0.00
Material 7	tpy	0.00	-	0.00	-	0.00
Material 8	tpy	0.00	-	0.00	-	0.00
Material 9	tpy	0.00	-	0.00	-	0.00
Material 10	tpy	0.00	-	0.00	-	0.00
Material 11	tpy	0.00	-	0.00	-	0.00
Material 12	tpy	0.00	-	0.00	-	0.00
Material 13	tpy	0.00	-	0.00	-	0.00
Material 14	tpy	0.00	-	0.00	-	0.00
Material 15	tpy	0.00	-	0.00	-	0.00
Material 16	tpy	0.00	-	0.00	-	0.00
Material 17	tpy	0.00	-	0.00	-	0.00
Material 18	tpy	0.00	-	0.00	-	0.00
Material 19	tpy	0.00	-	0.00	-	0.00
Material 20	tpy	0.00	-	0.00	-	0.00
Material 21	tpy	0.00	-	0.00	-	0.00
Material 22	tpy	0.00	-	0.00	-	0.00
Material 23	tpy	0.00	-	0.00	-	0.00
Material 24	tpy	0.00	-	0.00	-	0.00
Material 25	tpy	0.00	-	0.00	-	0.00
Total Annual VOC	tpy	-	-	-	-	-
Material 1	lb/hr	STYRENE	7.18	STYRENE	7.18	STYRENE
Material 2	lb/hr	ACETOPHENONE	0.02	ACETOPHENONE	0.02	ACETOPHENONE
Material 3	lb/hr	lpha-METHYLBENZYL ALCOHO	0.01	lpha-METHYLBENZYL ALCOHO	0.01	lpha-METHYLBENZYL ALCOHO
Material 4	lb/hr	0.00	-	0.00	-	0.00
Material 5	lb/hr	0.00	-	0.00	-	0.00
Material 6	lb/hr	0.00	-	0.00	-	0.00
Material 7	lb/hr	0.00	-	0.00	-	0.00
Material 8	lb/hr	0.00	-	0.00	-	0.00
Material 9	lb/hr	0.00	-	0.00	-	0.00
Material 10	lb/hr	0.00	-	0.00	-	0.00
Material 11	lb/hr	0.00	-	0.00	-	0.00
Material 12	lb/hr	0.00	-	0.00	-	0.00
Material 13	lb/hr	0.00	-	0.00	-	0.00
Material 14	lb/hr	0.00	-	0.00	-	0.00
Material 15	lb/hr	0.00	-	0.00	-	0.00
Material 16	lb/hr	0.00	-	0.00	-	0.00
Material 17	lb/hr	0.00	-	0.00	-	0.00
Material 18	lb/hr	0.00	-	0.00	-	0.00
Material 19	lb/hr	0.00	-	0.00	-	0.00
Material 20	lb/hr	0.00	-	0.00	-	0.00
Material 21	lb/hr	0.00	-	0.00	-	0.00
Material 22	lb/hr	0.00	-	0.00	-	0.00
Material 23	lb/hr	0.00	-	0.00	-	0.00
Material 24	lb/hr	0.00	-	0.00	-	0.00
Material 25	lb/hr	0.00	-	0.00	-	0.00
Total Hrly VOC			7.18		7.18	

Tank		TK-60221	TK-60221	TK-60221
Material		Crude ACP	Crude ACP	Crude ACP high styrene
Working Loss				
Lw FRT	lb/yr	1471.89	1471.89	1471.89
	tpy	0.74	0.74	0.74
Max Annual Rate	gal/yr	6500000.00	6500000.00	6500000.00
Tank Volume	ft3	69397.78	69397.78	69397.78
Kn		1.00	1.00	1.00
Kp		1.00	1.00	1.00
Standing Loss				
	lb/yr	1041.35	1041.35	1041.35
	tpy	0.52	0.52	0.52
Diameter	ft	47.00	47.00	47.00
Height	ft	40.00	40.00	40.00
Vv vertical	ft3	36415.76	36415.76	36415.76
Wv	lb/ft3	0.00	0.00	0.00
Ke		0.06	0.06	0.06
Ks		0.91	0.91	0.91
Hvo vertical	ft	20.99	20.99	20.99
HI	ft	19.50	19.50	19.50
roof type		Cone	Cone	Cone
roof radius	ft	47.00	47.00	47.00
slope	ft/ft	0.06	0.06	0.06
Hr	ft	6.30	6.30	6.30
Hro	ft	0.49	0.49	0.49
Pva	psia	0.09	0.09	0.09
dTv	R	30.98	30.98	30.98
dPv	psia	0.01	0.01	0.01
dPb	psia	0.06	0.06	0.06
Mv	lb/lbmol	109.04	109.04	109.04
Shell Color		Aluminum Specular	Aluminum Specular	Aluminum Specular
Shell Paint Condition		average	average	average
Bulk Temperature Avg	F	115.00	115.00	115.00
Taa	F	69.63	69.63	69.63
Tax	F	79.11	79.11	79.11
Tan	F	60.15	60.15	60.15
Tla	R	575.00	575.00	575.00

Tank		TK-60221	TK-60221	TK-60221
Material		Crude ACP	Crude ACP	Crude ACP high styrene
Max Hourly				
Bulk Temperature Max	F	140.00	130.00	102.69
Pmax	psia	0.24	0.18	0.09
Mv max	lb/lbmol	108.61	108.43	107.40
Max Hourly rate	gph	25,000.00	30,000.00	24,539.87
Kn		1.00	1.00	1.00
Kp hourly		1.00	1.00	1.00
Total Hrly	lb/hr	13.62	12.66	5.44
Speciated Emissions				
Material 1	tpy	ACETOPHENONE 0.26	ACETOPHENONE 0.26	ACETOPHENONE 0.26
Material 2	tpy	lpha-METHYLBENZYL ALCOHO 0.07	lpha-METHYLBENZYL ALCOHO 0.07	lpha-METHYLBENZYL ALCOHO 0.07
Material 3	tpy	2-PHENYLETHANOL 0.01	2-PHENYLETHANOL 0.01	2-PHENYLETHANOL 0.01
Material 4	tpy	STYRENE 0.37	STYRENE 0.37	STYRENE 0.37
Material 5	tpy	ETHYLBENZENE 0.55	ETHYLBENZENE 0.55	ETHYLBENZENE 0.55
Material 6	tpy	0.00 -	0.00 -	0.00 -
Material 7	tpy	0.00 -	0.00 -	0.00 -
Material 8	tpy	0.00 -	0.00 -	0.00 -
Material 9	tpy	0.00 -	0.00 -	0.00 -
Material 10	tpy	0.00 -	0.00 -	0.00 -
Material 11	tpy	0.00 -	0.00 -	0.00 -
Material 12	tpy	0.00 -	0.00 -	0.00 -
Material 13	tpy	0.00 -	0.00 -	0.00 -
Material 14	tpy	0.00 -	0.00 -	0.00 -
Material 15	tpy	0.00 -	0.00 -	0.00 -
Material 16	tpy	0.00 -	0.00 -	0.00 -
Material 17	tpy	0.00 -	0.00 -	0.00 -
Material 18	tpy	0.00 -	0.00 -	0.00 -
Material 19	tpy	0.00 -	0.00 -	0.00 -
Material 20	tpy	0.00 -	0.00 -	0.00 -
Material 21	tpy	0.00 -	0.00 -	0.00 -
Material 22	tpy	0.00 -	0.00 -	0.00 -
Material 23	tpy	0.00 -	0.00 -	0.00 -
Material 24	tpy	0.00 -	0.00 -	0.00 -
Material 25	tpy	0.00 -	0.00 -	0.00 -
Total Annual VOC	tpy	1.26	1.26	1.26
Material 1	lb/hr	ACETOPHENONE 12.40	ACETOPHENONE 11.57	ACETOPHENONE 5.02
Material 2	lb/hr	lpha-METHYLBENZYL ALCOHO 10.47	lpha-METHYLBENZYL ALCOHO 9.73	lpha-METHYLBENZYL ALCOHO 4.17
Material 3	lb/hr	2-PHENYLETHANOL 2.35	2-PHENYLETHANOL 2.11	2-PHENYLETHANOL 1.40
Material 4	lb/hr	STYRENE 4.61	STYRENE 4.58	STYRENE 4.55
Material 5	lb/hr	ETHYLBENZENE 12.42	ETHYLBENZENE 11.61	ETHYLBENZENE 5.25
Material 6	lb/hr	0.00 -	0.00 -	0.00 -
Material 7	lb/hr	0.00 -	0.00 -	0.00 -
Material 8	lb/hr	0.00 -	0.00 -	0.00 -
Material 9	lb/hr	0.00 -	0.00 -	0.00 -
Material 10	lb/hr	0.00 -	0.00 -	0.00 -
Material 11	lb/hr	0.00 -	0.00 -	0.00 -
Material 12	lb/hr	0.00 -	0.00 -	0.00 -
Material 13	lb/hr	0.00 -	0.00 -	0.00 -
Material 14	lb/hr	0.00 -	0.00 -	0.00 -
Material 15	lb/hr	0.00 -	0.00 -	0.00 -
Material 16	lb/hr	0.00 -	0.00 -	0.00 -
Material 17	lb/hr	0.00 -	0.00 -	0.00 -
Material 18	lb/hr	0.00 -	0.00 -	0.00 -
Material 19	lb/hr	0.00 -	0.00 -	0.00 -
Material 20	lb/hr	0.00 -	0.00 -	0.00 -
Material 21	lb/hr	0.00 -	0.00 -	0.00 -
Material 22	lb/hr	0.00 -	0.00 -	0.00 -
Material 23	lb/hr	0.00 -	0.00 -	0.00 -
Material 24	lb/hr	0.00 -	0.00 -	0.00 -
Material 25	lb/hr	0.00 -	0.00 -	0.00 -
Total Hrly VOC		13.62	12.66	5.44

Tank		TK-60285A	TK-60285B	TK-60001
Material		PEA Unit Feed	PEA Unit Feed	Crude PEA
Working Loss				
Lw FRT	lb/yr	157.29	157.29	79.46
	tpy	0.08	0.08	0.04
Max Annual Rate	gal/yr	4748423.00	4748423.00	7078894.00
Tank Volume	ft3	28224.85	28224.85	24152.56
Kn		1.00	1.00	0.93
Kp		1.00	1.00	1.00
Standing Loss				
	lb/yr	68.16	68.16	24.13
	tpy	0.03	0.03	0.01
Diameter	ft	33.00	33.00	31.00
Height	ft	33.00	33.00	32.00
Vv vertical	ft3	14834.09	14834.09	13919.44
Wv	lb/ft3	0.00	0.00	0.00
Ke		0.06	0.06	0.06
Ks		0.99	0.99	1.00
Hvo vertical	ft	17.34	17.34	18.44
HI	ft	16.00	16.00	15.50
roof type		Cone	Cone	Cone
roof radius	ft	33.00	33.00	31.00
slope	ft/ft	0.06	0.06	0.38
Hr	ft	4.42	4.42	4.15
Hro	ft	0.34	0.34	1.94
Pva	psia	0.01	0.01	0.00
dTv	R	30.98	30.98	30.98
dPv	psia	0.00	0.00	0.00
dPb	psia	0.06	0.06	0.06
Mv	lb/lbmol	121.67	121.67	122.53
Shell Color		Aluminum Specular	Aluminum Specular	Aluminum Specular
Shell Paint Condition		average	average	average
Bulk Temperature Avg	F	130.00	130.00	101.00
Taa	F	69.63	69.63	69.63
Tax	F	79.11	79.11	79.11
Tan	F	60.15	60.15	60.15
Tla	R	568.27	568.27	550.88

Tank		TK-60285A		TK-60285B		TK-60001	
Material		PEA Unit Feed		PEA Unit Feed		Crude PEA	
Max Hourly							
Bulk Temperature Max	F	151.00		151.00		150.00	
Pmax	psia	0.05		0.05		0.05	
Mv max	lb/lbmol	120.91		120.91		120.87	
Max Hourly rate	gph	1,350.00		1,350.00		8,400.00	
Kn		1.00		1.00		0.93	
Kp hourly		1.00		1.00		1.00	
Total Hrly	lb/hr	0.18		0.18		1.09	
Speciated Emissions							
Material 1	tpy	Styrene dimer	<0.01	Styrene dimer	<0.01	ACETOPHENONE	0.01
Material 2	tpy	MBA ether	<0.01	MBA ether	<0.01	BENZYL ALCOHOL	<0.01
Material 3	tpy	o-ETHYLPHENOL	<0.01	o-ETHYLPHENOL	<0.01	Alpha-METHYLBENZYL ALCOHO	0.01
Material 4	tpy	PHENYL PROPANOLS	0.01	PHENYL PROPANOLS	0.01	PHENYL PROPANOLS	0.01
Material 5	tpy	ACETOPHENONE	0.04	ACETOPHENONE	0.04	2-PHENYLETHANOL	0.02
Material 6	tpy	BENZYL ALCOHOL	<0.01	BENZYL ALCOHOL	<0.01	1,2-PROPYLENE GLYCOL	<0.01
Material 7	tpy	Alpha-METHYLBENZYL ALCOHO	0.04	Alpha-METHYLBENZYL ALCOHO	0.04	TOLUALCOHOLS	<0.01
Material 8	tpy	1,2-PROPYLENE GLYCOL	<0.01	1,2-PROPYLENE GLYCOL	<0.01	TOLUALDEHYDES	<0.01
Material 9	tpy	2-PHENYLETHANOL	0.02	2-PHENYLETHANOL	0.02	o-ETHYLPHENOL	<0.01
Material 10	tpy	TOLUALCOHOLS	<0.01	TOLUALCOHOLS	<0.01	0.00	-
Material 11	tpy	TOLUALDEHYDES	<0.01	TOLUALDEHYDES	<0.01	0.00	-
Material 12	tpy	0.00	-	0.00	-	0.00	-
Material 13	tpy	0.00	-	0.00	-	0.00	-
Material 14	tpy	0.00	-	0.00	-	0.00	-
Material 15	tpy	0.00	-	0.00	-	0.00	-
Material 16	tpy	0.00	-	0.00	-	0.00	-
Material 17	tpy	0.00	-	0.00	-	0.00	-
Material 18	tpy	0.00	-	0.00	-	0.00	-
Material 19	tpy	0.00	-	0.00	-	0.00	-
Material 20	tpy	0.00	-	0.00	-	0.00	-
Material 21	tpy	0.00	-	0.00	-	0.00	-
Material 22	tpy	0.00	-	0.00	-	0.00	-
Material 23	tpy	0.00	-	0.00	-	0.00	-
Material 24	tpy	0.00	-	0.00	-	0.00	-
Material 25	tpy	0.00	-	0.00	-	0.00	-
Total Annual VOC	tpy		0.11		0.11		0.05
Material 1	lb/hr	Styrene dimer	<0.01	Styrene dimer	<0.01	ACETOPHENONE	0.33
Material 2	lb/hr	MBA ether	<0.01	MBA ether	<0.01	BENZYL ALCOHOL	0.07
Material 3	lb/hr	o-ETHYLPHENOL	0.02	o-ETHYLPHENOL	0.02	Alpha-METHYLBENZYL ALCOHO	0.52
Material 4	lb/hr	PHENYL PROPANOLS	0.03	PHENYL PROPANOLS	0.03	PHENYL PROPANOLS	0.10
Material 5	lb/hr	ACETOPHENONE	0.10	ACETOPHENONE	0.10	2-PHENYLETHANOL	0.65
Material 6	lb/hr	BENZYL ALCOHOL	0.02	BENZYL ALCOHOL	0.02	1,2-PROPYLENE GLYCOL	0.02
Material 7	lb/hr	Alpha-METHYLBENZYL ALCOHO	0.14	Alpha-METHYLBENZYL ALCOHO	0.14	TOLUALCOHOLS	0.01
Material 8	lb/hr	1,2-PROPYLENE GLYCOL	0.01	1,2-PROPYLENE GLYCOL	0.01	TOLUALDEHYDES	0.28
Material 9	lb/hr	2-PHENYLETHANOL	0.16	2-PHENYLETHANOL	0.16	o-ETHYLPHENOL	0.06
Material 10	lb/hr	TOLUALCOHOLS	<0.01	TOLUALCOHOLS	<0.01	0.00	-
Material 11	lb/hr	TOLUALDEHYDES	0.04	TOLUALDEHYDES	0.04	0.00	-
Material 12	lb/hr	0.00	-	0.00	-	0.00	-
Material 13	lb/hr	0.00	-	0.00	-	0.00	-
Material 14	lb/hr	0.00	-	0.00	-	0.00	-
Material 15	lb/hr	0.00	-	0.00	-	0.00	-
Material 16	lb/hr	0.00	-	0.00	-	0.00	-
Material 17	lb/hr	0.00	-	0.00	-	0.00	-
Material 18	lb/hr	0.00	-	0.00	-	0.00	-
Material 19	lb/hr	0.00	-	0.00	-	0.00	-
Material 20	lb/hr	0.00	-	0.00	-	0.00	-
Material 21	lb/hr	0.00	-	0.00	-	0.00	-
Material 22	lb/hr	0.00	-	0.00	-	0.00	-
Material 23	lb/hr	0.00	-	0.00	-	0.00	-
Material 24	lb/hr	0.00	-	0.00	-	0.00	-
Material 25	lb/hr	0.00	-	0.00	-	0.00	-
Total Hrly VOC			0.18		0.18		1.09

Tank		TK-60003	TK-60004	D-6312A
Material		Toluene Solvent	MPG Solvent	PEA Product
Working Loss				
Lw FRT	lb/yr	1588.91	144.61	17.47
	tpy	0.79	0.07	0.01
Max Annual Rate	gal/yr	1992992.00	3242606.00	831652.49
Tank Volume	ft3	2650.72	2309.07	235.62
Kn		0.47	0.33	0.23
Kp		1.00	1.00	1.00
Standing Loss				
	lb/yr	260.48	18.38	1.58
	tpy	0.13	0.01	0.00
Diameter	ft	15.00	14.00	5.00
Height	ft	15.00	15.00	12.00
Vv vertical	ft3	1557.26	1351.23	134.36
Wv	lb/ft3	0.01	0.00	0.00
Ke		0.05	0.04	0.06
Ks		0.73	0.87	0.99
Hvo vertical	ft	8.81	8.78	6.84
HI	ft	7.00	7.00	5.50
roof type		Cone	Cone	Dome
roof radius	ft	15.00	14.00	5.00
slope	ft/ft	0.32	0.33	0.06
Hr	ft	2.01	1.88	0.67
Hro	ft	0.81	0.78	0.34
Pva	psia	0.78	0.31	0.03
dTv	R	23.50	23.50	30.98
dPv	psia	0.18	0.08	0.00
dPb	psia	0.06	0.06	0.06
Mv	lb/lbmol	92.16	18.61	122.20
Shell Color		White	White	Aluminum Specular
Shell Paint Condition		average	average	average
Bulk Temperature Avg	F	100.00	105.00	151.00
Taa	F	69.63	69.63	69.63
Tax	F	79.11	79.11	79.11
Tan	F	60.15	60.15	60.15
Tla	R	549.23	552.08	611.00

Tank		TK-60003		TK-60004		D-6312A	
Material		Toluene Solvent		MPG Solvent		PEA Product	
Max Hourly							
Bulk Temperature Max	F	120.00		150.00		151.00	
Pmax	psia	1.32		2.66		0.03	
Mv max	lb/lbmol	95.55		18.40		122.28	
Max Hourly rate	gph	7,800.00		6,900.00		1,586.31	
Kn		0.47		0.33		0.23	
Kp hourly		1.00		1.00		1.00	
Total Hrly	lb/hr	21.47		7.14		0.13	
Speciated Emissions							
Material 1	tpy	TOLUENE	0.92	1,2-PROPYLENE GLYCOL	<0.01	2-PHENYLETHANOL	0.01
Material 2	tpy	1,2-PROPYLENE GLYCOL	<0.01	WATER	0.08	PHENYL PROPANOLS	<0.01
Material 3	tpy	kanes, C5-C16, generic, not otl	<0.01	2-PHENYLETHANOL	<0.01	TOLUALCOHOLS	<0.01
Material 4	tpy	0.00	-	0.00	-	o-ETHYLPHENOL	<0.01
Material 5	tpy	0.00	-	0.00	-	BENZYL ALCOHOL	<0.01
Material 6	tpy	0.00	-	0.00	-	0.00	-
Material 7	tpy	0.00	-	0.00	-	0.00	-
Material 8	tpy	0.00	-	0.00	-	0.00	-
Material 9	tpy	0.00	-	0.00	-	0.00	-
Material 10	tpy	0.00	-	0.00	-	0.00	-
Material 11	tpy	0.00	-	0.00	-	0.00	-
Material 12	tpy	0.00	-	0.00	-	0.00	-
Material 13	tpy	0.00	-	0.00	-	0.00	-
Material 14	tpy	0.00	-	0.00	-	0.00	-
Material 15	tpy	0.00	-	0.00	-	0.00	-
Material 16	tpy	0.00	-	0.00	-	0.00	-
Material 17	tpy	0.00	-	0.00	-	0.00	-
Material 18	tpy	0.00	-	0.00	-	0.00	-
Material 19	tpy	0.00	-	0.00	-	0.00	-
Material 20	tpy	0.00	-	0.00	-	0.00	-
Material 21	tpy	0.00	-	0.00	-	0.00	-
Material 22	tpy	0.00	-	0.00	-	0.00	-
Material 23	tpy	0.00	-	0.00	-	0.00	-
Material 24	tpy	0.00	-	0.00	-	0.00	-
Material 25	tpy	0.00	-	0.00	-	0.00	-
Total Annual VOC	tpy		0.92		<0.01		0.01
Material 1	lb/hr	TOLUENE	21.47	1,2-PROPYLENE GLYCOL	7.14	2-PHENYLETHANOL	0.13
Material 2	lb/hr	1,2-PROPYLENE GLYCOL	0.06	WATER	7.06	PHENYL PROPANOLS	<0.01
Material 3	lb/hr	kanes, C5-C16, generic, not otl	7.55	2-PHENYLETHANOL	0.19	TOLUALCOHOLS	<0.01
Material 4	lb/hr	0.00	-	0.00	-	o-ETHYLPHENOL	<0.01
Material 5	lb/hr	0.00	-	0.00	-	BENZYL ALCOHOL	<0.01
Material 6	lb/hr	0.00	-	0.00	-	0.00	-
Material 7	lb/hr	0.00	-	0.00	-	0.00	-
Material 8	lb/hr	0.00	-	0.00	-	0.00	-
Material 9	lb/hr	0.00	-	0.00	-	0.00	-
Material 10	lb/hr	0.00	-	0.00	-	0.00	-
Material 11	lb/hr	0.00	-	0.00	-	0.00	-
Material 12	lb/hr	0.00	-	0.00	-	0.00	-
Material 13	lb/hr	0.00	-	0.00	-	0.00	-
Material 14	lb/hr	0.00	-	0.00	-	0.00	-
Material 15	lb/hr	0.00	-	0.00	-	0.00	-
Material 16	lb/hr	0.00	-	0.00	-	0.00	-
Material 17	lb/hr	0.00	-	0.00	-	0.00	-
Material 18	lb/hr	0.00	-	0.00	-	0.00	-
Material 19	lb/hr	0.00	-	0.00	-	0.00	-
Material 20	lb/hr	0.00	-	0.00	-	0.00	-
Material 21	lb/hr	0.00	-	0.00	-	0.00	-
Material 22	lb/hr	0.00	-	0.00	-	0.00	-
Material 23	lb/hr	0.00	-	0.00	-	0.00	-
Material 24	lb/hr	0.00	-	0.00	-	0.00	-
Material 25	lb/hr	0.00	-	0.00	-	0.00	-
Total Hrly VOC			21.47		7.14		0.13

Tank		D-6312B	TK-60005	TK-60006
Material		PEA Product	PEA Product	PEA Product
Working Loss				
Lw FRT	lb/yr	17.47	6.86	6.64
	tpy	0.01	0.00	0.00
Max Annual Rate	gal/yr	831652.49	763863.23	770259.21
Tank Volume	ft3	235.62	9952.57	4825.49
Kn		0.23	1.00	1.00
Kp		1.00	1.00	1.00
Standing Loss				
	lb/yr	1.58	7.71	3.18
	tpy	0.00	0.00	0.00
Diameter	ft	5.00	24.00	16.00
Height	ft	12.00	22.00	24.00
Vv vertical	ft3	134.36	5947.19	2546.78
Wv	lb/ft3	0.00	0.00	0.00
Ke		0.06	0.06	0.06
Ks		0.99	1.00	1.00
Hvo vertical	ft	6.84	13.15	12.67
HI	ft	5.50	10.50	11.50
roof type		Dome	Dome	Cone
roof radius	ft	5.00	24.00	16.00
slope	ft/ft	0.06	0.06	0.06
Hr	ft	0.67	3.22	2.14
Hro	ft	0.34	1.65	0.17
Pva	psia	0.03	0.00	0.00
dTv	R	30.98	30.98	30.98
dPv	psia	0.00	0.00	0.00
dPb	psia	0.06	0.06	0.06
Mv	lb/lbmol	122.20	122.20	122.20
Shell Color		Aluminum Specular	Aluminum Specular	Aluminum Specular
Shell Paint Condition		average	average	average
Bulk Temperature Avg	F	151.00	100.00	100.00
Taa	F	69.63	69.63	69.63
Tax	F	79.11	79.11	79.11
Tan	F	60.15	60.15	60.15
Tla	R	611.00	550.52	549.56

Tank		D-6312B		TK-60005		TK-60006	
Material		PEA Product		PEA Product		PEA Product	
Max Hourly							
Bulk Temperature Max	F	151.00		151.00		151.00	
Pmax	psia	0.03		0.03		0.03	
Mv max	lb/lbmol	122.28		122.28		122.28	
Max Hourly rate	gph	1,586.31		9,000.00		13,705.68	
Kn		0.23		1.00		1.00	
Kp hourly		1.00		1.00		1.00	
Total Hrly	lb/hr	0.13		0.73		1.11	
Speciated Emissions							
Material 1	tpy	2-PHENYLETHANOL	0.01	2-PHENYLETHANOL	0.01	2-PHENYLETHANOL	<0.01
Material 2	tpy	PHENYL PROPANOLS	<0.01	PHENYL PROPANOLS	<0.01	PHENYL PROPANOLS	<0.01
Material 3	tpy	TOLUALCOHOLS	<0.01	TOLUALCOHOLS	<0.01	TOLUALCOHOLS	<0.01
Material 4	tpy	o-ETHYLPHENOL	<0.01	o-ETHYLPHENOL	<0.01	o-ETHYLPHENOL	<0.01
Material 5	tpy	BENZYL ALCOHOL	<0.01	BENZYL ALCOHOL	<0.01	BENZYL ALCOHOL	<0.01
Material 6	tpy	0.00	-	0.00	-	0.00	-
Material 7	tpy	0.00	-	0.00	-	0.00	-
Material 8	tpy	0.00	-	0.00	-	0.00	-
Material 9	tpy	0.00	-	0.00	-	0.00	-
Material 10	tpy	0.00	-	0.00	-	0.00	-
Material 11	tpy	0.00	-	0.00	-	0.00	-
Material 12	tpy	0.00	-	0.00	-	0.00	-
Material 13	tpy	0.00	-	0.00	-	0.00	-
Material 14	tpy	0.00	-	0.00	-	0.00	-
Material 15	tpy	0.00	-	0.00	-	0.00	-
Material 16	tpy	0.00	-	0.00	-	0.00	-
Material 17	tpy	0.00	-	0.00	-	0.00	-
Material 18	tpy	0.00	-	0.00	-	0.00	-
Material 19	tpy	0.00	-	0.00	-	0.00	-
Material 20	tpy	0.00	-	0.00	-	0.00	-
Material 21	tpy	0.00	-	0.00	-	0.00	-
Material 22	tpy	0.00	-	0.00	-	0.00	-
Material 23	tpy	0.00	-	0.00	-	0.00	-
Material 24	tpy	0.00	-	0.00	-	0.00	-
Material 25	tpy	0.00	-	0.00	-	0.00	-
Total Annual VOC	tpy		0.01		0.01		<0.01
Material 1	lb/hr	2-PHENYLETHANOL	0.13	2-PHENYLETHANOL	0.73	2-PHENYLETHANOL	1.10
Material 2	lb/hr	PHENYL PROPANOLS	<0.01	PHENYL PROPANOLS	0.01	PHENYL PROPANOLS	0.01
Material 3	lb/hr	TOLUALCOHOLS	<0.01	TOLUALCOHOLS	<0.01	TOLUALCOHOLS	<0.01
Material 4	lb/hr	o-ETHYLPHENOL	<0.01	o-ETHYLPHENOL	<0.01	o-ETHYLPHENOL	<0.01
Material 5	lb/hr	BENZYL ALCOHOL	<0.01	BENZYL ALCOHOL	<0.01	BENZYL ALCOHOL	<0.01
Material 6	lb/hr	0.00	-	0.00	-	0.00	-
Material 7	lb/hr	0.00	-	0.00	-	0.00	-
Material 8	lb/hr	0.00	-	0.00	-	0.00	-
Material 9	lb/hr	0.00	-	0.00	-	0.00	-
Material 10	lb/hr	0.00	-	0.00	-	0.00	-
Material 11	lb/hr	0.00	-	0.00	-	0.00	-
Material 12	lb/hr	0.00	-	0.00	-	0.00	-
Material 13	lb/hr	0.00	-	0.00	-	0.00	-
Material 14	lb/hr	0.00	-	0.00	-	0.00	-
Material 15	lb/hr	0.00	-	0.00	-	0.00	-
Material 16	lb/hr	0.00	-	0.00	-	0.00	-
Material 17	lb/hr	0.00	-	0.00	-	0.00	-
Material 18	lb/hr	0.00	-	0.00	-	0.00	-
Material 19	lb/hr	0.00	-	0.00	-	0.00	-
Material 20	lb/hr	0.00	-	0.00	-	0.00	-
Material 21	lb/hr	0.00	-	0.00	-	0.00	-
Material 22	lb/hr	0.00	-	0.00	-	0.00	-
Material 23	lb/hr	0.00	-	0.00	-	0.00	-
Material 24	lb/hr	0.00	-	0.00	-	0.00	-
Material 25	lb/hr	0.00	-	0.00	-	0.00	-
Total Hrly VOC			0.13		0.73		1.11

Tank		TK-60561	TK-6802	TK-68784
Material		PEA Product	First Flush Stormwater	Derivatives Wastewater
			271668.61	1903560.35
Working Loss				
Lw FRT	lb/yr	1.62	5214.16	7669.71
	tpy	0.00	2.61	3.83
Max Annual Rate	gal/yr	191919.81	78600000.00	33342263.92
Tank Volume	ft3	6911.50	36316.81	254469.00
Kn		1.00	0.27	1.00
Kp		1.00	1.00	1.00
Standing Loss				
	lb/yr	3.41	376.09	2547.85
	tpy	0.00	0.19	1.27
Diameter	ft	20.00	34.00	90.00
Height	ft	22.00	40.00	40.00
Vv vertical	ft3	3678.28	18933.92	136379.48
Wv	lb/ft3	0.00	0.00	0.00
Ke		0.04	0.05	0.05
Ks		1.00	0.61	0.62
Hvo vertical	ft	11.71	20.85	21.44
HI	ft	10.50	19.50	19.50
roof type		Cone	Cone	Cone
roof radius	ft	20.00	34.00	90.00
slope	ft/ft	0.06	0.06	0.06
Hr	ft	2.68	4.56	12.06
Hro	ft	0.21	0.35	0.94
Pva	psia	0.00	0.57	0.53
dTv	R	23.50	23.50	23.50
dPv	psia	0.00	0.16	0.14
dPb	psia	0.06	0.06	0.06
Mv	lb/lbmol	122.20	18.17	18.13
Shell Color		White	White	White
Shell Paint Condition		average	average	average
Bulk Temperature Avg	F	100.00	90.00	85.00
Taa	F	69.63	69.63	69.63
Tax	F	79.11	79.11	79.11
Tan	F	60.15	60.15	60.15
Tla	R	549.06	543.05	541.09

Tank		TK-60561	TK-6802	TK-68784			
Material		PEA Product	First Flush Stormwater	Derivatives Wastewater			
Max Hourly							
Bulk Temperature Max	F	151.00	120.00	125.00			
Pmax	psia	0.03	1.71	1.97			
Mv max	lb/lbmol	122.28	18.13	18.40			
Max Hourly rate	gph	8,400.00	287,650.00	84,194.89			
Kn		1.00	0.27	1.00			
Kp hourly		1.00	1.00	1.00			
Total Hrly	lb/hr	0.68	194.38	66.24			
Speciated Emissions							
Material 1	tpy	2-PHENYLETHANOL	<0.01	ACETOPHENONE	<0.01	ACETONE	<0.01
Material 2	tpy	PHENYL PROPANOLS	<0.01	BENZALDEHYDE	<0.01	ALLYL ALCOHOL	<0.01
Material 3	tpy	TOLUALCOHOLS	<0.01	BENZENE	<0.01	1,4-BUTANEDIOL	<0.01
Material 4	tpy	o-ETHYLPHENOL	<0.01	ETHYLBENZENE	<0.01	ETHYLBENZENE	<0.01
Material 5	tpy	BENZYL ALCOHOL	<0.01	lpha-METHYLBENZYL ALCOHO	<0.01	gamma-BUTYROLACTONE	<0.01
Material 6	tpy	0.00	-	PROPANAL	0.01	lpha-METHYLBENZYL ALCOHO	<0.01
Material 7	tpy	0.00	-	1,2-PROPYLENE GLYCOL	<0.01	METHYL ETHYL KETONE	<0.01
Material 8	tpy	0.00	-	PROPYLENE OXIDE	0.01	METHANOL	0.02
Material 9	tpy	0.00	-	STYRENE	<0.01	1,2-PROPYLENE GLYCOL	<0.01
Material 10	tpy	0.00	-	TOLUENE	<0.01	TETRAHYDROFURAN	<0.01
Material 11	tpy	0.00	-	WATER	2.76	N-METHYL-2-PYRROLIDONE	<0.01
Material 12	tpy	0.00	-	0.00	-	ETHANOL	<0.01
Material 13	tpy	0.00	-	0.00	-	ACETOPHENONE	<0.01
Material 14	tpy	0.00	-	0.00	-	tert-BUTYL ETHYL ETHER	<0.01
Material 15	tpy	0.00	-	0.00	-	METHYL tert-BUTYL ETHER	0.01
Material 16	tpy	0.00	-	0.00	-	p-DIETHYLBENZENE	<0.01
Material 17	tpy	0.00	-	0.00	-	o-DIETHYLBENZENE	<0.01
Material 18	tpy	0.00	-	0.00	-	m-DIETHYLBENZENE	<0.01
Material 19	tpy	0.00	-	0.00	-	2-PHENYLETHANOL	<0.01
Material 20	tpy	0.00	-	0.00	-	1-PROPANOL	<0.01
Material 21	tpy	0.00	-	0.00	-	PHENOL	<0.01
Material 22	tpy	0.00	-	0.00	-	PROPYLENE OXIDE	0.01
Material 23	tpy	0.00	-	0.00	-	WATER	5.06
Material 24	tpy	0.00	-	0.00	-	0.00	-
Material 25	tpy	0.00	-	0.00	-	0.00	-
Total Annual VOC	tpy		<0.01		0.03		0.04
Material 1	lb/hr	2-PHENYLETHANOL	0.68	ACETOPHENONE	<0.01	ACETONE	0.36
Material 2	lb/hr	PHENYL PROPANOLS	0.01	BENZALDEHYDE	<0.01	ALLYL ALCOHOL	0.02
Material 3	lb/hr	TOLUALCOHOLS	<0.01	BENZENE	0.07	1,4-BUTANEDIOL	<0.01
Material 4	lb/hr	o-ETHYLPHENOL	<0.01	ETHYLBENZENE	0.32	ETHYLBENZENE	<0.01
Material 5	lb/hr	BENZYL ALCOHOL	<0.01	lpha-METHYLBENZYL ALCOHO	0.01	gamma-BUTYROLACTONE	0.05
Material 6	lb/hr	0.00	-	PROPANAL	0.54	lpha-METHYLBENZYL ALCOHO	<0.01
Material 7	lb/hr	0.00	-	1,2-PROPYLENE GLYCOL	<0.01	METHYL ETHYL KETONE	0.05
Material 8	lb/hr	0.00	-	PROPYLENE OXIDE	0.68	METHANOL	1.36
Material 9	lb/hr	0.00	-	STYRENE	0.09	1,2-PROPYLENE GLYCOL	<0.01
Material 10	lb/hr	0.00	-	TOLUENE	0.02	TETRAHYDROFURAN	0.37
Material 11	lb/hr	0.00	-	WATER	192.64	N-METHYL-2-PYRROLIDONE	<0.01
Material 12	lb/hr	0.00	-	0.00	-	ETHANOL	0.10
Material 13	lb/hr	0.00	-	0.00	-	ACETOPHENONE	<0.01
Material 14	lb/hr	0.00	-	0.00	-	tert-BUTYL ETHYL ETHER	0.05
Material 15	lb/hr	0.00	-	0.00	-	METHYL tert-BUTYL ETHER	0.04
Material 16	lb/hr	0.00	-	0.00	-	p-DIETHYLBENZENE	<0.01
Material 17	lb/hr	0.00	-	0.00	-	o-DIETHYLBENZENE	<0.01
Material 18	lb/hr	0.00	-	0.00	-	m-DIETHYLBENZENE	<0.01
Material 19	lb/hr	0.00	-	0.00	-	2-PHENYLETHANOL	<0.01
Material 20	lb/hr	0.00	-	0.00	-	1-PROPANOL	0.01
Material 21	lb/hr	0.00	-	0.00	-	PHENOL	<0.01
Material 22	lb/hr	0.00	-	0.00	-	PROPYLENE OXIDE	0.16
Material 23	lb/hr	0.00	-	0.00	-	WATER	66.24
Material 24	lb/hr	0.00	-	0.00	-	0.00	-
Material 25	lb/hr	0.00	-	0.00	-	0.00	-
Total Hrly VOC			0.68		1.74		2.20

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification		TK-60631
Applicant's name:		
Location:		see plot plan
Tank No.		TK-60631
Emission Point No.		ETK60631
FIN		
Status		
II. Tank Physical Characteristics		
Dimensions		
Shell height (ft)		18.00
Diameter (ft)		20.00
Maximum Liquid Height		21.41
Nominal capacity or tank volume (gallons)		42,301
Turnovers per year		11
Net throughput (gallons/yr)		465,375
Maximum Filling rate (gallons/hour)		18,000
Paint Characteristics		
Shell Color/Shade		White
Shell Condition		average
Roof Color/Shade		White
Roof Condition		average
Roof Characteristics		
Roof Type		Dome
Roof Height (ft)		
Radius (Dome Roof Only) (ft.)		24.00
Slope (Cone Roof Only) (ft/ft)		
Breather Vent Settings		
Combination Vent Valve Number:		
Combination Vent Valve Pressure Setting (psig):		0.03
Combination Vent Valve Vacuum Setting (psig):		-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Pressure Vent Valve Number:		
Pressure Vent Valve Pressure Setting (psig)		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Vacuum Vent Valve Number:		
Vaccum Vent Valve Pressure Setting (psig)		
Open Vent Valve Number:		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60631	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	Heavy Aromatic Solvent	
Average liquid surface temperature (F)	90.03	
Minimum liquid surface temperature (F)	85.80	
Maximum liquid surface temperature (F)	94.15	
True vapor pressure at avg.l.s.t. (psia)	0.03	
True vapor pressure at min.l.s.t. (psia)	0.02	
True vapor pressure at max.l.s.t. (psia)	0.03	
Liquid molecular weight	142.89	
Vapor molecular weight	134.40	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	DIPHENYLMETHANE	30.00%
Material 2	heavy ends of polyethylben	70.00%
Material 3		
Material 4		
Material 5		
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60226
Applicant's name:	
Location:	see plot plan
Tank No.	TK-60226
Emission Point No.	ETK60226
FIN	
Status	
II. Tank Physical Characteristics	
Dimensions	
Shell height (ft)	12.00
Diameter (ft)	12.00
Maximum Liquid Height	13.54
Nominal capacity or tank volume (gallons)	10,152
Turnovers per year	1,773
Net throughput (gallons/yr)	18,000,000
Maximum Filling rate (gallons/hour)	10,000
Paint Characteristics	
Shell Color/Shade	Aluminum Specular
Shell Condition	average
Roof Color/Shade	Aluminum Specular
Roof Condition	average
Roof Characteristics	
Roof Type	Cone
Roof Height (ft)	
Radius (Dome Roof Only) (ft.)	
Slope (Cone Roof Only) (ft/ft)	0.25
Breather Vent Settings	
Combination Vent Valve Number:	
Combination Vent Valve Pressure Setting (psig):	0.03
Combination Vent Valve Vacuum Setting (psig):	-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Pressure Vent Valve Number:	
Pressure Vent Valve Pressure Setting (psig)	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Vacuum Vent Valve Number:	
Vacuum Vent Valve Pressure Setting (psig)	
Open Vent Valve Number:	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60226	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Single	
1. Single component information		
Chemical name	2-Ethyl Hexanoic Acid	
CAS Number		
Average liquid surface temperature (F)	90.34	
True vapor pressure at avg.lst (psia)	0.00	
Liquid molecular weight	144.21	
2. Multiple component information		
Mixture name		
Average liquid surface temperature (F)		
Minimum liquid surface temperature (F)		
Maximum liquid surface temperature (F)		
True vapor pressure at avg.l.s.t. (psia)		
True vapor pressure at min.l.s.t. (psia)		
True vapor pressure at max.l.s.t. (psia)		
Liquid molecular weight		
Vapor molecular weight		
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1		
Material 2		
Material 3		
Material 4		
Material 5		
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification		TK-64305
Applicant's name:		
Location:		see plot plan
Tank No.		TK-64305
Emission Point No.		ETK64305
FIN		
Status		
II. Tank Physical Characteristics		
Dimensions		
Shell height (ft)		13.00
Diameter (ft)		10.00
Maximum Liquid Height		12.87
Nominal capacity or tank volume (gallons)		7,638
Turnovers per year		569
Net throughput (gallons/yr)		4,350,000
Maximum Filling rate (gallons/hour)		7,637
Paint Characteristics		
Shell Color/Shade		Aluminum Specular
Shell Condition		average
Roof Color/Shade		Aluminum Specular
Roof Condition		average
Roof Characteristics		
Roof Type		Cone
Roof Height (ft)		
Radius (Dome Roof Only) (ft.)		
Slope (Cone Roof Only) (ft/ft)		0.27
Breather Vent Settings		
Combination Vent Valve Number:		
Combination Vent Valve Pressure Setting (psig):		0.03
Combination Vent Valve Vacuum Setting (psig):		-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Pressure Vent Valve Number:		
Pressure Vent Valve Pressure Setting (psig)		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Vacuum Vent Valve Number:		
Vaccum Vent Valve Pressure Setting (psig)		
Open Vent Valve Number:		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-64305	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Single	
1. Single component information		
Chemical name	Ethylbenzene	
CAS Number		
Average liquid surface temperature (F)	101.51	
True vapor pressure at avg.lst (psia)	0.39	
Liquid molecular weight	106.17	
2. Multiple component information		
Mixture name		
Average liquid surface temperature (F)		
Minimum liquid surface temperature (F)		
Maximum liquid surface temperature (F)		
True vapor pressure at avg.l.s.t. (psia)		
True vapor pressure at min.l.s.t. (psia)		
True vapor pressure at max.l.s.t. (psia)		
Liquid molecular weight		
Vapor molecular weight		
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1		
Material 2		
Material 3		
Material 4		
Material 5		
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60225
Applicant's name:	
Location:	see plot plan
Tank No.	TK-60225
Emission Point No.	ETK60225
FIN	
Status	
II. Tank Physical Characteristics	
Dimensions	
Shell height (ft)	30.00
Diameter (ft)	28.00
Maximum Liquid Height	32.70
Nominal capacity or tank volume (gallons)	138,184
Turnovers per year	12
Net throughput (gallons/yr)	1,623,142
Maximum Filling rate (gallons/hour)	6,000
Paint Characteristics	
Shell Color/Shade	White
Shell Condition	average
Roof Color/Shade	White
Roof Condition	average
Roof Characteristics	
Roof Type	Dome
Roof Height (ft)	
Radius (Dome Roof Only) (ft.)	28.00
Slope (Cone Roof Only) (ft/ft)	
Breather Vent Settings	
Combination Vent Valve Number:	
Combination Vent Valve Pressure Setting (psig):	0.03
Combination Vent Valve Vacuum Setting (psig):	-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Pressure Vent Valve Number:	
Pressure Vent Valve Pressure Setting (psig)	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Vacuum Vent Valve Number:	
Vacuum Vent Valve Pressure Setting (psig)	
Open Vent Valve Number:	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60225	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Single	
1. Single component information		
Chemical name	Octane Solvent	
CAS Number		
Average liquid surface temperature (F)	75.45	
True vapor pressure at avg.lst (psia)	0.26	
Liquid molecular weight	114.23	
2. Multiple component information		
Mixture name		
Average liquid surface temperature (F)		
Minimum liquid surface temperature (F)		
Maximum liquid surface temperature (F)		
True vapor pressure at avg.l.s.t. (psia)		
True vapor pressure at min.l.s.t. (psia)		
True vapor pressure at max.l.s.t. (psia)		
Liquid molecular weight		
Vapor molecular weight		
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1		
Material 2		
Material 3		
Material 4		
Material 5		
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60225
Applicant's name:	
Location:	see plot plan
Tank No.	TK-60225
Emission Point No.	ETK60225
FIN	
Status	
II. Tank Physical Characteristics	
Dimensions	
Shell height (ft)	30.00
Diameter (ft)	28.00
Maximum Liquid Height	32.70
Nominal capacity or tank volume (gallons)	138,184
Turnovers per year	12
Net throughput (gallons/yr)	1,623,142
Maximum Filling rate (gallons/hour)	6,000
Paint Characteristics	
Shell Color/Shade	White
Shell Condition	average
Roof Color/Shade	White
Roof Condition	average
Roof Characteristics	
Roof Type	Dome
Roof Height (ft)	
Radius (Dome Roof Only) (ft.)	28.00
Slope (Cone Roof Only) (ft/ft)	
Breather Vent Settings	
Combination Vent Valve Number:	
Combination Vent Valve Pressure Setting (psig):	0.03
Combination Vent Valve Vacuum Setting (psig):	-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Pressure Vent Valve Number:	
Pressure Vent Valve Pressure Setting (psig)	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Vacuum Vent Valve Number:	
Vacuum Vent Valve Pressure Setting (psig)	
Open Vent Valve Number:	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60225	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	isopar-e solvent	
Average liquid surface temperature (F)	75.45	
Minimum liquid surface temperature (F)	72.36	
Maximum liquid surface temperature (F)	80.71	
True vapor pressure at avg.l.s.t. (psia)	0.39	
True vapor pressure at min.l.s.t. (psia)	0.35	
True vapor pressure at max.l.s.t. (psia)	0.45	
Liquid molecular weight	114.23	
Vapor molecular weight	114.23	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	NAPHTHA (PETROLEUM), LI	99.75%
Material 2	2,2,4-TRIMETHYLPENTANE	0.25%
Material 3		
Material 4		
Material 5		
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification		TK-68632A
Applicant's name:		
Location:		see plot plan
Tank No.		TK-68632A
Emission Point No.		ETK68632A
FIN		
Status		
II. Tank Physical Characteristics		
Dimensions		
Shell height (ft)		36.00
Diameter (ft)		34.00
Maximum Liquid Height		39.48
Nominal capacity or tank volume (gallons)		244,502
Turnovers per year		85
Net throughput (gallons/yr)		20,767,278
Maximum Filling rate (gallons/hour)		10,000
Paint Characteristics		
Shell Color/Shade		White
Shell Condition		average
Roof Color/Shade		White
Roof Condition		average
Roof Characteristics		
Roof Type		Dome
Roof Height (ft)		
Radius (Dome Roof Only) (ft.)		40.75
Slope (Cone Roof Only) (ft/ft)		
Breather Vent Settings		
Combination Vent Valve Number:		
Combination Vent Valve Pressure Setting (psig):		0.03
Combination Vent Valve Vacuum Setting (psig):		-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Pressure Vent Valve Number:		
Pressure Vent Valve Pressure Setting (psig)		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Vacuum Vent Valve Number:		
Vaccum Vent Valve Pressure Setting (psig)		
Open Vent Valve Number:		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-68632A	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	RFO-637	
Average liquid surface temperature (F)	142.64	
Minimum liquid surface temperature (F)	135.64	
Maximum liquid surface temperature (F)	143.99	
True vapor pressure at avg.l.s.t. (psia)	0.02	
True vapor pressure at min.l.s.t. (psia)	0.01	
True vapor pressure at max.l.s.t. (psia)	0.02	
Liquid molecular weight	167.79	
Vapor molecular weight	120.63	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	ACETOPHENONE	0.08%
Material 2	BENZYL ALCOHOL	0.11%
Material 3	alpha-METHYLBENZYL ALCC	3.26%
Material 4	PHENOL	0.16%
Material 5	PHENYL PROPANOLS	1.38%
Material 6	2-PHENYLETHANOL	3.90%
Material 7	1,2-PROPYLENE GLYCOL	0.05%
Material 8	STYRENE	0.02%
Material 9	Styrene dimer	0.20%
Material 10	TOLUENE	0.06%
Material 11	MBA ether	13.41%
Material 12	Heavies (Phenyl ethers)	5.00%
Material 13	Heavies (Propylene glycol o	57.37%
Material 14	Heavies (Alkylated phenols)	15.00%
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification		TK-68632A
Applicant's name:		
Location:		see plot plan
Tank No.		TK-68632A
Emission Point No.		ETK68632A
FIN		
Status		
II. Tank Physical Characteristics		
Dimensions		
Shell height (ft)		36.00
Diameter (ft)		34.00
Maximum Liquid Height		39.48
Nominal capacity or tank volume (gallons)		244,502
Turnovers per year		85
Net throughput (gallons/yr)		20,767,278
Maximum Filling rate (gallons/hour)		5,000
Paint Characteristics		
Shell Color/Shade		White
Shell Condition		average
Roof Color/Shade		White
Roof Condition		average
Roof Characteristics		
Roof Type		Dome
Roof Height (ft)		
Radius (Dome Roof Only) (ft.)		40.75
Slope (Cone Roof Only) (ft/ft)		
Breather Vent Settings		
Combination Vent Valve Number:		
Combination Vent Valve Pressure Setting (psig):		0.03
Combination Vent Valve Vacuum Setting (psig):		-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Pressure Vent Valve Number:		
Pressure Vent Valve Pressure Setting (psig)		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Vacuum Vent Valve Number:		
Vaccum Vent Valve Pressure Setting (psig)		
Open Vent Valve Number:		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-68632A	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	RFO-637	
Average liquid surface temperature (F)	142.64	
Minimum liquid surface temperature (F)	135.64	
Maximum liquid surface temperature (F)	143.99	
True vapor pressure at avg.l.s.t. (psia)	0.02	
True vapor pressure at min.l.s.t. (psia)	0.01	
True vapor pressure at max.l.s.t. (psia)	0.02	
Liquid molecular weight	167.79	
Vapor molecular weight	120.63	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	ACETOPHENONE	0.08%
Material 2	BENZYL ALCOHOL	0.11%
Material 3	alpha-METHYLBENZYL ALCC	3.26%
Material 4	PHENOL	0.16%
Material 5	PHENYL PROPANOLS	1.38%
Material 6	2-PHENYLETHANOL	3.90%
Material 7	1,2-PROPYLENE GLYCOL	0.05%
Material 8	STYRENE	0.02%
Material 9	Styrene dimer	0.20%
Material 10	TOLUENE	0.06%
Material 11	MBA ether	13.41%
Material 12	Heavies (Phenyl ethers)	5.00%
Material 13	Heavies (Propylene glycol o	57.37%
Material 14	Heavies (Alkylated phenols)	15.00%
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification		TK-60220
Applicant's name:		
Location:		see plot plan
Tank No.		TK-60220
Emission Point No.		ETK60220
FIN		
Status		
II. Tank Physical Characteristics		
Dimensions		
Shell height (ft)		40.00
Diameter (ft)		52.00
Maximum Liquid Height		51.46
Nominal capacity or tank volume (gallons)		635,460
Turnovers per year		20
Net throughput (gallons/yr)		12,400,000
Maximum Filling rate (gallons/hour)		51,300
Paint Characteristics		
Shell Color/Shade		Aluminum Specular
Shell Condition		average
Roof Color/Shade		Aluminum Specular
Roof Condition		average
Roof Characteristics		
Roof Type		Cone
Roof Height (ft)		
Radius (Dome Roof Only) (ft.)		
Slope (Cone Roof Only) (ft/ft)		0.06
Breather Vent Settings		
Combination Vent Valve Number:		
Combination Vent Valve Pressure Setting (psig):		0.03
Combination Vent Valve Vacuum Setting (psig):		-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Pressure Vent Valve Number:		
Pressure Vent Valve Pressure Setting (psig)		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Vacuum Vent Valve Number:		
Vaccum Vent Valve Pressure Setting (psig)		
Open Vent Valve Number:		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60220	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	Crude MBA	
Average liquid surface temperature (F)	146.86	
Minimum liquid surface temperature (F)	113.60	
Maximum liquid surface temperature (F)	121.94	
True vapor pressure at avg.l.s.t. (psia)	0.05	
True vapor pressure at min.l.s.t. (psia)	0.02	
True vapor pressure at max.l.s.t. (psia)	0.02	
Liquid molecular weight	121.91	
Vapor molecular weight	121.74	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	ACETOPHENONE	12.37%
Material 2	alpha-METHYLBENZYL ALCC	86.60%
Material 3	2-PHENYLETHANOL	1.03%
Material 4		
Material 5		
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60220
Applicant's name:	
Location:	see plot plan
Tank No.	TK-60220
Emission Point No.	ETK60220
FIN	
Status	
II. Tank Physical Characteristics	
Dimensions	
Shell height (ft)	40.00
Diameter (ft)	52.00
Maximum Liquid Height	51.46
Nominal capacity or tank volume (gallons)	635,460
Turnovers per year	5
Net throughput (gallons/yr)	3,468,007
Maximum Filling rate (gallons/hour)	51,300
Paint Characteristics	
Shell Color/Shade	Aluminum Specular
Shell Condition	average
Roof Color/Shade	Aluminum Specular
Roof Condition	average
Roof Characteristics	
Roof Type	Cone
Roof Height (ft)	
Radius (Dome Roof Only) (ft.)	
Slope (Cone Roof Only) (ft/ft)	0.06
Breather Vent Settings	
Combination Vent Valve Number:	
Combination Vent Valve Pressure Setting (psig):	0.03
Combination Vent Valve Vacuum Setting (psig):	-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Pressure Vent Valve Number:	
Pressure Vent Valve Pressure Setting (psig)	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Vacuum Vent Valve Number:	
Vacuum Vent Valve Pressure Setting (psig)	
Open Vent Valve Number:	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60220	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	Crude MBA	
Average liquid surface temperature (F)	170.00	
Minimum liquid surface temperature (F)	126.55	
Maximum liquid surface temperature (F)	134.90	
True vapor pressure at avg.l.s.t. (psia)	0.11	
True vapor pressure at min.l.s.t. (psia)	0.03	
True vapor pressure at max.l.s.t. (psia)	0.04	
Liquid molecular weight	121.91	
Vapor molecular weight	121.77	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	ACETOPHENONE	12.37%
Material 2	alpha-METHYLBENZYL ALCC	86.60%
Material 3	2-PHENYLETHANOL	1.03%
Material 4		
Material 5		
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60320
Applicant's name:	
Location:	see plot plan
Tank No.	TK-60320
Emission Point No.	ETK60320
FIN	
Status	
II. Tank Physical Characteristics	
Dimensions	
Shell height (ft)	40.00
Diameter (ft)	50.00
Maximum Liquid Height	50.46
Nominal capacity or tank volume (gallons)	587,519
Turnovers per year	418
Net throughput (gallons/yr)	245,483,681
Maximum Filling rate (gallons/hour)	47,546
Paint Characteristics	
Shell Color/Shade	Aluminum Specular
Shell Condition	average
Roof Color/Shade	Aluminum Specular
Roof Condition	average
Roof Characteristics	
Roof Type	Cone
Roof Height (ft)	
Radius (Dome Roof Only) (ft.)	
Slope (Cone Roof Only) (ft/ft)	0.06
Breather Vent Settings	
Combination Vent Valve Number:	
Combination Vent Valve Pressure Setting (psig):	0.03
Combination Vent Valve Vacuum Setting (psig):	-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Pressure Vent Valve Number:	
Pressure Vent Valve Pressure Setting (psig)	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Vacuum Vent Valve Number:	
Vaccum Vent Valve Pressure Setting (psig)	
Open Vent Valve Number:	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60320	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	Crude Styrene	
Average liquid surface temperature (F)	95.00	
Minimum liquid surface temperature (F)	84.55	
Maximum liquid surface temperature (F)	92.90	
True vapor pressure at avg.l.s.t. (psia)	0.17	
True vapor pressure at min.l.s.t. (psia)	0.13	
True vapor pressure at max.l.s.t. (psia)	0.16	
Liquid molecular weight	107.42	
Vapor molecular weight	104.38	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	ACETOPHENONE	14.36%
Material 2	alpha-METHYLBENZYL ALCC	6.67%
Material 3	2-PHENYLETHANOL	1.03%
Material 4	STYRENE	77.95%
Material 5		
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60321A/B/C
Applicant's name:	
Location:	see plot plan
Tank No.	TK-60321A/B/C
Emission Point No.	ETK60321A, B, and C CAP
FIN	
Status	
II. Tank Physical Characteristics	
Dimensions	
Shell height (ft)	30.00
Diameter (ft)	28.00
Maximum Liquid Height	32.70
Nominal capacity or tank volume (gallons)	138,184
Turnovers per year	1,919
Net throughput (gallons/yr)	265,234,667
Maximum Filling rate (gallons/hour)	0
Paint Characteristics	
Shell Color/Shade	Aluminum Specular
Shell Condition	average
Roof Color/Shade	Aluminum Specular
Roof Condition	average
Roof Characteristics	
Roof Type	Dome
Roof Height (ft)	
Radius (Dome Roof Only) (ft.)	33.50
Slope (Cone Roof Only) (ft/ft)	
Breather Vent Settings	
Combination Vent Valve Number:	
Combination Vent Valve Pressure Setting (psig):	0.06
Combination Vent Valve Vacuum Setting (psig):	-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Pressure Vent Valve Number:	
Pressure Vent Valve Pressure Setting (psig)	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Vacuum Vent Valve Number:	
Vacuum Vent Valve Pressure Setting (psig)	
Open Vent Valve Number:	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60321A/B/C	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	Styrene Product	
Average liquid surface temperature (F)	70.00	
Minimum liquid surface temperature (F)	70.55	
Maximum liquid surface temperature (F)	78.90	
True vapor pressure at avg.l.s.t. (psia)	0.09	
True vapor pressure at min.l.s.t. (psia)	0.10	
True vapor pressure at max.l.s.t. (psia)	0.13	
Liquid molecular weight	104.16	
Vapor molecular weight	104.15	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	STYRENE	99.95%
Material 2	ACETOPHENONE	0.03%
Material 3	alpha-METHYLBENZYL ALCC	0.03%
Material 4		
Material 5		
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification		TK-60321A
Applicant's name:		
Location:		see plot plan
Tank No.		TK-60321A
Emission Point No.		ETK60321A
FIN		
Status		
II. Tank Physical Characteristics		
Dimensions		
Shell height (ft)		30.00
Diameter (ft)		28.00
Maximum Liquid Height		32.70
Nominal capacity or tank volume (gallons)		138,184
Turnovers per year		0
Net throughput (gallons/yr)		0
Maximum Filling rate (gallons/hour)		28,000
Paint Characteristics		
Shell Color/Shade		Aluminum Specular
Shell Condition		average
Roof Color/Shade		Aluminum Specular
Roof Condition		average
Roof Characteristics		
Roof Type		Dome
Roof Height (ft)		
Radius (Dome Roof Only) (ft.)		33.50
Slope (Cone Roof Only) (ft/ft)		
Breather Vent Settings		
Combination Vent Valve Number:		
Combination Vent Valve Pressure Setting (psig):		0.06
Combination Vent Valve Vacuum Setting (psig):		-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Pressure Vent Valve Number:		
Pressure Vent Valve Pressure Setting (psig)		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Vacuum Vent Valve Number:		
Vaccum Vent Valve Pressure Setting (psig)		
Open Vent Valve Number:		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60321A	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	Styrene Product	
Average liquid surface temperature (F)	0.00	
Minimum liquid surface temperature (F)	31.35	
Maximum liquid surface temperature (F)	39.70	
True vapor pressure at avg.l.s.t. (psia)	0.01	
True vapor pressure at min.l.s.t. (psia)	0.02	
True vapor pressure at max.l.s.t. (psia)	0.03	
Liquid molecular weight	104.16	
Vapor molecular weight	104.15	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	STYRENE	99.95%
Material 2	ACETOPHENONE	0.03%
Material 3	alpha-METHYLBENZYL ALCC	0.03%
Material 4		
Material 5		
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification		TK-60321B
Applicant's name:		
Location:		see plot plan
Tank No.		TK-60321B
Emission Point No.		ETK60321B
FIN		
Status		
II. Tank Physical Characteristics		
Dimensions		
Shell height (ft)		30.00
Diameter (ft)		28.00
Maximum Liquid Height		32.70
Nominal capacity or tank volume (gallons)		138,184
Turnovers per year		0
Net throughput (gallons/yr)		0
Maximum Filling rate (gallons/hour)		28,000
Paint Characteristics		
Shell Color/Shade		Aluminum Specular
Shell Condition		average
Roof Color/Shade		Aluminum Specular
Roof Condition		average
Roof Characteristics		
Roof Type		Dome
Roof Height (ft)		
Radius (Dome Roof Only) (ft.)		33.50
Slope (Cone Roof Only) (ft/ft)		
Breather Vent Settings		
Combination Vent Valve Number:		
Combination Vent Valve Pressure Setting (psig):		0.06
Combination Vent Valve Vacuum Setting (psig):		-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Pressure Vent Valve Number:		
Pressure Vent Valve Pressure Setting (psig)		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Vacuum Vent Valve Number:		
Vaccum Vent Valve Pressure Setting (psig)		
Open Vent Valve Number:		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60321B	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	Styrene Product	
Average liquid surface temperature (F)	0.00	
Minimum liquid surface temperature (F)	31.35	
Maximum liquid surface temperature (F)	39.70	
True vapor pressure at avg.l.s.t. (psia)	0.01	
True vapor pressure at min.l.s.t. (psia)	0.02	
True vapor pressure at max.l.s.t. (psia)	0.03	
Liquid molecular weight	104.16	
Vapor molecular weight	104.15	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	STYRENE	99.95%
Material 2	ACETOPHENONE	0.03%
Material 3	alpha-METHYLBENZYL ALCC	0.03%
Material 4		
Material 5		
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification		TK-60321C
Applicant's name:		
Location:		see plot plan
Tank No.		TK-60321C
Emission Point No.		ETK60321C
FIN		
Status		
II. Tank Physical Characteristics		
Dimensions		
Shell height (ft)		30.00
Diameter (ft)		28.00
Maximum Liquid Height		32.70
Nominal capacity or tank volume (gallons)		138,184
Turnovers per year		0
Net throughput (gallons/yr)		0
Maximum Filling rate (gallons/hour)		28,000
Paint Characteristics		
Shell Color/Shade		Aluminum Specular
Shell Condition		average
Roof Color/Shade		Aluminum Specular
Roof Condition		average
Roof Characteristics		
Roof Type		Dome
Roof Height (ft)		
Radius (Dome Roof Only) (ft.)		33.50
Slope (Cone Roof Only) (ft/ft)		
Breather Vent Settings		
Combination Vent Valve Number:		
Combination Vent Valve Pressure Setting (psig):		0.06
Combination Vent Valve Vacuum Setting (psig):		-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Pressure Vent Valve Number:		
Pressure Vent Valve Pressure Setting (psig)		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Vacuum Vent Valve Number:		
Vaccum Vent Valve Pressure Setting (psig)		
Open Vent Valve Number:		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60321C	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	Styrene Product	
Average liquid surface temperature (F)	0.00	
Minimum liquid surface temperature (F)	31.35	
Maximum liquid surface temperature (F)	39.70	
True vapor pressure at avg.l.s.t. (psia)	0.01	
True vapor pressure at min.l.s.t. (psia)	0.02	
True vapor pressure at max.l.s.t. (psia)	0.03	
Liquid molecular weight	104.16	
Vapor molecular weight	104.15	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	STYRENE	99.95%
Material 2	ACETOPHENONE	0.03%
Material 3	alpha-METHYLBENZYL ALCC	0.03%
Material 4		
Material 5		
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60221
Applicant's name:	
Location:	see plot plan
Tank No.	TK-60221
Emission Point No.	ETK60221
FIN	
Status	
II. Tank Physical Characteristics	
Dimensions	
Shell height (ft)	40.00
Diameter (ft)	47.00
Maximum Liquid Height	48.93
Nominal capacity or tank volume (gallons)	519,131
Turnovers per year	13
Net throughput (gallons/yr)	6,500,000
Maximum Filling rate (gallons/hour)	25,000
Paint Characteristics	
Shell Color/Shade	Aluminum Specular
Shell Condition	average
Roof Color/Shade	Aluminum Specular
Roof Condition	average
Roof Characteristics	
Roof Type	Cone
Roof Height (ft)	
Radius (Dome Roof Only) (ft.)	
Slope (Cone Roof Only) (ft/ft)	0.06
Breather Vent Settings	
Combination Vent Valve Number:	
Combination Vent Valve Pressure Setting (psig):	0.03
Combination Vent Valve Vacuum Setting (psig):	-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Pressure Vent Valve Number:	
Pressure Vent Valve Pressure Setting (psig)	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Vacuum Vent Valve Number:	
Vacuum Vent Valve Pressure Setting (psig)	
Open Vent Valve Number:	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60221	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	Crude ACP	
Average liquid surface temperature (F)	115.00	
Minimum liquid surface temperature (F)	95.75	
Maximum liquid surface temperature (F)	104.10	
True vapor pressure at avg.l.s.t. (psia)	0.09	
True vapor pressure at min.l.s.t. (psia)	0.05	
True vapor pressure at max.l.s.t. (psia)	0.06	
Liquid molecular weight	118.79	
Vapor molecular weight	109.04	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	ACETOPHENONE	51.02%
Material 2	alpha-METHYLBENZYL ALCC	30.61%
Material 3	2-PHENYLETHANOL	6.12%
Material 4	STYRENE	6.12%
Material 5	ETHYLBENZENE	6.12%
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification		TK-60221
Applicant's name:		
Location:		see plot plan
Tank No.		TK-60221
Emission Point No.		ETK60221
FIN		
Status		
II. Tank Physical Characteristics		
Dimensions		
Shell height (ft)		40.00
Diameter (ft)		47.00
Maximum Liquid Height		48.93
Nominal capacity or tank volume (gallons)		519,131
Turnovers per year		13
Net throughput (gallons/yr)		6,500,000
Maximum Filling rate (gallons/hour)		30,000
Paint Characteristics		
Shell Color/Shade		Aluminum Specular
Shell Condition		average
Roof Color/Shade		Aluminum Specular
Roof Condition		average
Roof Characteristics		
Roof Type		Cone
Roof Height (ft)		
Radius (Dome Roof Only) (ft.)		
Slope (Cone Roof Only) (ft/ft)		0.06
Breather Vent Settings		
Combination Vent Valve Number:		
Combination Vent Valve Pressure Setting (psig):		0.03
Combination Vent Valve Vacuum Setting (psig):		-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Pressure Vent Valve Number:		
Pressure Vent Valve Pressure Setting (psig)		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Vacuum Vent Valve Number:		
Vaccum Vent Valve Pressure Setting (psig)		
Open Vent Valve Number:		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60221	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	Crude ACP	
Average liquid surface temperature (F)	115.00	
Minimum liquid surface temperature (F)	95.75	
Maximum liquid surface temperature (F)	104.10	
True vapor pressure at avg.l.s.t. (psia)	0.09	
True vapor pressure at min.l.s.t. (psia)	0.05	
True vapor pressure at max.l.s.t. (psia)	0.06	
Liquid molecular weight	118.79	
Vapor molecular weight	109.04	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	ACETOPHENONE	51.02%
Material 2	alpha-METHYLBENZYL ALCC	30.61%
Material 3	2-PHENYLETHANOL	6.12%
Material 4	STYRENE	6.12%
Material 5	ETHYLBENZENE	6.12%
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification		TK-60221
Applicant's name:		
Location:		see plot plan
Tank No.		TK-60221
Emission Point No.		ETK60221
FIN		
Status		
II. Tank Physical Characteristics		
Dimensions		
Shell height (ft)		40.00
Diameter (ft)		47.00
Maximum Liquid Height		48.93
Nominal capacity or tank volume (gallons)		519,131
Turnovers per year		13
Net throughput (gallons/yr)		6,500,000
Maximum Filling rate (gallons/hour)		24,540
Paint Characteristics		
Shell Color/Shade		Aluminum Specular
Shell Condition		average
Roof Color/Shade		Aluminum Specular
Roof Condition		average
Roof Characteristics		
Roof Type		Cone
Roof Height (ft)		
Radius (Dome Roof Only) (ft.)		
Slope (Cone Roof Only) (ft/ft)		0.06
Breather Vent Settings		
Combination Vent Valve Number:		
Combination Vent Valve Pressure Setting (psig):		0.03
Combination Vent Valve Vacuum Setting (psig):		-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Pressure Vent Valve Number:		
Pressure Vent Valve Pressure Setting (psig)		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Vacuum Vent Valve Number:		
Vaccum Vent Valve Pressure Setting (psig)		
Open Vent Valve Number:		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60221	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	Crude ACP high styrene	
Average liquid surface temperature (F)	115.00	
Minimum liquid surface temperature (F)	95.75	
Maximum liquid surface temperature (F)	104.10	
True vapor pressure at avg.l.s.t. (psia)	0.09	
True vapor pressure at min.l.s.t. (psia)	0.05	
True vapor pressure at max.l.s.t. (psia)	0.06	
Liquid molecular weight	118.79	
Vapor molecular weight	109.04	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	ACETOPHENONE	51.02%
Material 2	alpha-METHYLBENZYL ALCC	30.61%
Material 3	2-PHENYLETHANOL	6.12%
Material 4	STYRENE	6.12%
Material 5	ETHYLBENZENE	6.12%
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification		TK-60285A
Applicant's name:		
Location:		see plot plan
Tank No.		TK-60285A
Emission Point No.		ETK60285A
FIN		
Status		
II. Tank Physical Characteristics		
Dimensions		
Shell height (ft)		33.00
Diameter (ft)		33.00
Maximum Liquid Height		37.24
Nominal capacity or tank volume (gallons)		211,137
Turnovers per year		22
Net throughput (gallons/yr)		4,748,423
Maximum Filling rate (gallons/hour)		1,350
Paint Characteristics		
Shell Color/Shade		Aluminum Specular
Shell Condition		average
Roof Color/Shade		Aluminum Specular
Roof Condition		average
Roof Characteristics		
Roof Type		Cone
Roof Height (ft)		
Radius (Dome Roof Only) (ft.)		
Slope (Cone Roof Only) (ft/ft)		0.06
Breather Vent Settings		
Combination Vent Valve Number:		
Combination Vent Valve Pressure Setting (psig):		0.03
Combination Vent Valve Vacuum Setting (psig):		-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Pressure Vent Valve Number:		
Pressure Vent Valve Pressure Setting (psig)		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Vacuum Vent Valve Number:		
Vacuum Vent Valve Pressure Setting (psig)		
Open Vent Valve Number:		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60285A	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	PEA Unit Feed	
Average liquid surface temperature (F)	108.27	
Minimum liquid surface temperature (F)	104.15	
Maximum liquid surface temperature (F)	112.50	
True vapor pressure at avg.l.s.t. (psia)	0.01	
True vapor pressure at min.l.s.t. (psia)	0.01	
True vapor pressure at max.l.s.t. (psia)	0.01	
Liquid molecular weight	123.50	
Vapor molecular weight	121.67	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	Styrene dimer	1.14%
Material 2	MBA ether	0.99%
Material 3	o-ETHYLPHENOL	2.14%
Material 4	PHENYL PROPANOLS	8.40%
Material 5	ACETOPHENONE	16.48%
Material 6	BENZYL ALCOHOL	2.46%
Material 7	alpha-METHYLBENZYL ALCC	32.58%
Material 8	1,2-PROPYLENE GLYCOL	0.19%
Material 9	2-PHENYLETHANOL	34.00%
Material 10	TOLUALCOHOLS	1.49%
Material 11	TOLUALDEHYDES	0.15%
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification		TK-60285B
Applicant's name:		
Location:		see plot plan
Tank No.		TK-60285B
Emission Point No.		ETK60285B
FIN		
Status		
II. Tank Physical Characteristics		
Dimensions		
Shell height (ft)		33.00
Diameter (ft)		33.00
Maximum Liquid Height		37.24
Nominal capacity or tank volume (gallons)		211,137
Turnovers per year		22
Net throughput (gallons/yr)		4,748,423
Maximum Filling rate (gallons/hour)		1,350
Paint Characteristics		
Shell Color/Shade		Aluminum Specular
Shell Condition		average
Roof Color/Shade		Aluminum Specular
Roof Condition		average
Roof Characteristics		
Roof Type		Cone
Roof Height (ft)		
Radius (Dome Roof Only) (ft.)		
Slope (Cone Roof Only) (ft/ft)		0.06
Breather Vent Settings		
Combination Vent Valve Number:		
Combination Vent Valve Pressure Setting (psig):		0.03
Combination Vent Valve Vacuum Setting (psig):		-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Pressure Vent Valve Number:		
Pressure Vent Valve Pressure Setting (psig)		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Vacuum Vent Valve Number:		
Vaccum Vent Valve Pressure Setting (psig)		
Open Vent Valve Number:		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60285B	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	PEA Unit Feed	
Average liquid surface temperature (F)	108.27	
Minimum liquid surface temperature (F)	104.15	
Maximum liquid surface temperature (F)	112.50	
True vapor pressure at avg.l.s.t. (psia)	0.01	
True vapor pressure at min.l.s.t. (psia)	0.01	
True vapor pressure at max.l.s.t. (psia)	0.01	
Liquid molecular weight	123.50	
Vapor molecular weight	121.67	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	Styrene dimer	1.14%
Material 2	MBA ether	0.99%
Material 3	o-ETHYLPHENOL	2.14%
Material 4	PHENYL PROPANOLS	8.40%
Material 5	ACETOPHENONE	16.48%
Material 6	BENZYL ALCOHOL	2.46%
Material 7	alpha-METHYLBENZYL ALCC	32.58%
Material 8	1,2-PROPYLENE GLYCOL	0.19%
Material 9	2-PHENYLETHANOL	34.00%
Material 10	TOLUALCOHOLS	1.49%
Material 11	TOLUALDEHYDES	0.15%
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60001
Applicant's name:	
Location:	see plot plan
Tank No.	TK-60001
Emission Point No.	ETK60001
FIN	
Status	
II. Tank Physical Characteristics	
Dimensions	
Shell height (ft)	32.00
Diameter (ft)	31.00
Maximum Liquid Height	35.54
Nominal capacity or tank volume (gallons)	180,674
Turnovers per year	39
Net throughput (gallons/yr)	7,078,894
Maximum Filling rate (gallons/hour)	8,400
Paint Characteristics	
Shell Color/Shade	Aluminum Specular
Shell Condition	average
Roof Color/Shade	Aluminum Specular
Roof Condition	average
Roof Characteristics	
Roof Type	Cone
Roof Height (ft)	
Radius (Dome Roof Only) (ft.)	
Slope (Cone Roof Only) (ft/ft)	0.38
Breather Vent Settings	
Combination Vent Valve Number:	
Combination Vent Valve Pressure Setting (psig):	0.03
Combination Vent Valve Vacuum Setting (psig):	-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Pressure Vent Valve Number:	
Pressure Vent Valve Pressure Setting (psig)	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Vacuum Vent Valve Number:	
Vacuum Vent Valve Pressure Setting (psig)	
Open Vent Valve Number:	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60001	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	Crude PEA	
Average liquid surface temperature (F)	90.88	
Minimum liquid surface temperature (F)	87.91	
Maximum liquid surface temperature (F)	96.26	
True vapor pressure at avg.l.s.t. (psia)	0.00	
True vapor pressure at min.l.s.t. (psia)	0.00	
True vapor pressure at max.l.s.t. (psia)	0.01	
Liquid molecular weight	122.92	
Vapor molecular weight	122.53	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	ACETOPHENONE	3.65%
Material 2	BENZYL ALCOHOL	4.25%
Material 3	alpha-METHYLBENZYL ALCC	20.07%
Material 4	PHENYL PROPANOLS	12.05%
Material 5	2-PHENYLETHANOL	53.87%
Material 6	1,2-PROPYLENE GLYCOL	0.02%
Material 7	TOLUALCOHOLS	2.36%
Material 8	TOLUALDEHYDES	0.24%
Material 9	o-ETHYLPHENOL	3.48%
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60003
Applicant's name:	
Location:	see plot plan
Tank No.	TK-60003
Emission Point No.	ETK60003
FIN	
Status	
II. Tank Physical Characteristics	
Dimensions	
Shell height (ft)	15.00
Diameter (ft)	15.00
Maximum Liquid Height	16.93
Nominal capacity or tank volume (gallons)	19,829
Turnovers per year	100
Net throughput (gallons/yr)	1,992,992
Maximum Filling rate (gallons/hour)	7,800
Paint Characteristics	
Shell Color/Shade	White
Shell Condition	average
Roof Color/Shade	White
Roof Condition	average
Roof Characteristics	
Roof Type	Cone
Roof Height (ft)	
Radius (Dome Roof Only) (ft.)	
Slope (Cone Roof Only) (ft/ft)	0.32
Breather Vent Settings	
Combination Vent Valve Number:	
Combination Vent Valve Pressure Setting (psig):	0.03
Combination Vent Valve Vacuum Setting (psig):	-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Pressure Vent Valve Number:	
Pressure Vent Valve Pressure Setting (psig)	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Vacuum Vent Valve Number:	
Vacuum Vent Valve Pressure Setting (psig)	
Open Vent Valve Number:	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60003	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	Toluene Solvent	
Average liquid surface temperature (F)	89.23	
Minimum liquid surface temperature (F)	85.24	
Maximum liquid surface temperature (F)	93.59	
True vapor pressure at avg.l.s.t. (psia)	0.78	
True vapor pressure at min.l.s.t. (psia)	0.70	
True vapor pressure at max.l.s.t. (psia)	0.88	
Liquid molecular weight	92.16	
Vapor molecular weight	92.16	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	TOLUENE	99.69%
Material 2	1,2-PROPYLENE GLYCOL	0.08%
Material 3	Nonaromatics (alkanes, C5-	0.21%
Material 4		
Material 5		
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60004
Applicant's name:	
Location:	see plot plan
Tank No.	TK-60004
Emission Point No.	ETK60004
FIN	
Status	
II. Tank Physical Characteristics	
Dimensions	
Shell height (ft)	15.00
Diameter (ft)	14.00
Maximum Liquid Height	16.35
Nominal capacity or tank volume (gallons)	17,273
Turnovers per year	188
Net throughput (gallons/yr)	3,242,606
Maximum Filling rate (gallons/hour)	6,900
Paint Characteristics	
Shell Color/Shade	White
Shell Condition	average
Roof Color/Shade	White
Roof Condition	average
Roof Characteristics	
Roof Type	Cone
Roof Height (ft)	
Radius (Dome Roof Only) (ft.)	
Slope (Cone Roof Only) (ft/ft)	0.33
Breather Vent Settings	
Combination Vent Valve Number:	
Combination Vent Valve Pressure Setting (psig):	0.03
Combination Vent Valve Vacuum Setting (psig):	-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Pressure Vent Valve Number:	
Pressure Vent Valve Pressure Setting (psig)	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Vacuum Vent Valve Number:	
Vacuum Vent Valve Pressure Setting (psig)	
Open Vent Valve Number:	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60004	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	MPG Solvent	
Average liquid surface temperature (F)	92.08	
Minimum liquid surface temperature (F)	88.04	
Maximum liquid surface temperature (F)	96.39	
True vapor pressure at avg.l.s.t. (psia)	0.31	
True vapor pressure at min.l.s.t. (psia)	0.27	
True vapor pressure at max.l.s.t. (psia)	0.35	
Liquid molecular weight	52.83	
Vapor molecular weight	18.61	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	1,2-PROPYLENE GLYCOL	85.00%
Material 2	WATER	13.80%
Material 3	2-PHENYLETHANOL	1.20%
Material 4		
Material 5		
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification		D-6312A
Applicant's name:		
Location:		see plot plan
Tank No.		D-6312A
Emission Point No.		ED6312A
FIN		
Status		
II. Tank Physical Characteristics		
Dimensions		
Shell height (ft)		12.00
Diameter (ft)		5.00
Maximum Liquid Height		8.74
Nominal capacity or tank volume (gallons)		1,763
Turnovers per year		472
Net throughput (gallons/yr)		831,652
Maximum Filling rate (gallons/hour)		1,586
Paint Characteristics		
Shell Color/Shade		Aluminum Specular
Shell Condition		average
Roof Color/Shade		Aluminum Specular
Roof Condition		average
Roof Characteristics		
Roof Type		Dome
Roof Height (ft)		
Radius (Dome Roof Only) (ft.)		5.00
Slope (Cone Roof Only) (ft/ft)		
Breather Vent Settings		
Combination Vent Valve Number:		
Combination Vent Valve Pressure Setting (psig):		0.03
Combination Vent Valve Vacuum Setting (psig):		-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Pressure Vent Valve Number:		
Pressure Vent Valve Pressure Setting (psig)		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Vacuum Vent Valve Number:		
Vaccum Vent Valve Pressure Setting (psig)		
Open Vent Valve Number:		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	D-6312A	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	PEA Product	
Average liquid surface temperature (F)	151.00	
Minimum liquid surface temperature (F)	115.91	
Maximum liquid surface temperature (F)	124.26	
True vapor pressure at avg.l.s.t. (psia)	0.03	
True vapor pressure at min.l.s.t. (psia)	0.01	
True vapor pressure at max.l.s.t. (psia)	0.01	
Liquid molecular weight	122.20	
Vapor molecular weight	122.20	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	2-PHENYLETHANOL	99.26%
Material 2	PHENYL PROPANOLS	0.27%
Material 3	TOLUALCOHOLS	0.45%
Material 4	o-ETHYLPHENOL	0.01%
Material 5	BENZYL ALCOHOL	0.01%
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification		D-6312B
Applicant's name:		
Location:		see plot plan
Tank No.		D-6312B
Emission Point No.		ED6312B
FIN		
Status		
II. Tank Physical Characteristics		
Dimensions		
Shell height (ft)		12.00
Diameter (ft)		5.00
Maximum Liquid Height		8.74
Nominal capacity or tank volume (gallons)		1,763
Turnovers per year		472
Net throughput (gallons/yr)		831,652
Maximum Filling rate (gallons/hour)		1,586
Paint Characteristics		
Shell Color/Shade		Aluminum Specular
Shell Condition		average
Roof Color/Shade		Aluminum Specular
Roof Condition		average
Roof Characteristics		
Roof Type		Dome
Roof Height (ft)		
Radius (Dome Roof Only) (ft.)		5.00
Slope (Cone Roof Only) (ft/ft)		
Breather Vent Settings		
Combination Vent Valve Number:		
Combination Vent Valve Pressure Setting (psig):		0.03
Combination Vent Valve Vacuum Setting (psig):		-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Pressure Vent Valve Number:		
Pressure Vent Valve Pressure Setting (psig)		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Vacuum Vent Valve Number:		
Vaccum Vent Valve Pressure Setting (psig)		
Open Vent Valve Number:		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	D-6312B	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	PEA Product	
Average liquid surface temperature (F)	151.00	
Minimum liquid surface temperature (F)	115.91	
Maximum liquid surface temperature (F)	124.26	
True vapor pressure at avg.l.s.t. (psia)	0.03	
True vapor pressure at min.l.s.t. (psia)	0.01	
True vapor pressure at max.l.s.t. (psia)	0.01	
Liquid molecular weight	122.20	
Vapor molecular weight	122.20	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	2-PHENYLETHANOL	99.26%
Material 2	PHENYL PROPANOLS	0.27%
Material 3	TOLUALCOHOLS	0.45%
Material 4	o-ETHYLPHENOL	0.01%
Material 5	BENZYL ALCOHOL	0.01%
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60005
Applicant's name:	
Location:	see plot plan
Tank No.	TK-60005
Emission Point No.	ETK60005
FIN	
Status	
II. Tank Physical Characteristics	
Dimensions	
Shell height (ft)	22.00
Diameter (ft)	24.00
Maximum Liquid Height	25.93
Nominal capacity or tank volume (gallons)	74,450
Turnovers per year	10
Net throughput (gallons/yr)	763,863
Maximum Filling rate (gallons/hour)	9,000
Paint Characteristics	
Shell Color/Shade	Aluminum Specular
Shell Condition	average
Roof Color/Shade	Aluminum Specular
Roof Condition	average
Roof Characteristics	
Roof Type	Dome
Roof Height (ft)	
Radius (Dome Roof Only) (ft.)	24.00
Slope (Cone Roof Only) (ft/ft)	
Breather Vent Settings	
Combination Vent Valve Number:	
Combination Vent Valve Pressure Setting (psig):	0.03
Combination Vent Valve Vacuum Setting (psig):	-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Pressure Vent Valve Number:	
Pressure Vent Valve Pressure Setting (psig)	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Vacuum Vent Valve Number:	
Vacuum Vent Valve Pressure Setting (psig)	
Open Vent Valve Number:	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60005	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	PEA Product	
Average liquid surface temperature (F)	90.52	
Minimum liquid surface temperature (F)	87.35	
Maximum liquid surface temperature (F)	95.70	
True vapor pressure at avg.l.s.t. (psia)	0.00	
True vapor pressure at min.l.s.t. (psia)	0.00	
True vapor pressure at max.l.s.t. (psia)	0.00	
Liquid molecular weight	122.20	
Vapor molecular weight	122.20	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	2-PHENYLETHANOL	99.26%
Material 2	PHENYL PROPANOLS	0.27%
Material 3	TOLUALCOHOLS	0.45%
Material 4	o-ETHYLPHENOL	0.01%
Material 5	BENZYL ALCOHOL	0.01%
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60006
Applicant's name:	
Location:	see plot plan
Tank No.	TK-60006
Emission Point No.	ETK60006
FIN	
Status	
II. Tank Physical Characteristics	
Dimensions	
Shell height (ft)	24.00
Diameter (ft)	16.00
Maximum Liquid Height	22.11
Nominal capacity or tank volume (gallons)	36,097
Turnovers per year	21
Net throughput (gallons/yr)	770,259
Maximum Filling rate (gallons/hour)	13,706
Paint Characteristics	
Shell Color/Shade	Aluminum Specular
Shell Condition	average
Roof Color/Shade	Aluminum Specular
Roof Condition	average
Roof Characteristics	
Roof Type	Cone
Roof Height (ft)	
Radius (Dome Roof Only) (ft.)	
Slope (Cone Roof Only) (ft/ft)	0.06
Breather Vent Settings	
Combination Vent Valve Number:	
Combination Vent Valve Pressure Setting (psig):	0.03
Combination Vent Valve Vacuum Setting (psig):	-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Pressure Vent Valve Number:	
Pressure Vent Valve Pressure Setting (psig)	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Vacuum Vent Valve Number:	
Vacuum Vent Valve Pressure Setting (psig)	
Open Vent Valve Number:	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60006	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	PEA Product	
Average liquid surface temperature (F)	89.56	
Minimum liquid surface temperature (F)	87.35	
Maximum liquid surface temperature (F)	95.70	
True vapor pressure at avg.l.s.t. (psia)	0.00	
True vapor pressure at min.l.s.t. (psia)	0.00	
True vapor pressure at max.l.s.t. (psia)	0.00	
Liquid molecular weight	122.20	
Vapor molecular weight	122.20	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	2-PHENYLETHANOL	99.26%
Material 2	PHENYL PROPANOLS	0.27%
Material 3	TOLUALCOHOLS	0.45%
Material 4	o-ETHYLPHENOL	0.01%
Material 5	BENZYL ALCOHOL	0.01%
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60561
Applicant's name:	
Location:	see plot plan
Tank No.	TK-60561
Emission Point No.	ETK60561
FIN	
Status	
II. Tank Physical Characteristics	
Dimensions	
Shell height (ft)	22.00
Diameter (ft)	20.00
Maximum Liquid Height	23.67
Nominal capacity or tank volume (gallons)	51,702
Turnovers per year	4
Net throughput (gallons/yr)	191,920
Maximum Filling rate (gallons/hour)	8,400
Paint Characteristics	
Shell Color/Shade	White
Shell Condition	average
Roof Color/Shade	White
Roof Condition	average
Roof Characteristics	
Roof Type	Cone
Roof Height (ft)	
Radius (Dome Roof Only) (ft.)	
Slope (Cone Roof Only) (ft/ft)	0.06
Breather Vent Settings	
Combination Vent Valve Number:	
Combination Vent Valve Pressure Setting (psig):	0.03
Combination Vent Valve Vacuum Setting (psig):	-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Pressure Vent Valve Number:	
Pressure Vent Valve Pressure Setting (psig)	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Vacuum Vent Valve Number:	
Vacuum Vent Valve Pressure Setting (psig)	
Open Vent Valve Number:	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-60561	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	PEA Product	
Average liquid surface temperature (F)	89.06	
Minimum liquid surface temperature (F)	85.24	
Maximum liquid surface temperature (F)	93.59	
True vapor pressure at avg.l.s.t. (psia)	0.00	
True vapor pressure at min.l.s.t. (psia)	0.00	
True vapor pressure at max.l.s.t. (psia)	0.00	
Liquid molecular weight	122.20	
Vapor molecular weight	122.20	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	2-PHENYLETHANOL	99.26%
Material 2	PHENYL PROPANOLS	0.27%
Material 3	TOLUALCOHOLS	0.45%
Material 4	o-ETHYLPHENOL	0.01%
Material 5	BENZYL ALCOHOL	0.01%
Material 6		
Material 7		
Material 8		
Material 9		
Material 10		
Material 11		
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification		TK-6802
Applicant's name:		
Location:		see plot plan
Tank No.		TK-6802
Emission Point No.		ETK6802
FIN		
Status		
II. Tank Physical Characteristics		
Dimensions		
Shell height (ft)		40.00
Diameter (ft)		34.00
Maximum Liquid Height		41.61
Nominal capacity or tank volume (gallons)		271,669
Turnovers per year		289
Net throughput (gallons/yr)		78,600,000
Maximum Filling rate (gallons/hour)		287,650
Paint Characteristics		
Shell Color/Shade		White
Shell Condition		average
Roof Color/Shade		White
Roof Condition		average
Roof Characteristics		
Roof Type		Cone
Roof Height (ft)		
Radius (Dome Roof Only) (ft.)		
Slope (Cone Roof Only) (ft/ft)		0.06
Breather Vent Settings		
Combination Vent Valve Number:		
Combination Vent Valve Pressure Setting (psig):		0.03
Combination Vent Valve Vacuum Setting (psig):		-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Pressure Vent Valve Number:		
Pressure Vent Valve Pressure Setting (psig)		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		
Vacuum Vent Valve Number:		
Vaccum Vent Valve Pressure Setting (psig)		
Open Vent Valve Number:		
SPECIFY "Atmosphere" or Discharging to (name of abatement device)		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-6802	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	First Flush Stormwater	
Average liquid surface temperature (F)	83.05	
Minimum liquid surface temperature (F)	79.64	
Maximum liquid surface temperature (F)	87.99	
True vapor pressure at avg.l.s.t. (psia)	0.57	
True vapor pressure at min.l.s.t. (psia)	0.51	
True vapor pressure at max.l.s.t. (psia)	0.66	
Liquid molecular weight	18.20	
Vapor molecular weight	18.17	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	ACETOPHENONE	0.06%
Material 2	BENZALDEHYDE	0.03%
Material 3	BENZENE	0.01%
Material 4	ETHYLBENZENE	0.43%
Material 5	alpha-METHYLBENZYL ALCC	0.25%
Material 6	PROPANAL	0.03%
Material 7	1,2-PROPYLENE GLYCOL	0.19%
Material 8	PROPYLENE OXIDE	0.02%
Material 9	STYRENE	0.19%
Material 10	TOLUENE	0.01%
Material 11	WATER	98.50%
Material 12		
Material 13		
Material 14		
Material 15		
Material 16		
Material 17		
Material 18		
Material 19		
Material 20		
Material 21		
Material 22		
Material 23		
Material 24		
Material 25		

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-68784
Applicant's name:	
Location:	see plot plan
Tank No.	TK-68784
Emission Point No.	ETK68784
FIN	
Status	
II. Tank Physical Characteristics	
Dimensions	
Shell height (ft)	40.00
Diameter (ft)	90.00
Maximum Liquid Height	67.70
Nominal capacity or tank volume (gallons)	1,903,560
Turnovers per year	18
Net throughput (gallons/yr)	33,342,264
Maximum Filling rate (gallons/hour)	84,195
Paint Characteristics	
Shell Color/Shade	White
Shell Condition	average
Roof Color/Shade	White
Roof Condition	average
Roof Characteristics	
Roof Type	Cone
Roof Height (ft)	
Radius (Dome Roof Only) (ft.)	
Slope (Cone Roof Only) (ft/ft)	0.06
Breather Vent Settings	
Combination Vent Valve Number:	
Combination Vent Valve Pressure Setting (psig):	0.03
Combination Vent Valve Vacuum Setting (psig):	-0.03
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Pressure Vent Valve Number:	
Pressure Vent Valve Pressure Setting (psig)	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	
Vacuum Vent Valve Number:	
Vacuum Vent Valve Pressure Setting (psig)	
Open Vent Valve Number:	
SPECIFY "Atmosphere" or Discharging to (name of abatement device)	

Table 7 (a) Vertical Fixed Roof Storage Tank Summary

I. Tank Identification	TK-68784	
III. Liquid Properties of Stored Material		
Chemical category	Organic Liquids	
Single or multi-component liquid	Multiple	
1. Single component information		
Chemical name		
CAS Number		
Average liquid surface temperature (F)		
True vapor pressure at avg.lst (psia)		
Liquid molecular weight		
2. Multiple component information		
Mixture name	Derivatives Wastewater	
Average liquid surface temperature (F)	81.09	
Minimum liquid surface temperature (F)	76.84	
Maximum liquid surface temperature (F)	85.19	
True vapor pressure at avg.l.s.t. (psia)	0.53	
True vapor pressure at min.l.s.t. (psia)	0.46	
True vapor pressure at max.l.s.t. (psia)	0.61	
Liquid molecular weight	18.06	
Vapor molecular weight	18.13	
Chemical components information		
Chemical name - Liquid Weight Percent	Chemical	Liq wt
Material 1	ACETONE	0.01%
Material 2	ALLYL ALCOHOL	0.01%
Material 3	1,4-BUTANEDIOL	0.04%
Material 4	ETHYLBENZENE	0.01%
Material 5	gamma-BUTYROLACTONE	0.02%
Material 6	alpha-METHYLBENZYL ALCC	0.01%
Material 7	METHYL ETHYL KETONE	0.01%
Material 8	METHANOL	0.07%
Material 9	1,2-PROPYLENE GLYCOL	0.01%
Material 10	TETRAHYDROFURAN	0.01%
Material 11	N-METHYL-2-PYRROLIDONE	0.01%
Material 12	ETHANOL	0.01%
Material 13	ACETOPHENONE	0.01%
Material 14	tert-BUTYL ETHYL ETHER	0.01%
Material 15	METHYL tert-BUTYL ETHER	0.01%
Material 16	p-DIETHYLBENZENE	0.01%
Material 17	o-DIETHYLBENZENE	0.01%
Material 18	m-DIETHYLBENZENE	0.01%
Material 19	2-PHENYLETHANOL	0.01%
Material 20	1-PROPANOL	0.01%
Material 21	PHENOL	0.01%
Material 22	PROPYLENE OXIDE	0.01%
Material 23	WATER	99.68%
Material 24		
Material 25		

Tank		TK-60223
Material		Heavy Aromatic Solvent
<u>Floating Roof Tank</u>		
Withdraw Losses	lb/yr	84.79
Rim Seal Loss	lb/yr	2.63
Deck Fitting Loss	lb/yr	9.26
Deck Seam Loss	lb/yr	0.00
FR Total	tpy	0.05
<u>Working Loss</u>		
Lwd Floating Roof	lb/yr	84.7902
Cs		0.0075
WI	lb/gal	7.5739
Nc Fc		0.0000
<u>Standing Loss</u>		
Diameter	ft	28.00
Height	ft	28.00
Mv	lb/lbmol	134.4065
Tank Color		White
Tank Condition		average
Bulk Temperature Avg	F	101.00
<u>Rim Seal Loss</u>		
Lr	lb/yr	2.63
primary seal		Liquid-mounted seal
Secondary seal		Primary only
Roof Const		Welded
Kra	lbmol/ft/yr	1.60
Krb	lbmol/(mph) ⁿ /ft/yr	0.30
v	mph	0.00
n		1.50
Pa	psia	14.70
Pb	psia	0.0257
p *		0.0004
<u>Deck Fitting Loss</u>		
Lf	lb/yr	9.2574
Kfb	lbmol/mph ^m yr	0.0000
Ff	lbmol/yr	157.6000
<u>Deck Seam Loss</u>		
Ld	lb/yr	0.00
Kd	lbmol/ ft-yr	0.00
Bolted tank panels		0.00
Bolted Deck Seam		0.00
Sd		0.00

Tank	TK-60223
Material	Heavy Aromatic Solvent

Max Hourly		
Bulk Temperature Max	F	120.00
Pmax	psia	0.0698
Mv max	lb/lbmol	134.4704
p*		0.0698
Max Hourly rate	gph	18,000.00
Lwd Floating Roof	lb/hr	0.8199
Lr	lb/hr	0.0008
Lf	lb/hr	0.0029
Ld	lb/hr	0.0000
Total Hrly	lb/hr	0.82

Speciated Emissions			
Material 1	tpy	DIPHENYLMETHANE	0.00
Material 2	tpy	heavy ends of polyethylbenzene residu	0.05
Total Annual VOC			0.05
Material 1	lb/hr	DIPHENYLMETHANE	0.01
Material 2	lb/hr	heavy ends of polyethylbenzene residu	0.82
Total Hrly VOC			0.82

Table 7 (d) Internal Floating Roof Storage Tank Summary

I. Tank Identification	TK-60223
1. Applicant's name:	
2. Location:	see plot plan
3. Tank No.	TK-60223
4. Emission Point No.	ETK60223
5. FIN	
6. Status	
II. Tank Physical Characteristics	
1. Dimensions	
Shell height (ft)	28.00
Diameter (ft)	28.00
Maximum Liquid Height	
Nominal capacity or tank volume (gallons)	128,972
Turnovers per year	14
Net throughput (gallons/yr)	1,861,500
Maximum pumping rate (gallons/hour)	18,000
h. Self supporting roof ?	No
Number of columns	0
Column diameter (ft)	0.00
2. Shell/Roof and Paint Characteristics	
Shell Condition	Light Rust
Shell Color/Shade	White
Shell Condition	average
Roof Color/Shade	White
Roof Condition	average
Tank Construction	
Primary seal	Liquid-mounted seal
Secondary seal	Yes
Deck type	Welded
Deck Construction (Bolted Tanks Only):	
Deck Seam Length (ft) (Bolted Tank Only):	
5. Roof fitting loss factor (lbmol/year)	157.60
Based upon	Actual Fittings
III. Liquid Properties of Stored Material	
1. Chemical category	Organic Liquids
2. Single or multi-component liquid	Multiple
3. Single component information	
Chemical name	
CAS Number	
Average liquid surface temperature (F)	
True vapor pressure at avg.l.s.t. (psia)	
Liquid molecular weight	
4. Multiple component information	
Mixture name	Heavy Aromatic Solvent
Average liquid surface temperature (F)	90.73
Minimum liquid surface temperature (F)	135.80
Maximum liquid surface temperature (F)	144.15
True vapor pressure at avg.l.s.t. (psia)	0.03
True vapor pressure at min.l.s.t. (psia)	0.02
True vapor pressure at max.l.s.t. (psia)	0.03
Liquid molecular weight	142.89
Vapor molecular weight	134.41

Table 7 (d) Internal Floating Roof Storage Tank Summary

I. Tank Identification		TK-60223	
Chemical components information			
Chemical name - Liquid Weight Percent	Chemical		Liq wt
Material 1	DIPHENYLMETHANE		30.00%
Material 2	heavy ends of polyethylbenzene residue		70.00%
Material 3			
Material 4			
Material 5			
Material 6			
Material 7			
Material 8			
Material 9			
Material 10			
Material 11			
Material 12			
Material 13			
Material 14			
Material 15			
Material 16			
Material 17			
Material 18			
Material 19			
Material 20			
Material 21			
Material 22			
Material 23			
Material 24			
Material 25			
IV. Fittings Information			
Fitting type		Quantity	No. x Kf
Access Hatch (24-in. Diam.),Hatch Unbolted Cover, Ungasketed			
Access Hatch (24-in. Diam.),Hatch Bolted Cover, Gasketed		1	1.6
Access Hatch (24-in. Diam.),Hatch Unbolted Cover, Gasketed			
Automatic Gauge Float Well,float Unbolted Cover, Ungasketed			
Automatic Gauge Float Well,float Bolted Cover, Gasketed		1	2.8
Automatic Gauge Float Well,float Unbolted Cover, Gasketed			
Column Well (24-in. Diam.),Round Pipe, Ungasketed Sliding Cover			
Column Well (24-in. Diam.),Round Pipe, Gasketed Sliding Cover			
Column Well (24-in. Diam.),Round Pipe, Flexible Fabric Sleeve Seal			
Column Well (24-in. Diam.),Built-Up Column, Sliding Cover, Ungasketed			
Column Well (24-in. Diam.),Built-Up Column, Sliding Cover, Gasketed			
Ladder Well (36-in. Diam.),Sliding Cover, Ungasketed			
Ladder Well (36-in. Diam.),Sliding Cover, Gasketed		1	56
Gauge-Hatch/Sample Well,Weighted Mech. Actuation, Gask.			
Gauge-Hatch/Sample Well,Weighted Mech. Actuation, Ungask.			
Gauge-Hatch/Sample Well,(G-Hatch Only) Slit Fabric Seal, 10% Open Area		1	12
Rim Vent (6-in. Diameter),Rim Weighted Mech. Actuation, Ungask.			
Rim Vent (6-in. Diameter),Rim Weighted Mech. Actuation, Gask.			
Vacuum Breaker (10-in. Diam.),VB Weighted Mech. Actuation, Ungask.			
Vacuum Breaker (10-in. Diam.),VB Weighted Mech. Actuation, Gask.		1	6.2
Roof Leg (3-in. Diameter),Center area - sock			
Roof Leg (3-in. Diameter),Adjustable, Internal Floating Deck		10	79
Roof Leg (3-in. Diameter),Adjustable, Double-Deck Roofs			
Roof Leg (3-in. Diameter),Adjustable, Pontoon Area, Gasketed			
Roof Leg (3-in. Diameter),Adjustable, Pontoon Area, Sock			
Roof Leg (3-in. Diameter),Adjustable, Pontoon Area, Ungasketed			
Roof Leg (3-in. Diameter),Adjustable, Center Area, Gasketed			
Roof Leg (3-in. Diameter),Adjustable, Center Area, Ungasketed			
Roof Leg (3-in. Diameter),Fixed			
Deck Drain,Stub Drain			
Deck Drain,Open			
Deck Drain,90% Closed			
Slotted Guide-Pole/Sample Well,Gask. Sliding Cover, w. Float, Wiper			
Slotted Guide-Pole/Sample Well,Gask. Sliding Cover, w. Pole Sleeve			
Slotted Guide-Pole/Sample Well,Gask. Sliding Cover, w. Pole Wiper			
Slotted Guide-Pole/Sample Well,UnGask or Gask. Sliding Cover			
Slotted Guide-Pole/Sample Well,UnGask or Gask. Sliding Cover, w. Float			
Slotted Guide-Pole/Sample Well,Gask. Sliding Cover, w. Pole Sleeve and Pole Wiper			
Slotted Guide-Pole/Sample Well,Gask. Sliding Cover, w. Float, Pole Sleeve, and Pole Wip			
Unslotted Guide-Pole Well,Ungasketed Sliding Cover			
Unslotted Guide-Pole Well,Ungasketed sliding cover, w. pole sleeve			
Total deck fitting loss factor, lb mole/year :			157.60

**Texas Commission on Environmental Quality
Form PI-1 General Application
General**

Date: 1/7/2021
Permit #: 2993
Company: Lyondell

I. Applicant Information	
<p style="color: red; margin: 0;">I acknowledge that I am submitting an authorized TCEQ application workbook and any necessary attachments. Except for inputting the requested data and adjusting row height and column width, I have not changed the TCEQ application workbook in any way, including but not limited to changing formulas, formatting, content, or protections.</p>	I agree
A. Company Information	
Company or Legal Name:	Lyondell Chemical Company
<p>Permits are issued to either the facility owner or operator, commonly referred to as the applicant or permit holder. List the legal name of the company, corporation, partnership, or person who is applying for the permit. We will verify the legal name with the Texas Secretary of State at (512) 463-5555 or at:</p> <p>https://www.sos.state.tx.us</p>	
Texas Secretary of State Charter/Registration Number (if given):	
B. Company Official Contact Information: must not be a consultant	
Prefix (Mr., Ms., Dr., etc.):	Mr.
First Name:	Christopher
Last Name:	Cain
Title:	Site Manager
Mailing Address:	PO Box 777
Address Line 2:	
City:	Channelview
State:	Texas
ZIP Code:	77530
Telephone Number:	(281) 862-5150
Fax Number:	
Email Address:	Christopher.Cain@lyb.com
C. Technical Contact Information: This person must have the authority to make binding agreements and representations on behalf of the applicant and may be a consultant. Additional technical contact(s) can be provided in a cover letter.	
Prefix (Mr., Ms., Dr., etc.):	Mrs.
First Name:	Teresa
Last Name:	Peneguy
Title:	Environmental Permitting
Company or Legal Name:	LyondellBasell
Mailing Address:	PO Box 777
Address Line 2:	
City:	Channelview
State:	Texas
ZIP Code:	77530
Telephone Number:	281-452-8330
Fax Number:	
Email Address:	teresa.peneguy@lyb.com
D. Assigned Numbers	
<p>The CN and RN below are assigned when a Core Data Form is initially submitted to the Central Registry. The RN is also assigned if the agency has conducted an investigation or if the agency has issued an enforcement action. If these numbers have not yet been assigned, leave these questions blank and include a Core Data Form with your application submittal. See Section VI.B. below for additional information.</p>	
Enter the CN. The CN is a unique number given to each business, governmental body, association, individual, or other entity that owns, operates, is responsible for, or is affiliated with a regulated entity.	600344402

Texas Commission on Environmental Quality
Form PI-1 General Application
General

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

Enter the RN. The RN is a unique agency assigned number given to each person, organization, place, or thing that is of environmental interest to us and where regulated activities will occur. The RN replaces existing air account numbers. The RN for portable units is assigned to the unit itself, and that same RN should be used when applying for authorization at a different location.	100633650
---	-----------

II. Delinquent Fees and Penalties

Does the applicant have unpaid delinquent fees and/or penalties owed to the TCEQ? This form will not be processed until all delinquent fees and/or penalties owed to the TCEQ or the Office of the Attorney General on behalf of the TCEQ are paid in accordance with the Delinquent Fee and Penalty Protocol. For more information regarding Delinquent Fees and Penalties, go to the TCEQ Web site at: https://www.tceq.texas.gov/agency/financial/fees/delin	No
--	----

III. Permit Information

A. Permit and Action Type (multiple may be selected, leave no blanks)

Additional information regarding the different NSR authorizations can be found at:
<https://www.tceq.texas.gov/permitting/air/guidance/authorize.html>

Select from the drop-down the type of action being requested for each permit type. **If that permit type does not apply, you MUST select "Not applicable".**

Provide all assigned permit numbers relevant for the project. Leave blank if the permit number has not yet been assigned.

Permit Type	Action Type Requested (do not leave blank)	Permit Number (if assigned)
Minor NSR (can be a Title V major source): <i>Not applicable, Initial, Amendment, Renewal, Renewal Certification, Renewal/Amendment, Relocation/Alteration, Change of Location, Alteration, Extension to Start of Construction</i>	Renewal/Amendment	2993
Special Permit: <i>Not applicable, Amendment, Renewal, Renewal Certification, Renewal/Amendment, Alteration, Extension to Start of Construction</i>	Not applicable	
De Minimis: <i>Not applicable, Initial</i>	Not applicable	
Flexible: <i>Not applicable, Initial, Amendment, Renewal, Renewal Certification, Renewal/Amendment, Alteration, Extension to Start of Construction</i>	Not applicable	
PSD: <i>Not applicable, Initial, Major Modification</i>	Not applicable	
Nonattainment: <i>Not applicable, Initial, Major Modification</i>	Not applicable	
HAP Major Source [FCAA § 112(g)]: <i>Not applicable, Initial, Major Modification</i>	Not applicable	
PAL: <i>Not applicable, Initial, Amendment, Renewal, Renewal/Amendment, Alteration</i>	Not applicable	
GHG PSD: <i>Not applicable, Initial, Major Modification, Voluntary Update</i>	Not applicable	

Texas Commission on Environmental Quality
Form PI-1 General Application
General

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

--	--

B. MSS Activities

How are/will MSS activities for sources associated with this project be authorized?	Combination (list below)
List the permit number, registration number, and/or PBR number.	NSR 83817, PBR 106.263

C. Consolidating NSR Permits

Will this permit be consolidated into another NSR permit with this action?	No
Will NSR permits be consolidated into this permit with this action?	No

D. Incorporation of Standard Permits, Standard Exemptions, and/or Permits By Rule (PBR)

To ensure protectiveness, previously issued authorizations (standard permits, standard exemptions, or PBRs) including those for MSS, are incorporated into a permit either by consolidation or by reference. At the time of renewal and/or amendment, consolidation (in some cases) may be voluntary and referencing is mandatory. More guidance regarding incorporation can be found in 30 TAC § 116.116(d)(2), 30 TAC § 116.615(3) and in this memo:

https://www.tceq.texas.gov/assets/public/permitting/air/memos/pbr_spc06.pdf

Are there any standard permits, standard exemptions, or PBRs to be incorporated by reference?	Yes
If yes, list any PBR, standard exemptions, or standard permits that need to be referenced:	106.487
Are there any PBR, standard exemptions, or standard permits associated to be incorporated by consolidation? Note: Emission calculations, a BACT analysis, and an impacts analysis must be attached to this application at the time of submittal for any authorization to be incorporated by consolidation.	Yes
If yes, list any PBR, standard exemptions, or standard permits that need to be consolidated:	108163, 158688
If yes, are emission calculations, BACT analysis, and an impacts analysis included for each authorization to be consolidated? If any required information is not provided, the authorization will be incorporated by reference.	Yes

E. Associated Federal Operating Permits

Texas Commission on Environmental Quality
Form PI-1 General Application
General

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

Is this facility located at a site required to obtain a site operating permit (SOP) or general operating permit (GOP) ?	Yes
Is a SOP or GOP review pending for this source, area, or site?	Yes
If required to obtain a SOP or GOP , list all associated permit number(s). If no associated permit number has been assigned yet, enter "TBD":	O1387

IV. Facility Location and General Information

A. Location

County: Enter the county where the facility is physically located.	Harris
TCEQ Region	Region 12
County attainment status as of Sept. 23, 2019	Serious Ozone nonattainment
Street Address:	2502 Sheldon Road
City: If the address is not located in a city, then enter the city or town closest to the facility, even if it is not in the same county as the facility.	Channelview
ZIP Code: Include the ZIP Code of the physical facility site, not the ZIP Code of the applicant's mailing address.	77530
Site Location Description: If there is no street address, provide written driving directions to the site. Identify the location by distance and direction from well-known landmarks such as major highway intersections.	
Use USGS maps, county maps prepared by the Texas Department of Transportation, or an online software application such as Google Earth to find the latitude and longitude.	
Latitude (in degrees, minutes, and nearest second (DDD:MM:SS)) for the street address or the destination point of the driving directions. Latitude is the angular distance of a location north of the equator and will always be between 25 and 37 degrees north (N) in Texas.	029:49:15
Longitude (in degrees, minutes, and nearest second (DDD:MM:SS)) for the street address or the destination point of the driving directions. Longitude is the angular distance of a location west of the prime meridian and will always be between 93 and 107 degrees west (W) in Texas.	095:06:19
Is this a project for a lead smelter, concrete crushing facility, and/or a hazardous waste management facility?	No

B. General Information

Site Name:	Channelview Facility
Area Name: Must indicate the general type of operation, process, equipment or facility. Include numerical designations, if appropriate. Examples are Sulfuric Acid Plant and No. 5 Steam Boiler. Vague names such as Chemical Plant are not acceptable.	POSM I Unit
Are there any schools located within 3,000 feet of the site boundary?	Yes

Texas Commission on Environmental Quality
Form PI-1 General Application
General

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

C. Portable Facility	
Permanent or portable facility?	Permanent

D. Industry Type	
Principal Company Product/Business:	SOCMI Chemicals
A list of SIC codes can be found at: https://www.naics.com/sic-codes-industry-drilldown/	
Principal SIC code:	2869
NAICS codes and conversions between NAICS and SIC Codes are available at: https://www.census.gov/eos/www/naics/	
Principal NAICS code:	325199

E. State Senator and Representative for this site	
This information can be found at (note, the website is not compatible to Internet Explorer): https://wrm.capitol.texas.gov/	
State Senator:	John Whitmire
District:	15
State Representative:	Ana Hernandez
District:	143

V. Project Information

A. Description	
Provide a brief description of the project that is requested. (Limited to 500 characters).	The permit is being renewed and amended to update permit representations.

B. Project Timing	
Authorization must be obtained for many projects before beginning construction. Construction is broadly interpreted as anything other than site clearance or site preparation. Enter the date as "Month Date, Year" (e.g. July 4, 1776).	
Projected Start of Construction:	TBD
Projected Start of Operation:	TBD

C. Enforcement Projects	
Is this application in response to, or related to, an agency investigation, notice of violation, or enforcement action?	No

D. Operating Schedule	
Will sources in this project be authorized to operate 8760 hours per year?	Yes

VI. Application Materials

All representations regarding construction plans and operation procedures contained in the permit application shall be conditions upon which the permit is issued. (30 TAC § 116.116)	
A. Confidential Application Materials	
Is confidential information submitted with this application?	No

Texas Commission on Environmental Quality
Form PI-1 General Application
General

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

B. Is the Core Data Form (Form 10400) attached?	No
https://www.tceq.texas.gov/assets/public/permitting/centralregistry/10400.docx	
C. Is a current area map attached?	Yes
Is the area map a current map with a true north arrow, an accurate scale, the entire plant property, the location of the property relative to prominent geographical features including, but not limited to, highways, roads, streams, and significant landmarks such as buildings, residences, schools, parks, hospitals, day care centers, and churches?	Yes
Does the map show a 3,000-foot radius from the property boundary?	Yes
D. Is a plot plan attached?	Yes
Does your plot plan clearly show a north arrow, an accurate scale, all property lines, all emission points, buildings, tanks, process vessels, other process equipment, and two bench mark locations?	Yes
Does your plot plan identify all emission points on the affected property, including all emission points authorized by other air authorizations, construction permits, PBRs, special permits, and standard permits?	Yes
Did you include a table of emission points indicating the authorization type and authorization identifier, such as a permit number, registration number, or rule citation under which each emission point is currently authorized?	Yes
E. Is a process flow diagram attached?	Yes
Is the process flow diagram sufficiently descriptive so the permit reviewer can determine the raw materials to be used in the process; all major processing steps and major equipment items; individual emission points associated with each process step; the location and identification of all emission abatement devices; and the location and identification of all waste streams (including wastewater streams that may have associated air emissions)?	Yes
F. Is a process description attached?	Yes
Does the process description emphasize where the emissions are generated, why the emissions must be generated, what air pollution controls are used (including process design features that minimize emissions), and where the emissions enter the atmosphere?	Yes
Does the process description also explain how the facility or facilities will be operating when the maximum possible emissions are produced?	Yes
G. Are detailed calculations attached? Calculations must be provided for each source with new or changing emission rates. For example, a new source, changing emission factors, decreasing emissions, consolidated sources, etc. You do not need to submit calculations for sources which are not changing emission rates with this project. Please note: the preferred format is an electronic workbook (such as Excel) with all formulas viewable for review. It can be emailed with the submittal of this application workbook.	Yes
Are emission rates and associated calculations for planned MSS facilities and related activities attached?	N/A
H. Is a material balance (Table 2, Form 10155) attached?	Yes
Table 2 (Form 10155), entitled Material Balance: A material balance representation may be required for all applications to confirm technical emissions information. Typically this is required for refining and chemical manufacturing processes involving reactions, separations, and blending. It may also be requested by the permit reviewer for other applications. Table 2 should represent the total material balance; that is, all streams into the system and all streams out. Additional sheets may be attached if necessary. Complex material balances may be presented on spreadsheets or indicated using process flow diagrams. All materials in the process should be addressed whether or not they directly result in the emission of an air contaminant. All production rates must be based on maximum operating conditions.	

Texas Commission on Environmental Quality
Form PI-1 General Application
General

Date: 1/7/2021
Permit #: 2993
Company: Lyondell

I. Is a list of MSS activities attached?	N/A
J. Is a discussion of state regulatory requirements attached, addressing 30 TAC Chapters 101, 111, 112, 113, 115, and 117?	Yes
For all applicable chapters, does the discussion include how the facility will comply with the requirements of the chapter?	Yes
For all not applicable chapters, does the discussion include why the chapter is not applicable?	Yes
K. Are all other required tables, calculations, and descriptions attached?	Yes

VII. Signature

The owner or operator of the facility must apply for authority to construct. The appropriate company official (owner, plant manager, president, vice president, or environmental director) must sign all copies of the application. The applicant's consultant cannot sign the application. **Important Note: Signatures must be original in ink, not reproduced by photocopy, fax, or other means, and must be received before any permit is issued.**

The signature below confirms that I have knowledge of the facts included in this application and that these facts are true and correct to the best of my knowledge and belief. I further state that to the best of my knowledge and belief, the project for which application is made will not in any way violate any provision of the Texas Water Code (TWC), Chapter 7; the Texas Health and Safety Code, Chapter 382; the Texas Clean Air Act (TCAA); the air quality rules of the Texas Commission on Environmental Quality; or any local governmental ordinance or resolution enacted pursuant to the TCAA. I further state that I understand my signature indicates that this application meets all applicable nonattainment, prevention of significant deterioration, or major source of hazardous air pollutant permitting requirements. The signature further signifies awareness that intentionally or knowingly making or causing to be made false material statements or representations in the application is a criminal offense subject to criminal penalties.

Name:	Christopher M Cain
Signature:	<i>Christopher M. Cain</i>
<i>Original signature is required.</i>	
Date:	1/7/2021

Texas Commission on Environmental Quality
Form PI-1 General Application
Renewals

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

I. Type of Permit Renewal and Associated Actions	
A. Current Operations	
Do all dockside vessel emissions associated with the facility comply with all rules and regulations of the commission and with the intent of the TCAA, including protection of the health and property of the public and minimization of emissions to the extent possible, consistent with good air pollution practices? (30 TAC § 116.311(a)(1))	N/A
Is the facility being operated in accordance with all requirements and conditions of the existing permit, including representations in the application for permit to construct and subsequent amendments, and any previously granted renewal, unless otherwise authorized for a qualified facility?	Yes
Are there any permit actions pending before the TCEQ?	No
Have any qualified facility changes under 30 TAC § 116.116(e) occurred since originally issued or last renewed?	No
Have emission factors changed since the last permitting action?	Yes
B. Changes Made Since Last Amendment or Renewal	
Have any of the following changes been made to or proposed for the facilities covered by this permit since it was last amended or renewed and are not currently authorized by a PBR, standard permit, or other authorization? <i>Select "Yes"</i>	
Construction of a new emission source?	No
The emission of new chemical species or a change in character of emissions?	Yes
An increase in emission rates on a short term or annual basis? (This includes increases of a criteria pollutant as well as increases of a chemical species.)	Yes
A change in the method of emission control if the emission control is a source itself, such as a thermal oxidizer or flare?	No
Are new pollutants being added in the renewal process, not currently listed in the permit?	Yes
If "yes" to any question in Section B above is selected, a concurrent permit amendment is required before the permit can be renewed.	

II. Federal Regulatory Questions	
Indicate if any of the following requirements apply to the proposed facility. Note that some federal regulations apply to minor sources. Enter all applicable Subparts.	
A. Title 40 CFR Part 60	
Do NSPS subpart(s) apply to a facility in this application?	Yes
If applicable, list applicable subparts you will demonstrate compliance with (e.g. Subpart M)	A, Kb
B. Title 40 CFR Part 61	
Do NESHAP subpart(s) apply to a facility in this application?	Yes
If applicable, list applicable subparts you will demonstrate compliance with (e.g. Subpart BB)	A, Y, FF
C. Title 40 CFR Part 63	
Do MACT subpart(s) apply to a facility in this application?	Yes
If applicable, list applicable subparts you will demonstrate compliance with (e.g. Subpart VVVV)	A, F, G, H, DDDDD

I. Additional Questions for Specific NSR Minor Permit Actions

E. Concrete Batch Plants

Is this a project for a concrete batch plant?	No
---	----

IX. Emissions Review

A. Impacts Analysis

Any change that results in an increase in off-property concentrations of air contaminants requires an air quality impacts demonstration. Information regarding the air quality impacts demonstration must be provided with the application and show compliance with all state and federal requirements. Detailed requirements for the information necessary to make the demonstration are listed on the Impacts sheet of this workbook.

Does this project require an impacts analysis?	Yes
--	-----

B. Disaster Review

If the proposed facility will handle sufficient quantities of certain chemicals which, if released accidentally, would cause off-property impacts that could be immediately dangerous to life and health, a disaster review analysis may be required as part of the application. Contact the appropriate NSR permitting section for assistance at (512) 239-1250. Additional Guidance can be found at:

<https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/disrev-factsheet.pdf>

Does this application involve any air contaminants for which a disaster review is required?	No
---	----

--	--

C. Air Pollutant Watch List

Certain areas of the state have concentrations of specific pollutants that are of concern. The TCEQ has designated these portions of the state as watch list areas. Location of a facility in a watch list area could result in additional restrictions on emissions of the affected air pollutant(s) or additional permit requirements. The location of the areas and pollutants of interest can be found at:

<https://www.tceq.texas.gov/toxicology/apwl/apwl.html>

Is the proposed facility located in a watch list area?	No
--	----

--	--

D. Mass Emissions Cap and Trade

Is this facility located at a site within the Houston/Galveston nonattainment area (Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties)?	Yes
--	-----

Is Mass Emissions Cap and Trade applicable to the new or modified facilities?	No
---	----

--	--

X. Additional Requirements

A. Bulk Fuel Terminals

Is this project for a bulk fuel terminal?	No	
---	----	--

--	--	--

--	--	--

--	--	--

B. Plant Fuel Gas Facilities

Does this site utilize plant fuel gas?	Yes	
--	-----	--

Texas Commission on Environmental Quality
Form PI-1 General Application
Unit Types - Emission Rates

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

Permit primary industry (must be selected for workbook to function) Chemical / Energy

Action Requested (only 1 action per FIN)	Include these emissions in annual (tpy) summary?	Facility ID Number (FIN)	Emission Point Number (EPN)	Source Name	Pollutant	Current Short-Term (lb/hr)	Current Long-Term (tpy)	Consolidated Current Short-Term (lb/hr)	Consolidated Current Long-Term (tpy)	Proposed Short-Term (lb/hr)	Proposed Long-Term (tpy)	Short-Term Difference (lb/hr)	Long-Term Difference (tpy)	Unit Type (Used for reviewing BACT and Monitoring Requirements)	Unit Type Notes (only if "other" unit type in Column O)
Remove		TK68225A	ETK68225A	Stormwater Tank 68225A								0	0		
Remove		TK68225B	ETK68225B	Stormwater Tank 68225B								0	0		
Remove		D68547A	ED68547A	Sodium Hypochlorite 68547A								0	0		
Remove		D68547B	ED68547B	Sodium Hypochlorite 68547B								0	0		
Remove		TK65639	ETK65639	Styrex-310 Tank								0	0		
Remove		D64100	ED64100	2 percent Caustic Tank 64100								0	0		
Remove		TK60788	ETK60788	20 percent Caustic Tank 60788								0	0		
Remove		TK60410	ETK60410	50 percent Caustic Tank 60410								0	0		
Remove		TK68525	ETK68525	Caustic Tank 68525								0	0		
Remove		D68734A	ED68734A	Sulfuric Acid D68734A								0	0		
Remove		D68734B	ED68734B	Sulfuric Acid D68734B								0	0		
Remove		TK68540	ETK68540	Sulfuric Acid Tank 68540								0	0		
Remove		TK65601	ETK65601	Catalyst Drum 65601								0	0		
Remove		TK60830	ETK60830	PEA Storage Tank 60830								0	0		
Remove		TK68485B	ETK68485B	Diesel Tank 68485B								0	0		
Remove		TK68485D	ETK68485D	Diesel Tank 68485D								0	0		
Remove		TK60550A	ETK60550A	Diesel Tank 60550AR1								0	0		
Remove		TK60550B	ETK60550B	Diesel Tank 60550B								0	0		
Remove		TK60311B	ETK60311B	TK60311B Barge Export Tank (POLYOL SERVICE ONLY)								0	0		
Renew only		PSM1DRTR	EPSM1DRTR	Deaerator Vents	VOC	0.21	0.92			0.21	0.92	0	0	Process Vent	
New/Modified	Yes	COOL1	ECOOL1	PO/SM 1 Cooling Tower	VOC	8.4	36.79			9.24	36.79	0.84	0	Cooling Tower	
					PM					7.02	27.97	7.02	27.97		
					PM10					1.51	6.02	1.51	6.02		
					PM2.5					0.01	0.04	0.01	0.04		
New/Modified	Yes	F64170	EF64170	Catalytic Converter/Incinerator F-64170	VOC	17.2	55.35			24.3	55.35	7.1	0	Control: Oxidizer: Catalytic	
					NOx	2.55	7.95			2.55	7.95	0	0		
					SO2	0.01	0.05			0.01	0.05	0	0		
					PM	0.32	1.03			0.32	1.03	0	0		
					CO	3.5	13.61			3.5	13.61	0	0		
New/Modified	Yes	F65630	EF65630	Hot Oil Heater F-630	VOC	2	5.9			2	5.9	0	0	Heater	
					Acetone					<0.01	<0.01	0.01	0.01		
					NOx	24.7	67.5			24.7	67.5	0	0		
					SO2	0.49	2.2			0.49	2.2	0	0		
					PM	11.23	33			11.23	33	0	0		
					CO	14.88	61.4			50.13	61.4	35.25	0		
New/Modified	Yes	FUGDW	EFUGDW	Deep Well Area Fugitives	VOC	2.49	3.33			3.02	8.55	0.53	5.22	Fugitives: Piping and Equipment Leak	
New/Modified	Yes	FUGOSM1	EFUGOSM1	OSM 1 Fugitives	VOC	13.43	36.03			13.43	42.73	0	6.7	Fugitives: Piping and Equipment Leak	
Renew only	Yes	ANAPOSM1	EANAPOSM1	Analyzers	VOC	0.08	0.33			0.08	0.33	0	0	Other	Analyzer vent
New/Modified	No	LHASTRK	ELHASTRK	HAS Truck Loading	VOC	0.43	0.01			0.8	0.06	0.37	0.05	Loading: Truck	
New/Modified	No	LHASRL	ELHASRL	HAS Rail Loading	VOC	0.43	0.01			0.8	0.06	0.37	0.05	Loading: Railcar	
New/Modified	Yes	HAS LD Cap	HAS LD Cap	ELHASTRK, ELHASRL CAP	VOC	0.43	0.01			0.8	0.06	0.37	0.05	Loading: Truck	
New/Modified	Yes	LMBA	ELMBA	MBA Loading	VOC	0.23	0.01			1.71	0.05	1.48	0.04	Loading: Truck	
New/Modified	Yes	LPEA	ELPEA	PEA Loading	VOC	0.07	0.01			0.42	0.01	0.35	0	Loading: Truck	
Renew only	Yes	LRFO635	ELRFO635	RFO 635 Loading	VOC	6.06	0.5			6.06	0.5	0	0	Loading: Truck	
New/Modified	Yes	LRFO637	ELRFO637	RFO 637 Loading	VOC	1.32	0.32			7.21	0.98	5.89	0.66	Loading: Truck	
New/Modified	Yes	FL68910	EFL68910	Deep Well Flare	VOC	30.44	26.91			33.07	26.91	2.63	0	Control: Flare	
					NOx	10.89	11.73			10.89	12.28	0	0.55		
					CO	55.44	59.74	32.49	35.01	89.52	105.31	1.59	10.56		

Texas Commission on Environmental Quality
Form PI-1 General Application
Unit Types - Emission Rates

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

Action Requested (only 1 action per FIN)	Include these emissions in annual (tpy) summary?	Facility ID Number (FIN)	Emission Point Number (EPN)	Source Name	Pollutant	Current Short-Term (lb/hr)	Current Long-Term (tpy)	Consolidated Current Short-Term (lb/hr)	Consolidated Current Long-Term (tpy)	Proposed Short-Term (lb/hr)	Proposed Long-Term (tpy)	Short-Term Difference (lb/hr)	Long-Term Difference (tpy)	Unit Type (Used for reviewing BACT and Monitoring Requirements)	Unit Type Notes (only if "other" unit type in Column O)
					SO2	0.18	0.78			1.09	2.88	0.91	2.1		
					Acetone					0.2	0.09	0.2	0.09		
New/Modified	Yes	D6312A	ED6312A	PEA Product Test Tank D6312A	VOC	0.01	0.01			0.13	0.01	0.12	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
New/Modified	Yes	D6312B	ED6312B	PEA Product Test Tank D6312B	VOC	0.01	0.01			0.13	0.01	0.12	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
Renew only	Yes	TK6802	ETK6802	Stormwater Tank 6802	VOC	1.74	0.04			1.74	0.04	0	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
New/Modified	Yes	TK60001	ETK60001	PEA Intermediate Storage Tank 60001	VOC	0.1	0.1			1.09	0.1	0.99	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
Renew only	Yes	TK60003	ETK60003	Toluene Storage Tank 60003	VOC	27.23	0.94			27.23	0.94	0	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
New/Modified	Yes	TK60004	ETK60004	MPG Storage Tank 60004	VOC	0.22	0.01			7.14	0.01	6.92	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
Renew only	Yes	TK60005	ETK60005	PEA Storage Tank 60005	VOC	0.93	0.01			0.93	0.01	0	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
New/Modified	Yes	TK60006	ETK60006	PEA Storage Tank 60006	VOC	0.93	0.01			1.11	0.01	0.18	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
New/Modified	Yes	TK60220	ETK60220	Dehydration Feed Tank 60220	VOC	14.28	1.4			19.95	1.4	5.67	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
New/Modified	Yes	TK60221	ETK60221	Crude ACP Tank 60221	VOC	8.68	0.87			13.62	1.26	4.94	0.39	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
New/Modified	Yes	TK60223	ETK60223	HAS Storage Tank 60223	VOC	0.02	0.01			0.82	0.05	0.8	0.04	Storage Tank (4): Floating roof with TVP < 11.0 psia	
Renew only	Yes	TK60225	ETK60225	Octane Storage Tank 60225	VOC	11.55	0.79	1.37	0.5801	12.92	1.37	0	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
New/Modified	Yes	TK60226	ETK60226	Octanoic Acid Tank 60226	VOC	0.07	0.01			0.08	0.01	0.01	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
Renew only	Yes	TK60285A	ETK60285A	PEA Feed Tank 60285A	VOC	0.2	0.27			0.2	0.27	0	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
Renew only	Yes	TK60285B	ETK60285B	PEA Feed Tank 60285B	VOC	0.2	0.27			0.2	0.27	0	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
Renew only	Yes	TK60320	ETK60320	Styrene Surge Tank 60320	VOC	27.58	13.74			27.58	13.74	0	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
Renew only	No	TK60321A	ETK60321A	Styrene Test Tank 60321A	VOC	7.18				7.18		0	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
Renew only	No	TK60321B	ETK60321B	Styrene Test Tank 60321B	VOC	7.18				7.18		0	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
Renew only	No	TK60321C	ETK60321C	Styrene Test Tank 60321C	VOC	7.18				7.18		0	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
New/Modified	Yes	TK60321A, B, and C CAP	ETK60321A, B, and C CAP	Styrene Test Tanks 60321A, 60321B and 60321C	VOC		5.47				5.65	0	0.1801	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
New/Modified	Yes	TK60631	ETK60631	HAS Storage Tank 60631	VOC	0.16	0.32			3.68	0.32	3.52	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
New/Modified	Yes	TK60561	ETK60561	PEA Storage Tank 60561	VOC				<0.01	0.68	<0.01	0.68	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
New/Modified	Yes	TK64305	ETK64305	Catalyst Preparation Tank 64305	VOC	25.75	0.67			29.24	0.67	3.49	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	

Texas Commission on Environmental Quality
Form PI-1 General Application
Unit Types - Emission Rates

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

Action Requested (only 1 action per FIN)	Include these emissions in annual (tpy) summary?	Facility ID Number (FIN)	Emission Point Number (EPN)	Source Name	Pollutant	Current Short-Term (lb/hr)	Current Long-Term (tpy)	Consolidated Current Short-Term (lb/hr)	Consolidated Current Long-Term (tpy)	Proposed Short-Term (lb/hr)	Proposed Long-Term (tpy)	Short-Term Difference (lb/hr)	Long-Term Difference (tpy)	Unit Type (Used for reviewing BACT and Monitoring Requirements)	Unit Type Notes (only if "other" unit type in Column O)
New/Modified	Yes	TK68632A	ETK68632A	RFO 637	VOC	4.46	0.88			11.11	0.88	6.65	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
New/Modified	Yes	TK68784	ETK68784	Wastewater Tank 68784	VOC	0.1	0.05			2.2	0.05	2.1	0	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	
					Acetone	<0.01	<0.01			0.36	<0.01	0.35	0		
Renew only	No	FUGBIO4	EFUGBIO4	AB4 Fugitives Bioplant	VOC	6.36				6.36		0	0	Wastewater Facilities	
					Acetone	0.0049				0.01		0.0051	0		
New/Modified	No	TK60897	ETK60897	Equalization Tank 60897	VOC	14.5				26.26		11.76	0	Wastewater Facilities	
					Acetone	0.17				0.77		0.6	0		
New/Modified	No	TK60898	ETK60898	Equalization Tank 60898	VOC	14.5				26.26		11.76	0	Wastewater Facilities	
					Acetone	0.17				0.77		0.6	0		
New/Modified	No	TK68127	ETK68127	Aeration Tank 68127	VOC	9				33.88		24.88	0	Wastewater Facilities	
					Acetone	<0.01				0.03		0.02	0		
New/Modified	No	TK68128	ETK68128	Aeration Tank 68128	VOC	9				33.88		24.88	0	Wastewater Facilities	
					Acetone	<0.01				0.03		0.02	0		
New/Modified	Yes	Bioplant Cap	Bioplant Cap	FUGBIO4, TK60897, TK60898, TK68127, & TK68128	VOC	53.36	54.64			95.79	54.64	42.43	0	Wastewater Facilities	
					Acetone	0.36	0.76			1.57	1	1.21	0.24		
Remove		F64175	EF64175	Thermal Combustor F-64175	NOx							0	0	Wastewater Facilities	
					CO							0	0		
Renew only	Yes	ECT68421	CT68421	Bioplant Cooling Tower	VOC	2.01	0.55			2.01	0.55	0	0	Cooling Tower	
					PM	0.07	0.29			0.07	0.29	0	0		
					PM10	0.02	0.08			0.02	0.08	0	0		
					PM2.5	<0.01	<0.01			<0.01	<0.01	0	0		
					Acetone	0.03	0.01			0.03	0.01	0	0		
Renew only	Yes	EF68154A/B	F68154A/B	Thermal Oxidizer A & B	VOC	0.3	1			0.3	1	0	0	Control: Oxidizer: Thermal	
					NOx	0.9	3.94			0.9	3.94	0	0		
					CO	4.2	2.3			4.2	2.3	0	0		
					PM	0.11	0.49			0.11	0.49	0	0		
					PM10	0.11	0.49			0.11	0.49	0	0		
					PM2.5	0.11	0.49			0.11	0.49	0	0		
					SO2	0.02	0.09			0.02	0.09	0	0		
					Acetone	<0.01	<0.01			<0.01	<0.01	0	0		

Texas Commission on Environmental Quality
Form PI-1 General Application
Stack Parameters

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

Emission Point Discharge Parameters									
EPN	Included in EMEW?	UTM Coordinates Zone	East (Meters)	North (Meters)	Building Height (ft)	Height Above Ground (ft)	Stack Exit Diameter (ft)	Velocity (FPS)	Temperature (°F)
ETK68225A	Yes								
ETK68225B	Yes								
ED68547A	Yes								
ED68547B	Yes								
ETK65639	Yes								
ED64100	Yes								
ETK60788	Yes								
ETK60410	Yes								
ETK68525	Yes								
ED68734A	Yes								
ED68734B	Yes								
ETK68540	Yes								
ETK65601	Yes								
ETK60830	Yes								
ETK68485B	Yes								
ETK68485D	Yes								
ETK60550A	Yes								
ETK60550B	Yes								
ETK60311B	Yes								
EPSM1DRTR	Yes								
ECOOL1	Yes								
EF64170	Yes								
EF65630	Yes								
EFUGDW	Yes								
EFUGPOSM1	Yes								
EANAPOSM1	Yes								
ELHASTRK	Yes								
ELHASRL	Yes								
HAS LD Cap	Yes								
ELMBA	Yes								
ELPEA	Yes								
ELRFO635	Yes								
ELRFO637	Yes								
EFL68910	Yes								
ED6312A	Yes								

Texas Commission on Environmental Quality
Form PI-1 General Application
Stack Parameters

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

EPN	Included in EMEW?	UTM Coordinates		Building Height (ft)	Height Above Ground (ft)	Stack Exit Diameter (ft)	Velocity (FPS)	Temperature (°F)
		Zone	East (Meters)					
ED6312B	Yes							
ETK6802	Yes							
ETK60001	Yes							
ETK60003	Yes							
ETK60004	Yes							
ETK60005	Yes							
ETK60006	Yes							
ETK60220	Yes							
ETK60221	Yes							
ETK60223	Yes							
ETK60225	Yes							
ETK60226	Yes							
ETK60285A	Yes							
ETK60285B	Yes							
ETK60320	Yes							
ETK60321A	Yes							
ETK60321B	Yes							
ETK60321C	Yes							
ETK60321A, B, and C CAP	Yes							
ETK60631	Yes							
ETK60561	Yes							
ETK64305	Yes							
ETK68632A	Yes							
ETK68784	Yes							
EFUGBIO4	Yes							
ETK60897	Yes							
ETK60898	Yes							
ETK68127	Yes							
ETK68128	Yes							
Bioplant Cap	Yes							
EF64175								
CT68421								
F68154A/B								

Texas Commission on Environmental Quality
Form PI-1 General Application
Public Notice

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

I. Public Notice Applicability	
A. Application Type	
Is this an application for a renewal?	Yes
Is this an application for a minor permit amendment?	Yes
Is there any change in character of emissions in this application (a new criteria pollutant or a new VOC or PM species)?	Yes
Is there a new air contaminant in this application?	Yes
B. Project Increases and Public Notice Thresholds (for Initial and Amendment Projects)	
<p>For public notice applicability, the agency does not include consolidation or incorporation of any previously authorized facility or activity (PBR, standard permits, etc.), changes to permitted allowable emission rates when exclusively due to changes to standardized emission factors, or reductions in emissions which are not enforceable through the amended permit. Thus, the total emissions increase would be the sum of emissions increases under the amended permit and the emissions decreases under the amended permit for each air contaminant.</p> <p>The table below will generate emission increases based on the values represented on the "Unit Types - Emission Rates" sheet. Use the "yes" and "no" options in column B of the "Unit Types - Emission Rates" worksheet to indicate if a unit's proposed change of emissions should be included in these totals.</p>	
Notes:	
<p>1. Emissions of PM, PM10, and/or PM2.5 may have been previously quantified and authorized as PM, PM10, and/or PM2.5. These emissions will be speciated based on current guidance and policy to demonstrate compliance with current standards and public notice requirements may change during the permit review.</p> <p>2. All renewals require public notice.</p>	
This row is optional. If you do not think the table below accurately represents public notice applicability increases for your project, provide discussion here (1000 characters).	
Do the facilities handle, load, unload, dry, manufacture, or process grain, seed, legumes, or vegetable fibers (agricultural facilities)?	No

Texas Commission on Environmental Quality
Form PI-1 General Application
Public Notice

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

Enter the contact information for the **Technical Contact**. This is the designated representative who will be listed in the public notice as a contact for additional information.

Prefix (Mr., Ms., Dr., etc.):	Mrs.
First Name:	Teresa
Last Name:	Peneguy
Title:	Environmental Permitting
Company Name:	LyondellBasell
Mailing Address:	PO Box 777
Address Line 2:	
City:	Channelview
State:	Texas
ZIP Code:	77530
Telephone Number:	281-452-8330
Fax Number:	
Email Address:	teresa.peneguy@lyb.com

B. Public place

Place a copy of the full application (including all of this workbook and all attachments) at a public place in the county where the facilities are or will be located. You must state where in the county the application will be available for public review and comment. The location must be a public place and described in the notice. A public place is a location which is owned and operated by public funds (such as libraries, county courthouses, city halls) and cannot be a commercial enterprise. You are required to pre-arrange this availability with the public place indicated below. The application must remain available from the first day of publication through the designated comment period.

If this is an application for a PSD, nonattainment, or FCAA §112(g) permit, the public place must have internet access available for the public as required in 30 TAC § 39.411(f)(3).

If the application is submitted to the agency with information marked as Confidential, you are required to indicate which specific portions of the application are not being made available to the public. These portions of the application must be accompanied with the following statement: ***Any request for portions of this application that are marked as confidential must be submitted in writing, pursuant to the Public Information Act, to the TCEQ Public Information Coordinator, MC 197, P.O. Box 13087, Austin, Texas 78711-3087.***

Name of Public Place:	North Channel Branch Library (if available)	
Physical Address:	15741 Wallisville Road	
Address Line 2:		
City:	Houston	
ZIP Code:	77049	
County:	Harris	
Has the public place granted authorization to place the application for public viewing and copying?	Yes	

**Texas Commission on Environmental Quality
Form PI-1 General Application
Federal Applicability**

Date: 1/7/2021
Permit #: 2993
Company: Lyondell

I. County Classification	
Does the project require retrospective review?	Yes
If so, what is the issuance date of the project being revisited? (xx/xx/xx)	5/5/1977
If so, select the nonattainment classification of the county when the project being revisited was authorized.	attainment
The workbook includes one retrospective review. If the project includes multiple, provide an attachment listing the additional issuance dates, classifications at the time of authorization, and offset data for each additional retrospective review in the project.	
County (completed for you from your response on the General sheet)	Harris

II. PSD and GHG PSD Applicability Summary			
Is netting required for the PSD analysis for this project?			No
Pollutant	Project Increase	Threshold	PSD Review Required?
CO	11.12	100	No
NO _x	1.45	40	No
PM	0	25	No
PM ₁₀	0	15	No
PM _{2.5}	0	10	No
SO ₂	2.88	40	No
Pb			
H ₂ S			
TRS			
Reduced sulfur compounds (including H ₂ S)			
H ₂ SO ₄			
Fluoride (excluding HF)			
CO ₂ e			

III. Nonattainment Applicability Summary			
Is netting required for the nonattainment analysis for this project?			No
Pollutant	Project Increase	Threshold	NA Review Required?
Ozone (as VOC)	2.5	5	No
Ozone (as NO _x)	1.45	5	No

V. Offset Summary (for Nonattainment Permits doing Retrospective Review)			
Pollutant	Offset Ratio	Offset Quantity Required (tpy)	Where is the offset coming from?

Texas Commission on Environmental Quality
Form PI-1 General Application
Fees

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

I. General Information - Non-Renewal	
Is this project for new facilities controlled and operated directly by the federal government? (30 TAC § 116.141(b)(1) and 30 TAC § 116.163(a))	No
A fee of \$75,000 shall be required if no estimate of capital project cost is included with the permit application. (30 TAC § 116.141(d)) Select "yes" here to use this option. Then skip sections II and III.	No
Select Application Type	Minor Application

II. Direct Costs - Non-Renewal	
Type of Cost	Amount
Process and control equipment not previously owned by the applicant and not currently authorized under this chapter.	\$0.00
Auxiliary equipment, including exhaust hoods, ducting, fans, pumps, piping, conveyors, stacks, storage tanks, waste disposal facilities, and air pollution control equipment specifically needed to meet permit and regulation requirements.	\$0.00
Freight charges.	\$0.00
Site preparation, including demolition, construction of fences, outdoor lighting, road, and parking areas.	\$0.00
Installation, including foundations, erection of supporting structures, enclosures or weather protection, insulation and painting, utilities and connections, process integration, and process control equipment.	\$0.00
Auxiliary buildings, including materials storage, employee facilities, and changes to existing structures.	\$0.00
Ambient air monitoring network.	\$0.00
Sub-Total:	\$0.00

III. Indirect Costs - Non-Renewal	
Type of Cost	Amount
Final engineering design and supervision, and administrative overhead.	\$0.00
Construction expense, including construction liaison, securing local building permits, insurance, temporary construction facilities, and construction clean-up.	\$0.00
Contractor's fee and overhead.	\$0.00
Sub-Total:	\$0.00

IV. Calculations - Non-Renewal	
<p>For GHG permits: A single PSD fee (calculated on the capital cost of the project per 30 TAC § 116.163) will be required for all of the associated permitting actions for a GHG PSD project. Other NSR permit fees related to the project that have already been remitted to the TCEQ can be subtracted when determining the appropriate fee to submit with the GHG PSD application. Identify these other fees in the GHG PSD permit application.</p>	
<p>In signing the "General" sheet with this fee worksheet attached, I certify that the total estimated capital cost of the project as defined in 30 TAC §116.141 is equal to or less than the above figure. I further state that I have read and understand Texas Water Code § 7.179, which defines Criminal Offenses for certain violations, including intentionally or knowingly making, or causing to be made, false material statements or representations.</p>	
Estimated Capital Cost	Minor Application Fee
Less than \$300,000	\$900 (minimum fee)

Texas Commission on Environmental Quality
Form PI-1 General Application
Fees

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

\$300,000 - \$7,500,000	N/A	
\$300,000 - \$25,000,000	0.30% of capital cost	
Greater than \$7,500,000	N/A	
Greater than \$25,000,000	\$75,000 (maximum fee)	

Your estimated capital cost:	\$0.00	Minimum fee applies.
Permit Application Fee:		\$900.00

V. Renewal Fee	
The fee for renewal is based on the total annual allowable emissions from the permitted facility to be renewed. If this project includes an amendment, the amendment permit fee will be calculated separately.	
Enter the total allowable emissions (tons per year). The total emissions must include those represented in any PBR or standard permits to be incorporated by consolidation into this permit.	571.82
Permit fee due	\$ 9,038.84

VI. Total Fees	
Note: fees can be paid together with one payment or as two separate payments.	
Non-Renewal Fee	\$900.00
Renewal Fee	\$ 9,038.84
Total	\$9,938.84

VII. Payment Information	
A. Payment One (required)	
Was the fee paid online?	No
Enter the fee amount:	\$9,938.84
Enter the check, money order, ePay Voucher, or other transaction number:	EFT 9070015539
Enter the Company name as it appears on the check:	Lyondell Chemical Company
B. Payment Two (if paying renewal and non-renewal fees separately)	
Was the fee paid online?	
Enter the fee amount:	
Enter the check, money order, ePay Voucher, or other transaction number:	
Enter the Company name as it appears on the check:	
C. Total Paid	\$9,938.84

VIII. Professional Engineer Seal Requirement	
Is the estimated capital cost of the project above \$2 million?	No
Is the application required to be submitted under the seal of a Texas licensed P.E.? Note: an electronic PE seal is acceptable.	No

Texas Commission on Environmental Quality
Form PI-1 General Application
Impacts

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

Pollutant	Does this pollutant require PSD review?	How will you demonstrate that this project meets all applicable requirements?	Notes	Additional Notes (optional)
VOC	No	Modeling: screen or refined	Attach a completed "Electronic Modeling Evaluation Workbook" (EMEW).	
PM	No	Modeling: screen or refined	Attach a completed "Electronic Modeling Evaluation Workbook" (EMEW).	
PM10	No	Modeling: screen or refined	Attach a completed "Electronic Modeling Evaluation Workbook" (EMEW).	
PM2.5	No	Modeling: screen or refined	Attach a completed "Electronic Modeling Evaluation Workbook" (EMEW).	
NOx	No	Modeling: screen or refined	Attach a completed "Electronic Modeling Evaluation Workbook" (EMEW).	
SO2	No	Modeling: screen or refined	Attach a completed "Electronic Modeling Evaluation Workbook" (EMEW).	
CO	No	Modeling: screen or refined	Attach a completed "Electronic Modeling Evaluation Workbook" (EMEW).	
Acetone	No	Modeling: screen or refined	Attach a completed "Electronic Modeling Evaluation Workbook" (EMEW).	

Texas Commission on Environmental Quality
Form PI-1 General Application
BACT

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

FINs	Unit Type	Pollutant	Current Tier I BACT	Confirm	Additional Notes
PSM1DRTR	Process Vent	VOC	Non-halogenated VOCs: flare, any oxidizer, adsorber, absorber/scrubber, etc. Specify technique. Must meet that control device's approved efficiency. Halogenated VOC: Thermal oxidation followed by absorber/scrubber carbon adsorption. Specify technique. Must meet that control device's approved efficiency.	No	Renewal of source, no change to source BACT identified from prior permit actions
		MSS	Same as normal operation BACT requirements.	No	Renewal of source, no change to source BACT identified from prior permit actions
COOL1	Cooling Tower	VOC	Non-contact design. Monthly monitoring of VOC in water per Appendix P or approved equivalent (assume all VOC stripped out). Repair identified leaks as soon as possible, but before next scheduled shutdown, or shutdown triggered by 0.08 ppmw cooling water VOC concentration.	Yes	
		PM	The emission reduction techniques for PM10 and PM2.5 will follow the technique for PM. Drift < 0.001% achieved by drift eliminators	No	Renewal of source, no change to source BACT identified from prior permit actions
		MSS	Same as normal operation BACT requirements.	Yes	
F64170	Control: Oxidizer: Catalytic	VOC	98% destruction or 20 ppmv outlet concentration at 3% oxygen on exhaust VOC. Monitor bed temperature, perform initial test. CEMS if > 2 tpy VOC emissions.	No	Annual emissions not being modified, source operated to meet either 98% DRE or 20 ppmv and bed temperature monitored
		NOx	See Additional Notes:	No	Renewal of source, no change to source BACT identified from prior permit actions
		SO2	See Additional Notes:	No	Renewal of source, no change to source BACT identified from prior permit actions
		PM	The emission reduction techniques for PM10 and PM2.5 will follow the technique for PM. See Additional Notes:	No	Renewal of source, no change to source BACT identified from prior permit actions
		CO	See Additional Notes:	No	Renewal of source, no change to source BACT identified from prior permit actions
		MSS	Same as normal operation BACT requirements.	No	Renewal of source, no change to source BACT identified from prior permit actions
F65630	Heater	VOC	Firing pipeline quality natural gas and good combustion practices. Specify if firing a different fuel.	No	Renewal of source, no change to source BACT identified from prior permit actions
		Acetone	See additional notes:	No	Renewal of source, no change to source BACT identified from prior permit actions
		NOx	Burners with the best NOx performance given the burner configuration and gaseous fuel used. Specify the proposed emission rate (performance is an annual average) and provide justification if NOx>0.01 lb/MMBtu. Cost data must be submitted for SCR if firing rate is > 300 MMBtu/hr and burner is >0.01 lb/MMBtu. CEMS required for 100 MMBtu/hr or greater.	No	Renewal of source, no change to source BACT identified from prior permit actions
		SO2	Maximum 0.6% sulfur content any liquid fuel or 5 grains for pipeline quality sweet natural gas. Provide details.	No	Renewal of source, no change to source BACT identified from prior permit actions
		PM	The emission reduction techniques for PM10 and PM2.5 will follow the technique for PM. Maximum opacity 5%	No	Renewal of source, no change to source BACT identified from prior permit actions
		CO	50 ppmv corrected to 3% O2	Yes	Source will meet 50 ppmv on an annual average basis.
		MSS	Same as normal operation BACT requirements.	No	Renewal of source, no change to source BACT identified from prior permit actions

Texas Commission on Environmental Quality
Form PI-1 General Application
BACT

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

FINs	Unit Type	Pollutant	Current Tier I BACT	Confirm	Additional Notes
FUGDW	Fugitives: Piping and Equipment Leak	VOC	Specify which is applicable: 1. Uncontrolled VOC emissions < 10 tpy: none 2. 10 tpy < uncontrolled VOC emissions < 25 tpy: 28M leak detection and repair program. 75% credit for 28M. 3. Uncontrolled VOC emissions > 25 tpy: 28VHP leak detection and repair program. 97% credit for valves, 85% for pumps and compressors. 4. VOC vp < 0.002 psia: no inspection required, no fugitive emissions expected. For emissions of approved odorous compounds (chlorine, ammonia, hydrogen sulfide, hydrogen cyanide and mercaptans only): AVO inspection twice per shift. Appropriate credit for AVO program.	Yes	Meeting 28VHP for all traditional fugitive components with VOC content > 10% VOC. Non-tradition components not required under NSR guidelines leak check using AVO.
		MSS	Same as normal operation BACT requirements.	Yes	Meeting 28VHP for all traditional fugitive components with VOC content > 10% VOC. Non-tradition components not required under NSR guidelines leak check using AVO.
FUGPOSM1	Fugitives: Piping and Equipment Leak	VOC	Specify which is applicable: 1. Uncontrolled VOC emissions < 10 tpy: none 2. 10 tpy < uncontrolled VOC emissions < 25 tpy: 28M leak detection and repair program. 75% credit for 28M. 3. Uncontrolled VOC emissions > 25 tpy: 28VHP leak detection and repair program. 97% credit for valves, 85% for pumps and compressors. 4. VOC vp < 0.002 psia: no inspection required, no fugitive emissions expected. For emissions of approved odorous compounds (chlorine, ammonia, hydrogen sulfide, hydrogen cyanide and mercaptans only): AVO inspection twice per shift. Appropriate credit for AVO program.	Yes	Meeting 28VHP for all traditional fugitive components with VOC content > 10% VOC. Non-tradition components not required under NSR guidelines leak check using AVO.
		MSS	Same as normal operation BACT requirements.	Yes	Meeting 28VHP for all traditional fugitive components with VOC content > 10% VOC. Non-tradition components not required under NSR guidelines leak check using AVO.
ANAPOSM1	Analyzer vent	VOC	See additional notes:	No	Renewal of source, no change to source BACT identified from prior permit actions
		MSS	See additional notes:	No	Renewal of source, no change to source BACT identified from prior permit actions
LHASTRK	Loading: Truck	VOC	Specify option: 1. VOC vp < 0.5 psia: submerged or bottom loading. No splash loading. 2. VOC vp ≥ 0.5 psia: route to VOC control device and meet the specific control device requirements. 98.7% collection efficiency for annual NSPS XX leak check.	Yes	Option 1
		MSS	Same as normal operation BACT requirements.	Yes	

Texas Commission on Environmental Quality
Form PI-1 General Application
BACT

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

FINs	Unit Type	Pollutant	Current Tier I BACT	Confirm	Additional Notes
LHASRL	Loading: Railcar	VOC	Specify option: 1. VOC vp < 0.5 psia: submerged or bottom loading. No splash loading. 2. VOC ≥ 0.5 psia: Route to VOC control device and meet the specific control device requirements. 100% collection efficiency of pressure-rated cars ensured by Department of Transportation Testing. Hard piped or bolted connections, dry lock design. Hard piping loading arms and/or pressure-rated chemical transfer hoses.	Yes	Option 1
		MSS	Same as normal operation BACT requirements.	Yes	
HAS LD Cap	Loading: Truck	VOC	Specify option: 1. VOC vp < 0.5 psia: submerged or bottom loading. No splash loading. 2. VOC vp ≥ 0.5 psia: route to VOC control device and meet the specific control device requirements. 98.7% collection efficiency for annual NSPS XX leak check.	Yes	Option 1
		MSS	Same as normal operation BACT requirements.	Yes	
LMBA	Loading: Truck	VOC	Specify option: 1. VOC vp < 0.5 psia: submerged or bottom loading. No splash loading. 2. VOC vp ≥ 0.5 psia: route to VOC control device and meet the specific control device requirements. 98.7% collection efficiency for annual NSPS XX leak check.	Yes	Option 1
		MSS	Same as normal operation BACT requirements.	Yes	
LPEA	Loading: Truck	VOC	Specify option: 1. VOC vp < 0.5 psia: submerged or bottom loading. No splash loading. 2. VOC vp ≥ 0.5 psia: route to VOC control device and meet the specific control device requirements. 98.7% collection efficiency for annual NSPS XX leak check.	Yes	Option 1
		MSS	Same as normal operation BACT requirements.	Yes	
LRFO635	Loading: Truck	VOC	Specify option: 1. VOC vp < 0.5 psia: submerged or bottom loading. No splash loading. 2. VOC vp ≥ 0.5 psia: route to VOC control device and meet the specific control device requirements. 98.7% collection efficiency for annual NSPS XX leak check.	No	Renewal of source, no change to source BACT identified from prior permit actions
		MSS	Same as normal operation BACT requirements.	No	Renewal of source, no change to source BACT identified from prior permit actions
LRFO637	Loading: Truck	VOC	Specify option: 1. VOC vp < 0.5 psia: submerged or bottom loading. No splash loading. 2. VOC vp ≥ 0.5 psia: route to VOC control device and meet the specific control device requirements. 98.7% collection efficiency for annual NSPS XX leak check.	Yes	Option 1
		MSS	Same as normal operation BACT requirements.	Yes	
FL68910	Control: Flare	VOC	VOC: Meets 40 CFR 60.18. Destruction Efficiency: 99% for certain compounds up to three carbons, 98% otherwise. No flaring of halogenated compounds is allowed. Flow monitor required. Composition or BTU analyzer may be required.	No	Flare will meet 99% for certain compounds and 98% otherwise. Flow is monitored and BTU determined from periodic vent sampling.
		NOx	Provide emission factor used and reference.	Yes	0.0641 lb/MMBtu - 2020 Emissions Inventory Guidelines. Table A-7. Flare Emissions Factors. Unassisted, Low Btu.
		CO	Provide emission factor used and reference.	Yes	0.5496 lb/MMBtu - 2020 Emissions Inventory Guidelines. Table A-7. Flare Emissions Factors. Unassisted, Low Btu.
		SO2	Provide emission factor used and reference.	Yes	5 grains/dscf
		Acetone	See additional notes:	Yes	flare operated to meet 98% DRE

Texas Commission on Environmental Quality
Form PI-1 General Application
BACT

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

FINs	Unit Type	Pollutant	Current Tier I BACT	Confirm	Additional Notes
		MSS	Same as normal operation BACT requirements.	Yes	
D6312A	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
D6312B	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK6802	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK60001	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	

Texas Commission on Environmental Quality
Form PI-1 General Application
BACT

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

FINs	Unit Type	Pollutant	Current Tier I BACT	Confirm	Additional Notes
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK60003	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK60004	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK60005	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	

Texas Commission on Environmental Quality
Form PI-1 General Application
BACT

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

FINs	Unit Type	Pollutant	Current Tier I BACT	Confirm	Additional Notes
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK60006	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK60220	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK60221	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	Type 1. IFR. Liquid mounted Primary Seal.

Texas Commission on Environmental Quality
Form PI-1 General Application
BACT

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

FINs	Unit Type	Pollutant	Current Tier I BACT	Confirm	Additional Notes
		MSS	<p>Same as normal operation BACT requirements except as listed below.</p> <p>Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.</p>	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK60223	Storage Tank (4): Floating roof with TVP <11.0 psia	VOC	<p>Specify tank type.</p> <p>1. Internal floating roof: Uninsulated exterior surfaces exposed to the sun shall be white or aluminum. Drain dry design (new tanks only). Specify seals: Alternative 1: Primary seal mechanical or liquid mounted. Alternative 2: Primary seal vapor mounted and secondary seal rim mounted.</p> <p>2. External floating roof: Uninsulated exterior surfaces exposed to the sun shall be white or aluminum. Slotted guide pole fittings must have gasketed cover and at least two of the following (specify selection): wiper, float, or sleeve. Specify seals: Primary seal mechanical or liquid mounted, secondary seal rim mounted. Drain dry design (new tanks only).</p>	Yes	IFR with mechanical shoe primary seal
		MSS	<p>Unless specified below, route to appropriate control device when degassing. Control must be maintained until the VOC concentration is less than 10,000 ppmv VOC (or equivalent for non-VOCs). If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Route to control device during roof refloating if emissions from filling tanks without degassing and cleaning is > 5tpy. In this case, if controlling through fixed roof vent, route to control device during entire tank refill. New tanks must be designed to be drain dry with connections to control vapors under a landed roof. Commence under-roof degassing within 24 hours of landing. Degas every 24 hours unless no standing liquid in tank or vapor pressure of liquid in tank has a VOC partial pressure <0.02 psi.</p> <p>Floating roof tank landings at bulk gasoline terminals: May land roof without control for two landings per tank per year when required for Reid Vapor Pressure changes.</p> <p>Floating roof tank landing, change of service: May land roof without control for a change of service (incompatible liquids) if total site change of service tank landing emissions are less than 5 tpy.</p>	Yes	
TK60225	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	Tank storage storage of imported solvent authorized via NSR permit meets less than 0.5 psia. Alternative storage operations to store petroleum product with potential to have greater than 0.5 psia have been authorized under 106.263 (incorporated by reference).

Texas Commission on Environmental Quality
Form PI-1 General Application
BACT

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

FINs	Unit Type	Pollutant	Current Tier I BACT	Confirm	Additional Notes
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK60226	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK60285A	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK60285B	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	

Texas Commission on Environmental Quality
Form PI-1 General Application
BACT

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

FINs	Unit Type	Pollutant	Current Tier I BACT	Confirm	Additional Notes
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK60320	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK60321A	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK60321B	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	

Texas Commission on Environmental Quality
Form PI-1 General Application
BACT

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

FINs	Unit Type	Pollutant	Current Tier I BACT	Confirm	Additional Notes
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK60321C	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK60321A, B, and C CAP	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK60631	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	

Texas Commission on Environmental Quality
Form PI-1 General Application
BACT

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

FINs	Unit Type	Pollutant	Current Tier I BACT	Confirm	Additional Notes
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK60561	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK64305	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK68632A	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	

Texas Commission on Environmental Quality
Form PI-1 General Application
BACT

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

FINs	Unit Type	Pollutant	Current Tier I BACT	Confirm	Additional Notes
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
TK68784	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Fixed roof with submerged fill. Uninsulated exterior surfaces exposed to the sun shall be white or aluminum.	Yes	
		Acetone	See additional notes:	Yes	Tank white with submerged fill.
		MSS	Same as normal operation BACT requirements except as listed below. Fixed roof tank draining: VOC: Send liquid to a covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. Control device must meet BACT. Acid: Drain to covered vessel. If there is any standing liquid within the tank, and the tank is opened to the atmosphere or ventilated, the vapor stream must be controlled until there is no standing liquid or the acid vapor pressure is less than 0.02 psia. Control device must meet BACT.	No	Venting of material requiring control with vapor pressure > 0.5 psia will be controlled consistent with storage tank requirements for controlling tank vents.
FUGBIO4	Wastewater Facilities	VOC	Applicable for organics and inorganics. Uncontrolled site-wide wastewater emissions < 5 tpy VOC: Piped and covered conveyance to storage or biological treatment. Uncontrolled site-wide wastewater emissions > 5 tpy VOC: stripped gases from pretreatment routed to a control device, collection system hard piped/covered conveyance to biological treatment unit vented to a control device, wastewater treatment system must be at least 90 percent efficient.	No	Renewal of source, no change to source BACT identified in prior permit actions; calculation methodology updated since EPA Water 9 no longer recommended calculation tool
		Acetone	See additional notes:	No	Renewal of source, no change to source BACT identified in prior permit actions; calculation methodology updated since EPA Water 9 no longer recommended calculation tool
		MSS	Same as normal operation BACT requirements.	No	Renewal of source, no change to source BACT identified in prior permit actions; calculation methodology updated since EPA Water 9 no longer recommended calculation tool
TK60897	Wastewater Facilities	VOC	Applicable for organics and inorganics. Uncontrolled site-wide wastewater emissions < 5 tpy VOC: Piped and covered conveyance to storage or biological treatment. Uncontrolled site-wide wastewater emissions > 5 tpy VOC: stripped gases from pretreatment routed to a control device, collection system hard piped/covered conveyance to biological treatment unit vented to a control device, wastewater treatment system must be at least 90 percent efficient.	No	Renewal of source, no change to source BACT identified in prior permit actions; calculation methodology updated since EPA Water 9 no longer recommended calculation tool

Texas Commission on Environmental Quality
Form PI-1 General Application
BACT

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

FINs	Unit Type	Pollutant	Current Tier I BACT	Confirm	Additional Notes
		Acetone	See additional notes:	No	Renewal of source, no change to source BACT identified in prior permit actions; calculation methodology updated since EPA Water 9 no longer recommended calculation tool
		MSS	Same as normal operation BACT requirements.	No	Renewal of source, no change to source BACT identified in prior permit actions; calculation methodology updated since EPA Water 9 no longer recommended calculation tool
TK60898	Wastewater Facilities	VOC	Applicable for organics and inorganics. Uncontrolled site-wide wastewater emissions < 5 tpy VOC: Piped and covered conveyance to storage or biological treatment. Uncontrolled site-wide wastewater emissions > 5 tpy VOC: stripped gases from pretreatment routed to a control device, collection system hard piped/covered conveyance to biological treatment unit vented to a control device, wastewater treatment system must be at least 90 percent efficient.	No	Renewal of source, no change to source BACT identified in prior permit actions; calculation methodology updated since EPA Water 9 no longer recommended calculation tool
		Acetone	See additional notes:	No	Renewal of source, no change to source BACT identified in prior permit actions; calculation methodology updated since EPA Water 9 no longer recommended calculation tool
		MSS	Same as normal operation BACT requirements.	No	Renewal of source, no change to source BACT identified in prior permit actions; calculation methodology updated since EPA Water 9 no longer recommended calculation tool
TK68127	Wastewater Facilities	VOC	Applicable for organics and inorganics. Uncontrolled site-wide wastewater emissions < 5 tpy VOC: Piped and covered conveyance to storage or biological treatment. Uncontrolled site-wide wastewater emissions > 5 tpy VOC: stripped gases from pretreatment routed to a control device, collection system hard piped/covered conveyance to biological treatment unit vented to a control device, wastewater treatment system must be at least 90 percent efficient.	No	Renewal of source, no change to source BACT identified in prior permit actions; calculation methodology updated since EPA Water 9 no longer recommended calculation tool
		Acetone	See additional notes:	No	Renewal of source, no change to source BACT identified in prior permit actions; calculation methodology updated since EPA Water 9 no longer recommended calculation tool
		MSS	Same as normal operation BACT requirements.	No	Renewal of source, no change to source BACT identified in prior permit actions; calculation methodology updated since EPA Water 9 no longer recommended calculation tool
TK68128	Wastewater Facilities	VOC	Applicable for organics and inorganics. Uncontrolled site-wide wastewater emissions < 5 tpy VOC: Piped and covered conveyance to storage or biological treatment. Uncontrolled site-wide wastewater emissions > 5 tpy VOC: stripped gases from pretreatment routed to a control device, collection system hard piped/covered conveyance to biological treatment unit vented to a control device, wastewater treatment system must be at least 90 percent efficient.	No	Renewal of source, no change to source BACT identified in prior permit actions; calculation methodology updated since EPA Water 9 no longer recommended calculation tool
		Acetone	See additional notes:	No	Renewal of source, no change to source BACT identified in prior permit actions; calculation methodology updated since EPA Water 9 no longer recommended calculation tool
		MSS	Same as normal operation BACT requirements.	No	Renewal of source, no change to source BACT identified in prior permit actions; calculation methodology updated since EPA Water 9 no longer recommended calculation tool

Texas Commission on Environmental Quality
Form PI-1 General Application
BACT

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

FINs	Unit Type	Pollutant	Current Tier I BACT	Confirm	Additional Notes
Bioplant Cap	Wastewater Facilities	VOC	Applicable for organics and inorganics. Uncontrolled site-wide wastewater emissions < 5 tpy VOC: Piped and covered conveyance to storage or biological treatment. Uncontrolled site-wide wastewater emissions > 5 tpy VOC: stripped gases from pretreatment routed to a control device, collection system hard piped/covered conveyance to biological treatment unit vented to a control device, wastewater treatment system must be at least 90 percent efficient.	No	Renewal of source, no change to source BACT identified in prior permit actions; calculation methodology updated since EPA Water 9 no longer recommended calculation tool
		Acetone	See additional notes:	No	Renewal of source, no change to source BACT identified in prior permit actions; calculation methodology updated since EPA Water 9 no longer recommended calculation tool
		MSS	Same as normal operation BACT requirements.	No	Renewal of source, no change to source BACT identified in prior permit actions; calculation methodology updated since EPA Water 9 no longer recommended calculation tool
ECT68421	Cooling Tower	VOC	Non-contact design. Monthly monitoring of VOC in water per Appendix P or approved equivalent (assume all VOC stripped out). Repair identified leaks as soon as possible, but before next scheduled shutdown, or shutdown triggered by 0.08 ppmw cooling water VOC concentration.	Yes	
		PM	The emission reduction techniques for PM10 and PM2.5 will follow the technique for PM. Drift < 0.001% achieved by drift eliminators	Yes	
		Acetone	See additional notes:	Yes	Following BACT for VOC
		MSS	Same as normal operation BACT requirements.	Yes	
EF68154A/B	Control: Oxidizer: Thermal	VOC	99.9 DRE or 10 ppmv at 3% oxygen on exhaust VOC. Monitor chamber exit temperature, perform initial test. CEMS if > 10 tpy VOC emissions or if toxicity is a concern.	Yes	
		NOx	Low NOX burners (0.06 lb/MMBtu or less). Specify details.	Yes	No change in permit representation
		CO	See Additional Notes:	Yes	No change in permit representation
		PM	The emission reduction techniques for PM10 and PM2.5 will follow the technique for PM. See Additional Notes:	Yes	No change in permit representation
		SO2	See Additional Notes:	Yes	No change in permit representation
		Acetone	See additional notes:	Yes	No change in permit representation
		MSS	Same as normal operation BACT requirements.	Yes	

**Texas Commission on Environmental Quality
Form PI-1 General Application
Monitoring**

Date: 1/7/2021
Permit #: 2993
Company: Lyondell

Monitoring

This sheet provides the minimum acceptable requirements to demonstrate compliance through monitoring for each pollutant proposed to be emitted from each FIN. This sheet also includes measuring techniques for sources of significant emissions in the project.

Instructions:

1. The unit types listed under Unit Type (column B) include all new, modified, consolidated, and/or renewed sources as indicated on the "Unit Types - Emission Rates" sheet. Each new, modified, consolidated, and/or renewed source must address how compliance will be demonstrated.
2. The pollutants listed in Pollutant (column C) include the pollutants indicated on the "Unit Types - Emission Rates" sheet.

Monitoring (30 TAC § 116.111(a)(2)(G))

3. The minimum acceptable monitoring is automatically populated for each unit type and pollutant.
 - Additional monitoring may be required, particularly for Title V sources, and will be included in the NSR and/or Title V permits.
4. Fully expand the Minimum Monitoring Requirements (column D) by increasing the row heights so all text is visible. (Place the cursor on the bottom of the number line to the far left of the screen, click and drag downward until all text is visible.)
5. Review the monitoring and confirm that you will meet all representations listed on the sheet and any additional attachments by entering or selecting "Yes" in Confirm (column E).
6. Add additional notes as necessary in Additional Notes for Monitoring (column F), limited to 500 characters or fewer. Examples include the following:
 - Proposed monitoring for pollutants or units that list "See additional notes:";
 - Details requested in the populated data;
 - Alternative monitoring you are proposing; and
 - Any additional information relevant to the minimization of emissions.
7. Cap EPNs do not need monitoring (leave those rows blank).

Measurement of Emissions (30 TAC § 116.111(a)(2)(B))

Note: this section will be greyed out if this project does not require PSD or nonattainment review, as represented on the General sheet.

7. For each pollutant with a project increase **greater** than the PSD significant emission rate, select the proposed measurement technique using the dropdown (column G).
8. For each pollutant with a project increase **less** than the PSD significant emission rate: leave blank.
9. If selecting "other", provide details in Additional Notes for Measuring (column H).
10. You may also use the Additional Notes for Measuring (column H) to provide more details on a selection.

[Click here to return to Cover Sheet.](#)

Important Note: The permit holder shall maintain a copy of the permit along with records containing the information and data sufficient to demonstrate compliance with the permit, including production records and operating hours. All required records must be maintained in a file at the plant site. If, however, the facility normally operates unattended, records shall be maintained at the nearest staffed location within Texas specified in the application. The site must make the records available at the request of personnel from the commission or any air pollution control program having jurisdiction in a timely manner. The applicant must comply with any additional recordkeeping requirements specified in special conditions in the permit. All records must be retained in the file for at least two years following the date that the information or data is obtained. Some permits are required to maintain records for five years. [30 TAC § 116.115(b)(2)(E)]

FIN	Unit Type	Pollutant	Minimum Monitoring Requirements	Confirm	Additional Notes for Monitoring
PSM1DRTR	Process Vent	VOC	Production rate or flow as appropriate Monitoring consistent with Control Device	Yes	Representative process conditions monitored
COOL1	Cooling Tower	VOC	VOC concentration in the cooling water by TCEQ stripping method or approved equivalent monthly. Cooling water circulation rate measured hourly unless maximum circulation rate assumed.	Yes	

Texas Commission on Environmental Quality
Form PI-1 General Application
Monitoring

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

		PM	The emission monitoring techniques for PM10 and PM2.5 will follow the technique for PM. Cooling water circulation rate measured hourly unless maximum circulation rate assumed. Large (>50,000 gpm circulation rate): Total Dissolved Solids (TDS) in the cooling water daily then reduced to weekly and quarterly with daily conductivity measurement that is correlated. Small (<50,000 gpm circulation rate): Total Dissolved Solids (TDS) in the cooling water measured weekly.	No	Weekly sampling for TDS
F64170	Control: Oxidizer: Catalytic	VOC	Continuous Inlet and Exhaust Temperature monitoring and recorded as a six minute average. Waste gas flow monitor or operation record that provides flow by design.	No	Inlet and Exhaust temperature monitored; waste gas monitored or engineering knowledge used to determine flow.
		NOx	Waste gas flow monitor or operation record that provides flow by design.	Yes	
		SO2	Waste gas flow monitor or operation record that provides flow by design.	Yes	
		PM	The emission monitoring techniques for PM10 and PM2.5 will follow the technique for PM. Visible emissions check quarterly	Yes	
		CO	Waste gas flow monitor or operation record that provides flow by design.	Yes	
F65630	Heater	VOC	Continuously monitor the fuel firing rates. Periodic monitoring of fuel composition and heating value, if and when varied.	Yes	Monitor fuel flow rate for each fuel type
		Acetone	See additional notes:	Yes	Monitor fuel flow rate for each fuel type
		NOx	<100 MMBtu/hr: Continuously monitor the fuel firing rates. Periodic monitoring of fuel composition and heating value, if and when varied. Data used with stack testing results. ≥100 MMBtu/hr: Continuously monitor the fuel firing rates. Periodic monitoring of fuel composition and heating value, if and when varied. CEMS. Data collected four times per hour and averaged hourly.	Yes	Monitor fuel flow rate for each fuel type and NOx CEMS
		SO2	Continuously monitor the fuel firing rates. Periodic monitoring of fuel composition and heating value, if and when varied. SO2 and O2 CEMS if a major source. Refinery requires continuous monitoring of H2S in fuel, except where low sulfur content by design is established.	Yes	Monitor fuel flow rate for each fuel type

Texas Commission on Environmental Quality
Form PI-1 General Application
Monitoring

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

		PM	<p>The emission monitoring techniques for PM10 and PM2.5 will follow the technique for PM. Quarterly visible emission checks, followed by an opacity observation if visible emissions are observed.</p> <p>Continuously monitor the fuel firing rates. Periodic monitoring of fuel composition and heating value, if and when varied.</p>	Yes	Monitor fuel flow rate for each fuel type
		CO	<p><100 MMBtu/hr: Continuously monitor the fuel firing rates. Periodic monitoring of fuel composition and heating value, if and when varied. Data used with stack testing results.</p> <p>≥100 MMBtu/hr: Continuously monitor the fuel firing rates. Periodic monitoring of fuel composition and heating value, if and when varied. CEMS. Data collected four times per hour and averaged hourly.</p>	Yes	Monitor fuel flow rate for each fuel type and CO CEMS
FUGDW	Fugitives: Piping and Equipment Leak	VOC	<p>Use EPA Method 21 to monitor for leaks from seals on pumps, compressors, agitator and valve seals on piping components in light liquid and gas VOC service quarterly. Gas or hydraulic check new and a replaced connectors prior to returning to service, or monitor with Method 21 within 15 days of returning to service. Leak detection and repair (LDAR) Program 28M has a leak definition where repair action is required at 10,000 ppmv. LDAR Program 28 VHP has a leak definition where repair action is required at 500 ppmv for valves and connectors and 2000 ppmv for pumps, compressors and agitators. Check connectors weekly using audio, visual or olfactory (AVO) senses to observe leaks. Record results and corrective action taken.</p>	Yes	
FUGPOSM1	Fugitives: Piping and Equipment Leak	VOC	<p>Use EPA Method 21 to monitor for leaks from seals on pumps, compressors, agitator and valve seals on piping components in light liquid and gas VOC service quarterly. Gas or hydraulic check new and a replaced connectors prior to returning to service, or monitor with Method 21 within 15 days of returning to service. Leak detection and repair (LDAR) Program 28M has a leak definition where repair action is required at 10,000 ppmv. LDAR Program 28 VHP has a leak definition where repair action is required at 500 ppmv for valves and connectors and 2000 ppmv for pumps, compressors and agitators. Check connectors weekly using audio, visual or olfactory (AVO) senses to observe leaks. Record results and corrective action taken.</p>	Yes	

Texas Commission on Environmental Quality
Form PI-1 General Application
Monitoring

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

ANAPOSM1	Analyzer vent	VOC	See additional notes:	Yes	Records streams analyzed
LHASTRK	Loading: Truck	VOC	<p>Observation for connection leaks.</p> <p>Where vapor routed to control: copy of annual vapor tightness certification.</p> <p>Vacuum monitoring for 100% capture, not required for pressure vessel loading.</p> <p>Where specific liquids loaded and the maximum physical pumping rate of the system and maximum throughput for each liquid is specified: throughput of each liquid loaded.</p> <p>Where loading rate is operator controlled and/or specific liquid throughputs are variable: Timing and throughput, record of properties (temperature, vapor pressure and molecular weight) of each liquid loaded. Temperature of liquid loaded not required where liquids loaded from unheated tanks which receive liquids at or below ambient temperatures.</p> <p>Note: Records updated monthly, including 12 month rolling data.</p>	Yes	
LHASRL	Loading: Railcar	VOC	<p>Temperature and Hourly volume loaded for each product.</p> <p>Observation for connection leaks.</p> <p>Where vapor routed to control copy of annual vapor tightness certification.</p> <p>Vacuum monitoring for 100% capture, not required for pressure vessel loading.</p>	Yes	
HAS LD Cap	Loading: Truck	VOC	<p>Observation for connection leaks.</p> <p>Where vapor routed to control: copy of annual vapor tightness certification.</p> <p>Vacuum monitoring for 100% capture, not required for pressure vessel loading.</p> <p>Where specific liquids loaded and the maximum physical pumping rate of the system and maximum throughput for each liquid is specified: throughput of each liquid loaded.</p> <p>Where loading rate is operator controlled and/or specific liquid throughputs are variable: Timing and throughput, record of properties (temperature, vapor pressure and molecular weight) of each liquid loaded. Temperature of liquid loaded not required where liquids loaded from unheated tanks which receive liquids at or below ambient temperatures.</p> <p>Note: Records updated monthly, including 12 month rolling data.</p>	Yes	
LMBA	Loading: Truck	VOC	<p>Observation for connection leaks.</p> <p>Where vapor routed to control: copy of annual vapor tightness certification.</p>	Yes	

Texas Commission on Environmental Quality
Form PI-1 General Application
Monitoring

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

LPEA	Loading: Truck	VOC	Observation for connection leaks. Where vapor routed to control: copy of annual vapor tightness certification.	Yes	
LRFO635	Loading: Truck	VOC	Observation for connection leaks. Where vapor routed to control: copy of annual vapor tightness certification.	Yes	
LRFO637	Loading: Truck	VOC	Observation for connection leaks. Where vapor routed to control: copy of annual vapor tightness certification. Vacuum monitoring for 100% capture, not required for pressure vessel loading. Where specific liquids loaded and the maximum physical pumping rate of the system and maximum throughput for each liquid is specified: throughput of each liquid loaded. Where loading rate is operator controlled and/or specific liquid throughputs are variable: Timing and throughput, record of properties (temperature, vapor pressure and molecular weight) of each liquid loaded. Temperature of liquid loaded not required where liquids loaded from unheated tanks which receive liquids at or below ambient temperatures. Note: Records updated monthly, including 12 month rolling data.	Yes	
FL68910	Control: Flare	VOC	Pilot flame presence monitored continuously. Waste gas flow and composition monitored continuously (measured at the instrument's capability or every 15 minutes, which ever is less), with hourly averages recorded. A Btu analyzer may be substituted for the composition analyzer where the composition is understood.	No	Monitor pilot flame,waste gas flow and use period sampling to determine heat content.
		NOx	Pilot flame presence monitored continuously. Waste gas flow and composition monitored continuously (measured at the instrument's capability or every 15 minutes, which ever is less), with hourly averages recorded. A Btu analyzer may be substituted for the composition analyzer where the composition is understood.	No	
		CO	Pilot flame presence monitored continuously. Waste gas flow and composition monitored continuously (measured at the instrument's capability or every 15 minutes, which ever is less), with hourly averages recorded. A Btu analyzer may be substituted for the composition analyzer where the composition is understood.	No	
		SO2	Pilot flame presence monitored continuously. Waste gas flow and composition monitored continuously (measured at the instrument's capability or every 15 minutes, which ever is less), with hourly averages recorded. A Btu analyzer may be substituted for the composition analyzer where the composition is understood.	Yes	
		Acetone	See additional notes:	Yes	

Texas Commission on Environmental Quality
Form PI-1 General Application
Monitoring

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

D6312A	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
D6312B	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK6802	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK60001	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK60003	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK60004	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK60005	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK60006	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK60220	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK60221	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK60223	Storage Tank (4): Floating roof with TVP < 11.0 psia	VOC	Monitor and record throughput by material stored to record a monthly average. Monitor and record the monthly average temperature for each material stored if material or tank is heated.	Yes	

Texas Commission on Environmental Quality
Form PI-1 General Application
Monitoring

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

TK60225	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK60226	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK60285A	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK60285B	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK60320	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK60321A	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK60321B	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK60321C	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK60321A, B, and	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK60631	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	

Texas Commission on Environmental Quality
Form PI-1 General Application
Monitoring

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

TK60561	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK64305	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK68632A	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
TK68784	Storage Tank (1): Fixed roof with capacity < 25,000 gal or TVP < 0.50 psia	VOC	Stored material and throughput	Yes	
		Acetone	See additional notes:	Yes	Stored material and throughput
FUGBIO4	Wastewater Facilities	VOC	Daily Flow into treatment plant. Quarterly AVO check of water seal where site wastewater emissions >5tpy For Activated Sludge Biological Treatment, daily mixed liquor suspended solids (MLSS) Monthly wastewater concentration of all air contaminants entering treatment plant.	Yes	
		Acetone	See additional notes:	Yes	daily flow into treatment plant
TK60897	Wastewater Facilities	VOC	Daily Flow into treatment plant. Quarterly AVO check of water seal where site wastewater emissions	Yes	
		Acetone	See additional notes:	Yes	daily flow into treatment plant
TK60898	Wastewater Facilities	VOC	Daily Flow into treatment plant. Quarterly AVO check of water seal where site wastewater emissions	Yes	
		Acetone	See additional notes:	Yes	daily flow into treatment plant
TK68127	Wastewater Facilities	VOC	Daily Flow into treatment plant. Quarterly AVO check of water seal where site wastewater emissions	Yes	
		Acetone	See additional notes:	Yes	daily flow into treatment plant
TK68128	Wastewater Facilities	VOC	Daily Flow into treatment plant. Quarterly AVO check of water seal where site wastewater emissions	Yes	
		Acetone	See additional notes:	Yes	daily flow into treatment plant
Bioplant Cap	Wastewater Facilities	VOC	Daily Flow into treatment plant. Quarterly AVO check of water seal where site wastewater emissions		
		Acetone	See additional notes:	Yes	daily flow into treatment plant
ECT68421	Cooling Tower	VOC	VOC concentration in the cooling water by TCEQ stripping method or approved equivalent monthly. Cooling water circulation rate measured hourly unless maximum circulation rate assumed.	Yes	

Texas Commission on Environmental Quality
Form PI-1 General Application
Monitoring

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

		PM	The emission monitoring techniques for PM10 and PM2.5 will follow the technique for PM. Cooling water circulation rate measured hourly unless maximum circulation rate assumed. Large (>50,000 gpm circulation rate): Total Dissolved Solids (TDS) in the cooling water daily then reduced to weekly and quarterly with daily conductivity measurement that is correlated. Small (<50,000 gpm circulation rate): Total Dissolved Solids (TDS) in the cooling water measured weekly.	Yes	
		Acetone	See additional notes:	Yes	Concentration and circulation rate
EF68154A/B	Control: Oxidizer: Thermal	VOC	Continuous Exhaust Temperature and Oxygen concentration monitoring and recorded as a six minute average. Waste gas flow monitor or operation record that provides flow by design.	No	Temperature and waste gas flow monitored
		NOx	Waste gas flow monitor or operation record that provides flow by design.	Yes	
		CO	Waste gas flow monitor or operation record that provides flow by design.	Yes	
		PM	The emission monitoring techniques for PM10 and PM2.5 will follow the technique for PM. Visible emissions check quarterly	Yes	
		SO2	Waste gas flow monitor or operation record that provides flow by design.	Yes	
		Acetone	See additional notes:	Yes	Temperature and waste gas flow monitored

Texas Commission on Environmental Quality
Form PI-1 General Application
Materials

Date: 1/7/2021
 Permit #: 2993
 Company: Lyondell

Item	How submitted	Date submitted
A. Administrative Information		
Form PI-1 General Application	Email	
Hard copy of the General sheet with original (ink) signature	Mail	
Professional Engineer Seal	Not applicable	
B. General Information		
Copy of current permit (both Special Conditions and MAERT)		
Core Data Form		
Area map	Mail	
Plot plan	Mail	
Process description	Mail	
Process flow diagram	Mail	
List of MSS activities		
State regulatory requirements discussion	Mail	
C. Federal Applicability		
Summary and project emission increase determination - Tables 1F and 2F	Not applicable	
Netting analysis (if required) - Tables 3F and 4F as needed		
D. Technical Information		
BACT discussion, if additional details are attached	Mail	
Monitoring information, if additional details are attached	Not applicable	
Material Balance (if applicable)	Email	
Calculations	Email	
E. Impacts Analysis		
Qualitative impacts analysis	Mail	
MERA analysis	Mail	
Electronic Modeling Evaluation Workbook: SCREEN3	Not applicable	
Electronic Modeling Evaluation Workbook: NonSCREEN3	Email	
PSD modeling protocol	Not applicable	
F. Additional Attachments		



MEMORANDUM

To: Mr. Mason Green, Lyondell
Cc:
From: Mr. Michael Meister, Trinity Consultants
Date: January 12, 2021
**RE: Lyondell Chemical Company – Channelview Site
Air Quality Analysis, TCEQ Permit No. 2993**

LyondellBasell owns and operates a chemical manufacturing complex (Channelview Site) located in Channelview, Harris County, Texas. The Channelview Site is broken up into two operating areas and each area operates under a unique TCEQ Regulated Entity Number (RN) and Customer Number (CN):

- North Plant operated by Equistar Chemicals, L.P. (RN100542281, CN600124705), and
- South Plant operated by Lyondell Chemical Company (RN100633650, CN600344402).

For the purpose of federal regulatory applicability, the North and South Plants are contiguous and under common control and considered as one site under LyondellBasell. The combined Channelview Site is an existing major source, located in the Houston-Galveston-Brazoria (HGB) area.

Lyondell Chemical Company (Lyondell) is concurrently submitting an application to amend and renew Permit No. 2993, which authorizes air emissions from Lyondell's POSM I Unit at the Channelview Complex. The amendment/renewal package includes a request for increases in emissions of criteria pollutants and speciated non-criteria pollutants, including volatile organic compounds (VOCs).

This memorandum, which supplements the concurrently submitted Electronic Modeling Evaluation Workbook (EMEW), model input and output files, and other supporting documentation, contains the following:

- Modeled emissions inventory discussion;
- Area map;
- Plot plan;
- Urban dispersion option discussion; and
- Single Property Line Designation (SPLD) discussion;

1. MODELED EMISSIONS INVENTORY

Modeled Emissions Rates Determination

The emission calculations for the pollutants under evaluation are based on the following techniques and assumptions:

- The conversion from NO_x emission rates to modeled NO₂ emission rates was accomplished using the Tier 2 Ambient Ratio Method (ARM2).
- Cooling tower emissions (EPN COOL1) are split into fourteen (14) point sources (Model IDs COOL1_1 through COOL1_14) to represent the bank of 14 cells that comprise the POSM1 cooling tower. Accordingly, all modeled emissions associated with EPN COOL1 are divided evenly among the 14 point sources.
- The POSM I Unit Bio Plant sources (Source IDs TK60987, TK60898, TK68127, TK68128, and EFUGBIO4) are proposed to operate in four different configurations. In the site-wide modeling analysis for propylene oxide (PO) and alpha-methylbenzyl alcohol (MBA) conducted under MERA Step 7, each configuration was evaluated separately as shown in Table 1-1 in Attachment 1. Since either EQ tank (Source IDs TK60987 and TK60898) can be the first EQ tank in series, the higher emissions between the two EQ tanks for a given configuration are assigned to the tank with the higher unit impact as determined by the UIM modeling analysis conducted for MERA Step 3. Similarly, the higher emissions between the two aeration tanks (Source IDs TK68127 and TK68128) are assigned to the tank with the higher unit impact as determined by the UIM modeling analysis.
- Only one styrene test tank (Source IDs TK60321A, TK60321B, and TK60321C) can be filled at a time. The source with the maximum off-property impact, as determined by the UIM modeling analysis, was included in the site-wide modeling analysis of PO and MBA.
- Area source emissions were determined by dividing the source emission rate (g/s) by the total area covered by the sources (m²).

Modeled Receptor Grids for Determining the Maximally Impacted Non-Industrial Receptor

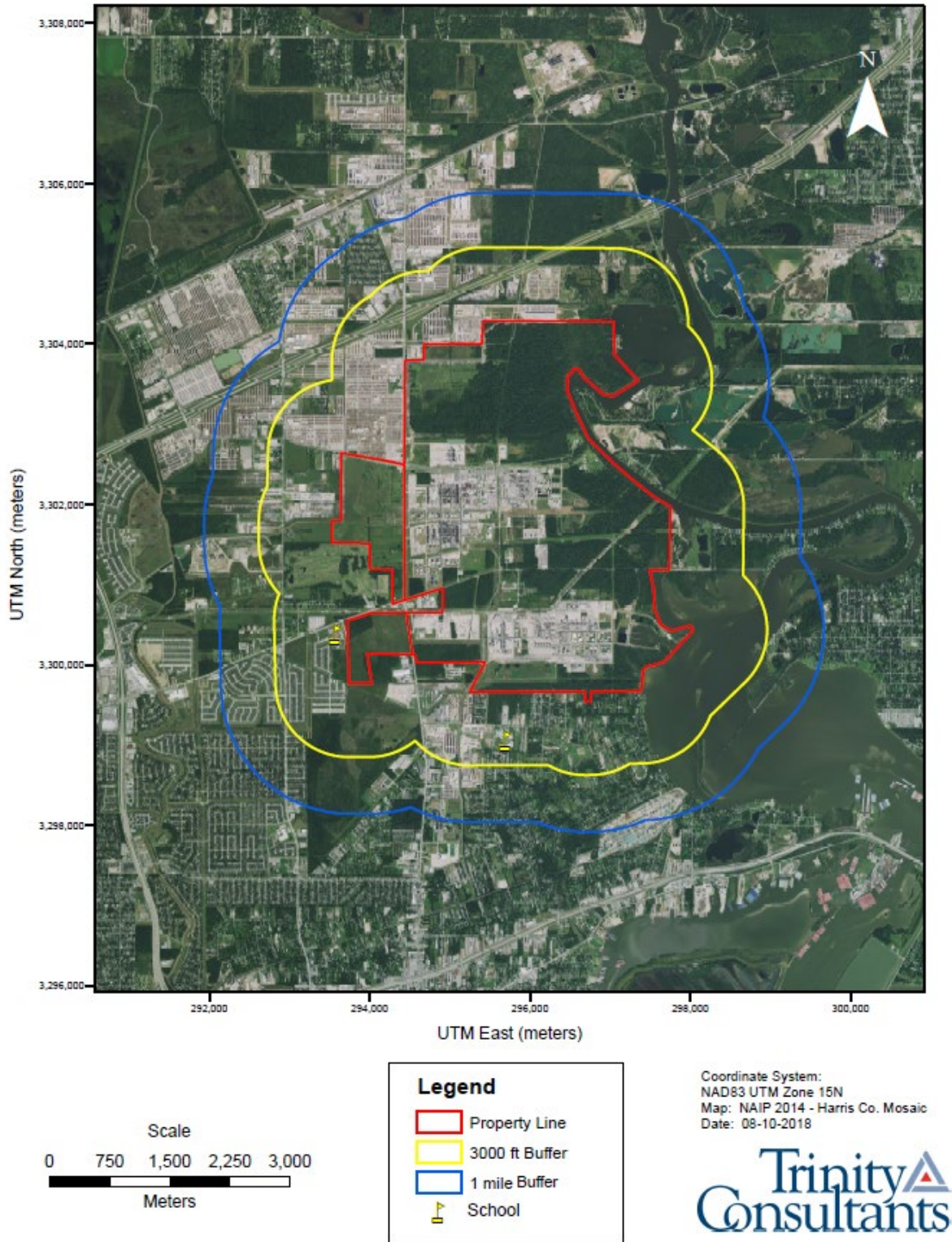
The maximum modeled ground-level concentrations (GLC_{max}) of PO and MBA occur at industrial-zoned receptors. To determine the maximally impacted non-industrial receptor (GLC_{ni}) for each compound, a subset of the receptor grids documented in the EMEW consisting of only non-industrial receptors was modeled in a separate series of model runs denoted by "NI" in the model input and output files.

2. AREA MAP

An area map of the Lyondell Channelview Site property used for federal modeling analyses, overlaid onto recent aerial imagery, is provided as Figure 1. As noted in Section 5, the Channelview Site is under an SPLD. Accordingly, when state modeling analyses (i.e., state health effects modeling) are conducted,

receptors placed over EIF Channelview Cogeneration, LLC are removed. Figure 2 depicts the property boundaries used for the criteria pollutant modeling analyses associated with this project. The area maps depict the property line with respect to the surrounding topography and predominant geographic features (such as highways, roads, streams, railroads, etc.)

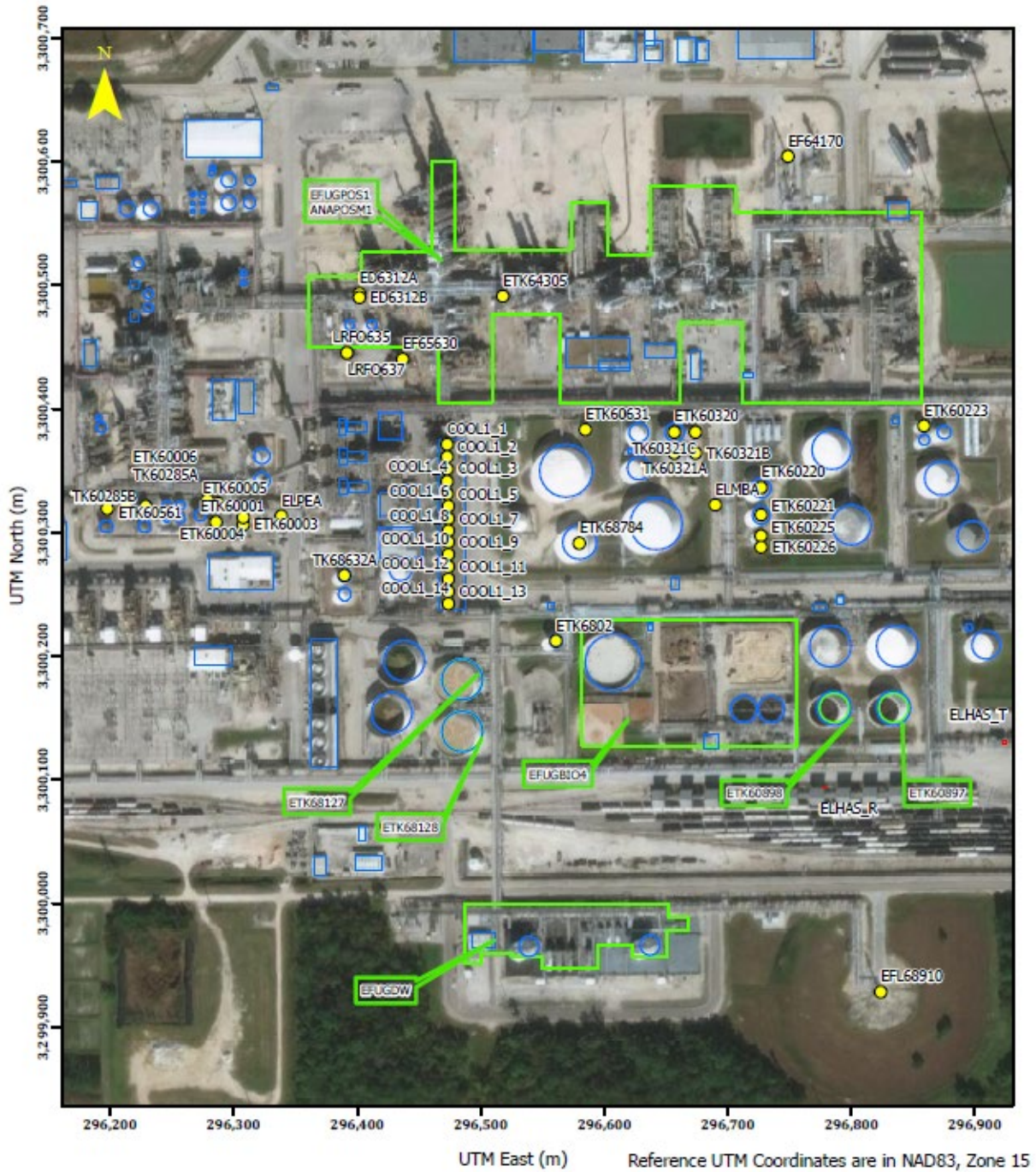
Figure 1. Lyondell Channelview Site Area Map



3. PLOT PLAN

A complete plot plan depicting the locations of the Channelview Site modeled sources, building structures, and property line is provided in Figures 2 through 20. Figure 2 shows the modeled project-related sources included in the Significance Analysis and the State Health Effects Analysis MERA Step 3. Figure 3 shows an overview of the locations of sources included in the MERA site-wide modeling of PO and MBA. Figures 4 through 8 provide detailed plots of site-wide PO and MBA sources. Figures 9 through 20 show the buildings at the Channelview Site.

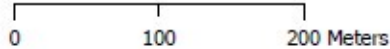
Figure 2. Project Source Locations



UTM East (m) Reference UTM Coordinates are in NAD83, Zone 15

Legend

Point Source	Volume Source
Area Source	Building



January 2021



Figure 3. Site-wide Source Locations - Overview

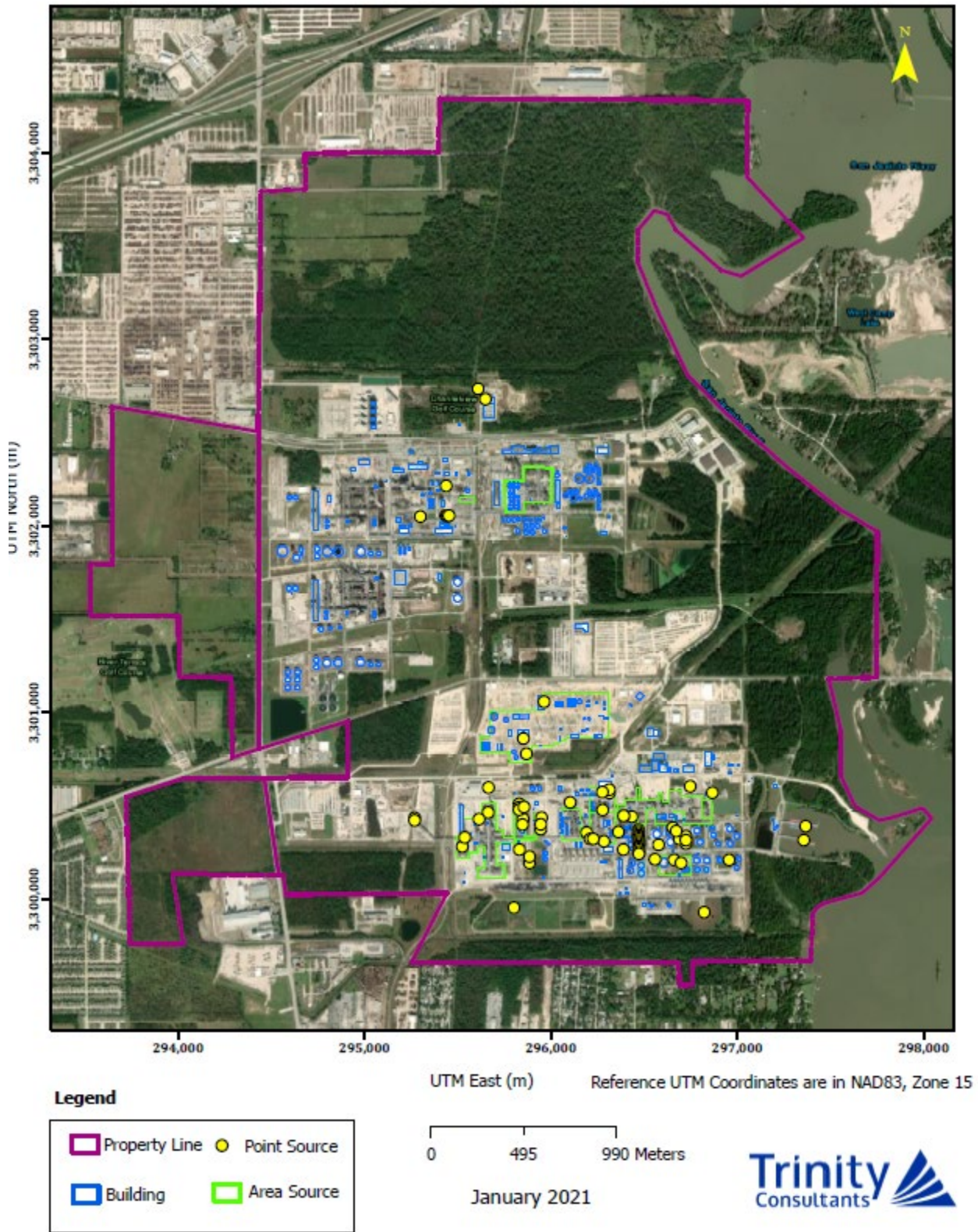


Figure 4. Site-wide Source Locations – Detail

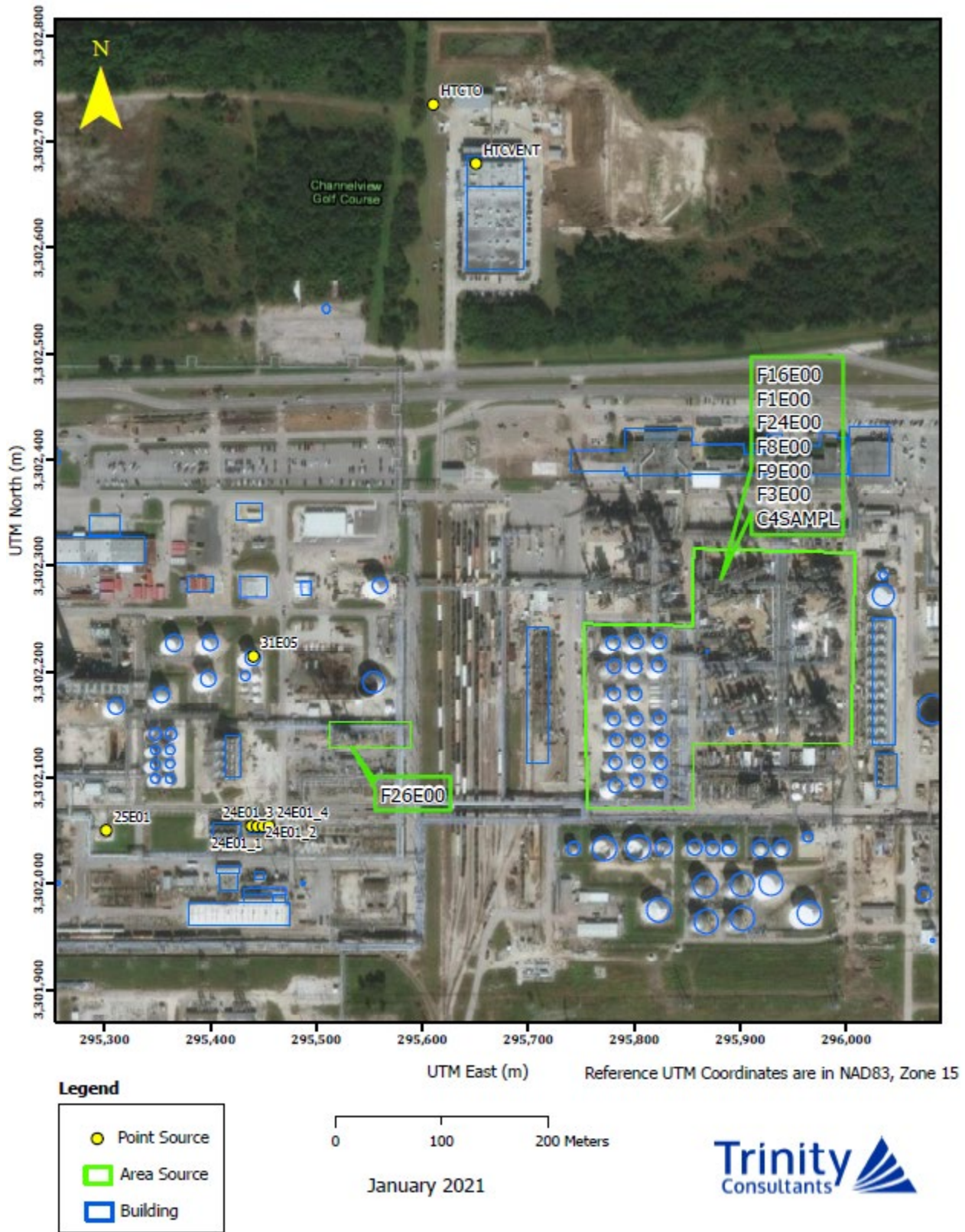


Figure 5. Site-wide Source Locations – Detail 2

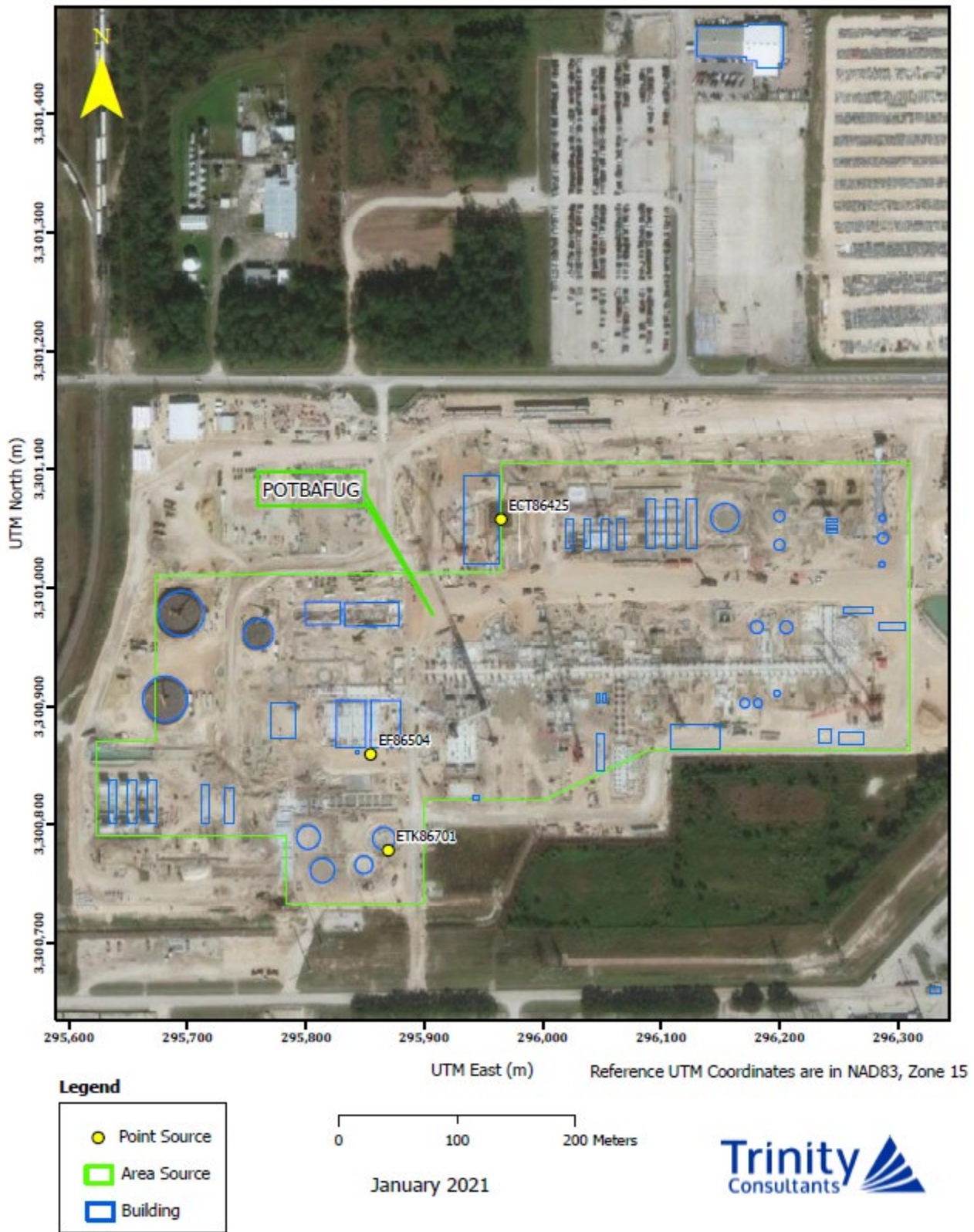
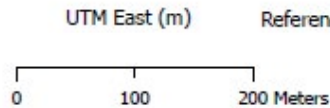


Figure 6. Site-wide Source Locations – Detail 3



Legend

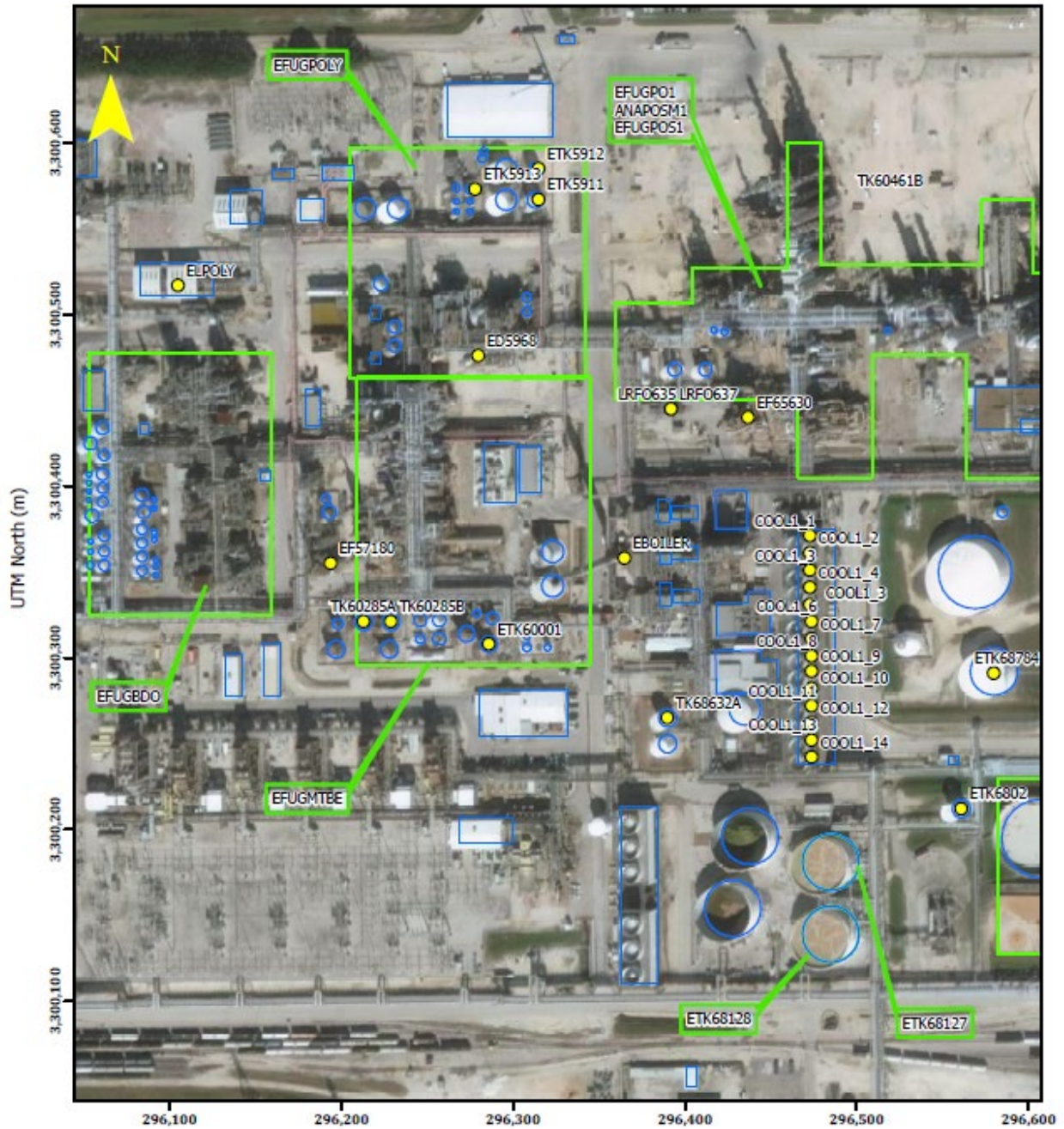
Point Source	Area Source
Property Line	Building



January 2021



Figure 7. Site-wide Source Locations – Detail 4

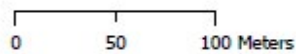


Legend

- Point Source
- Area Source
- Building

UTM East (m)

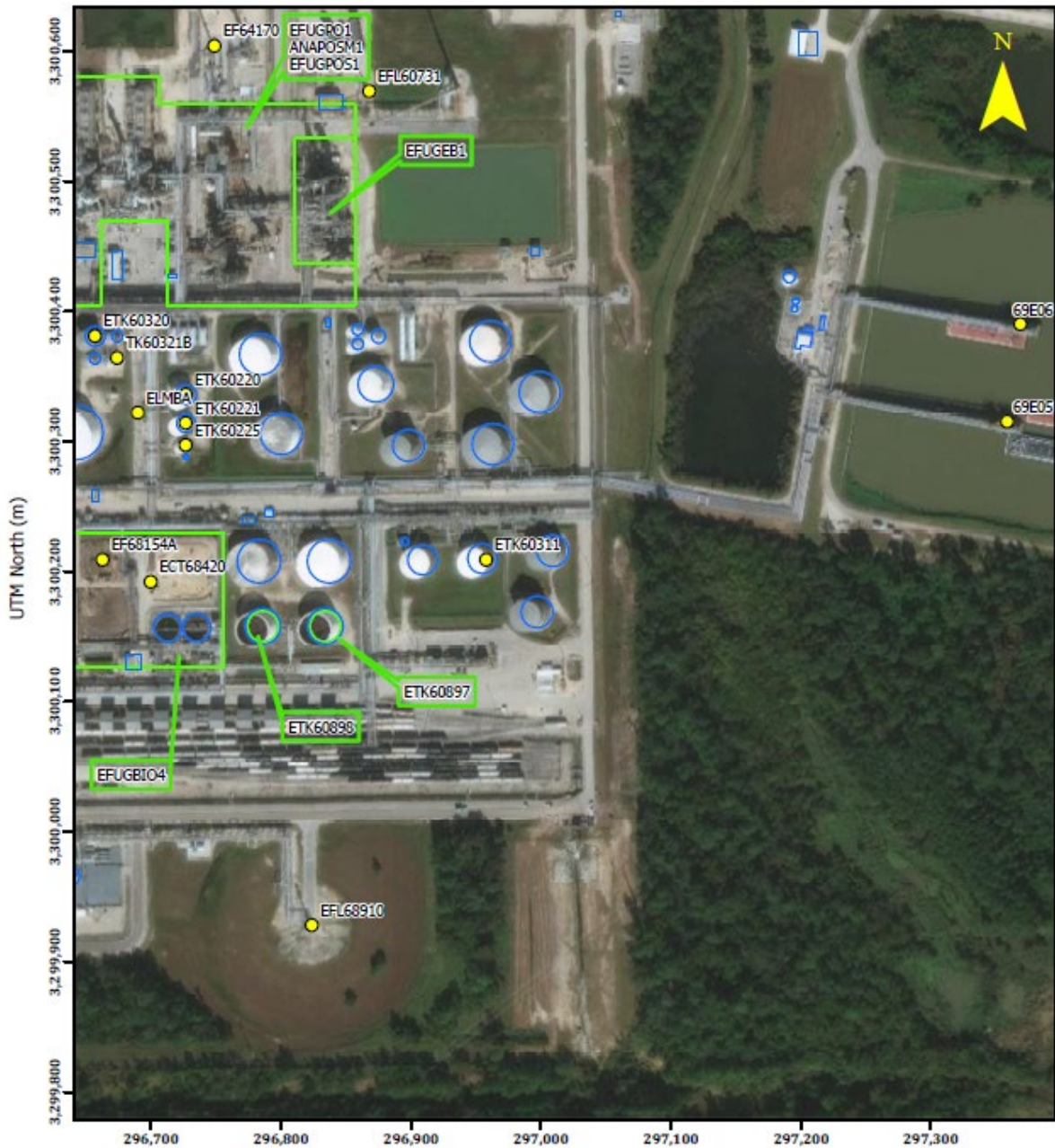
Reference UTM Coordinates are in NAD83, Zone 15



January 2021



Figure 8. Site-wide Source Locations – Detail 5

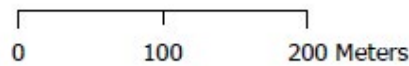


Legend

- Point Source
- Area Source
- Building

UTM East (m)

Reference UTM Coordinates are in NAD83, Zone 15



January 2021



Figure 9. Site-wide Buildings – Detail



Figure 10. Site-wide Buildings – Detail 2



Figure 12. Site-wide Buildings – Detail 4

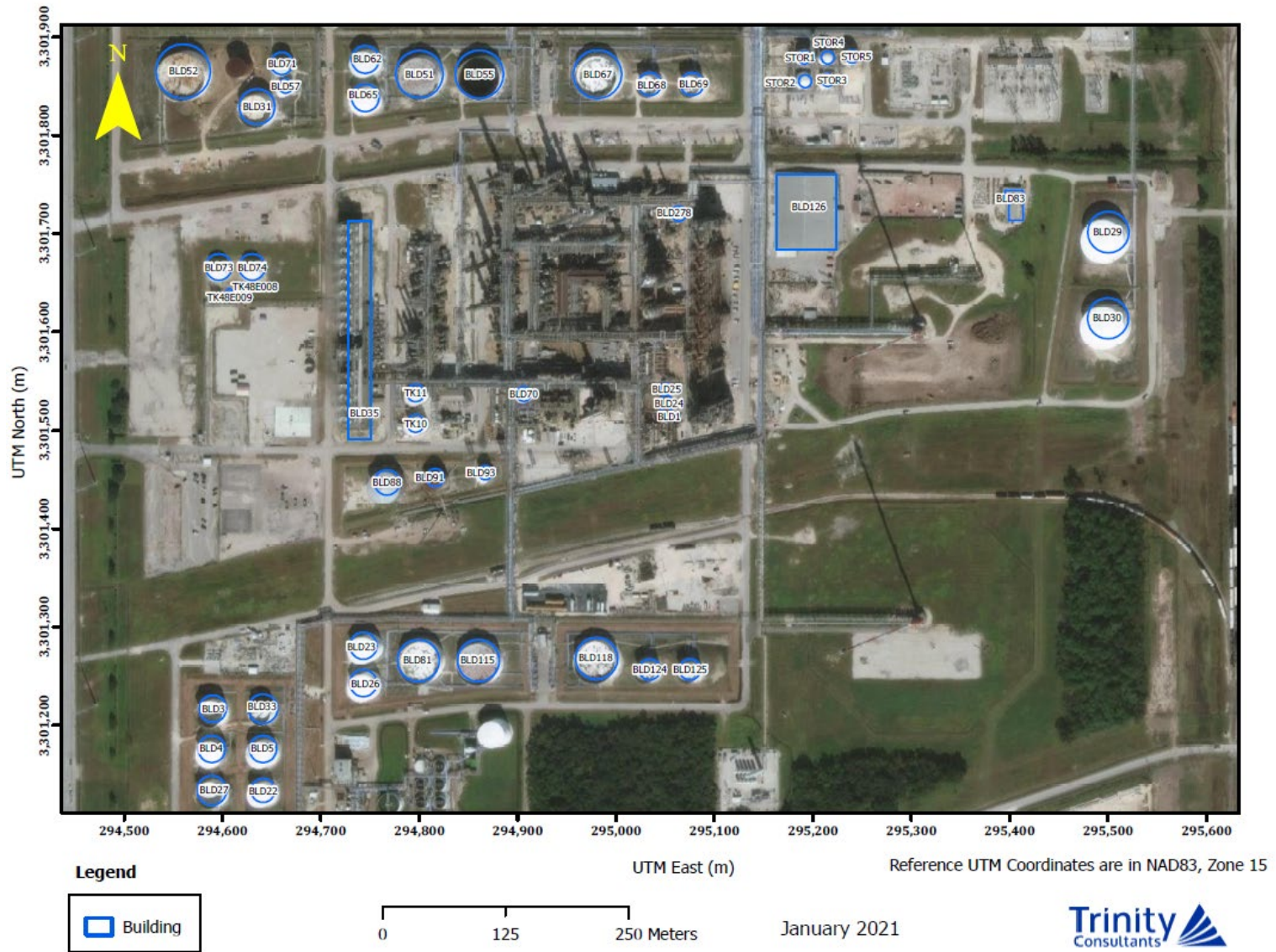


Figure 13. Site-wide Buildings – Detail 5

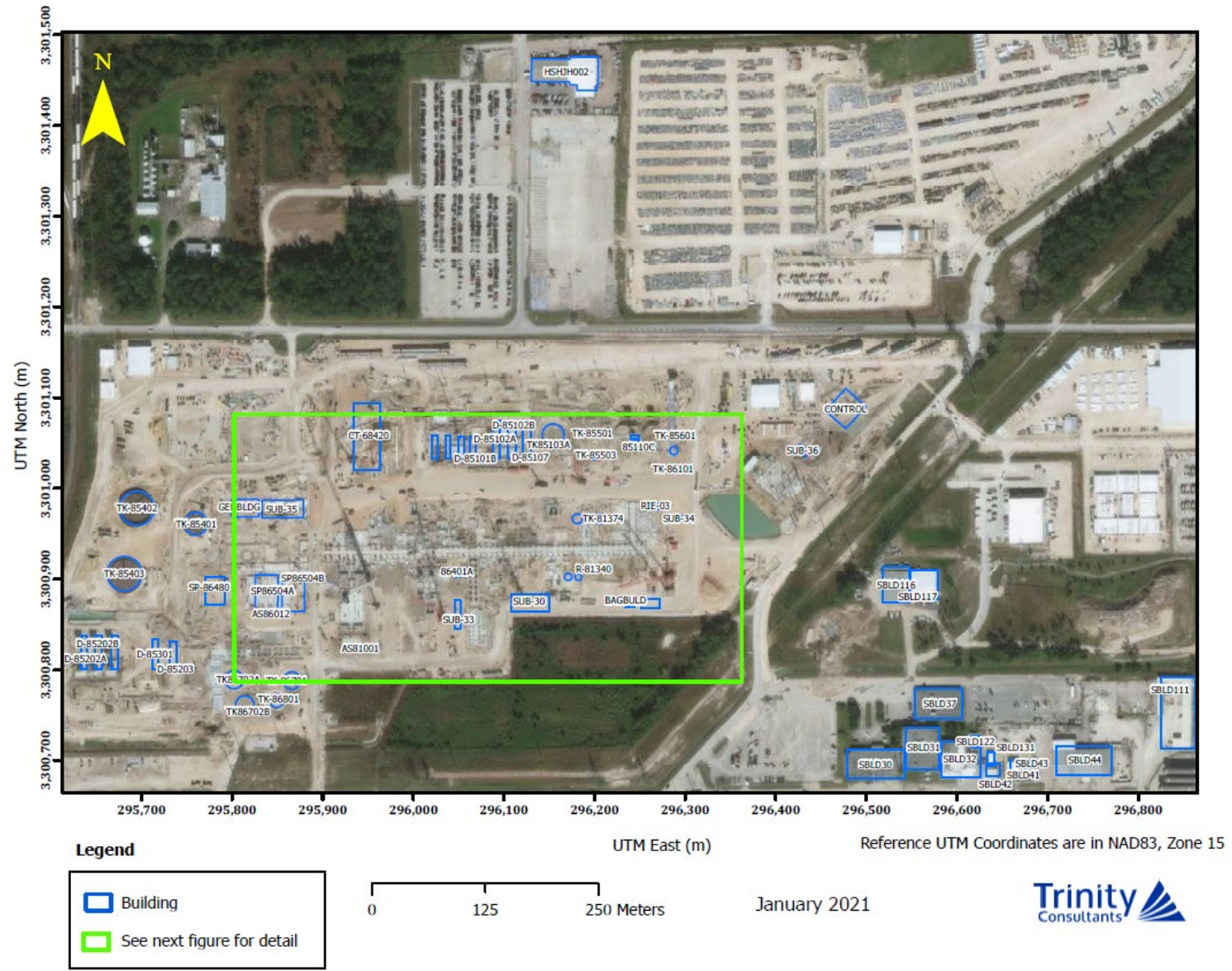


Figure 14. Site-wide Buildings – Detail 6

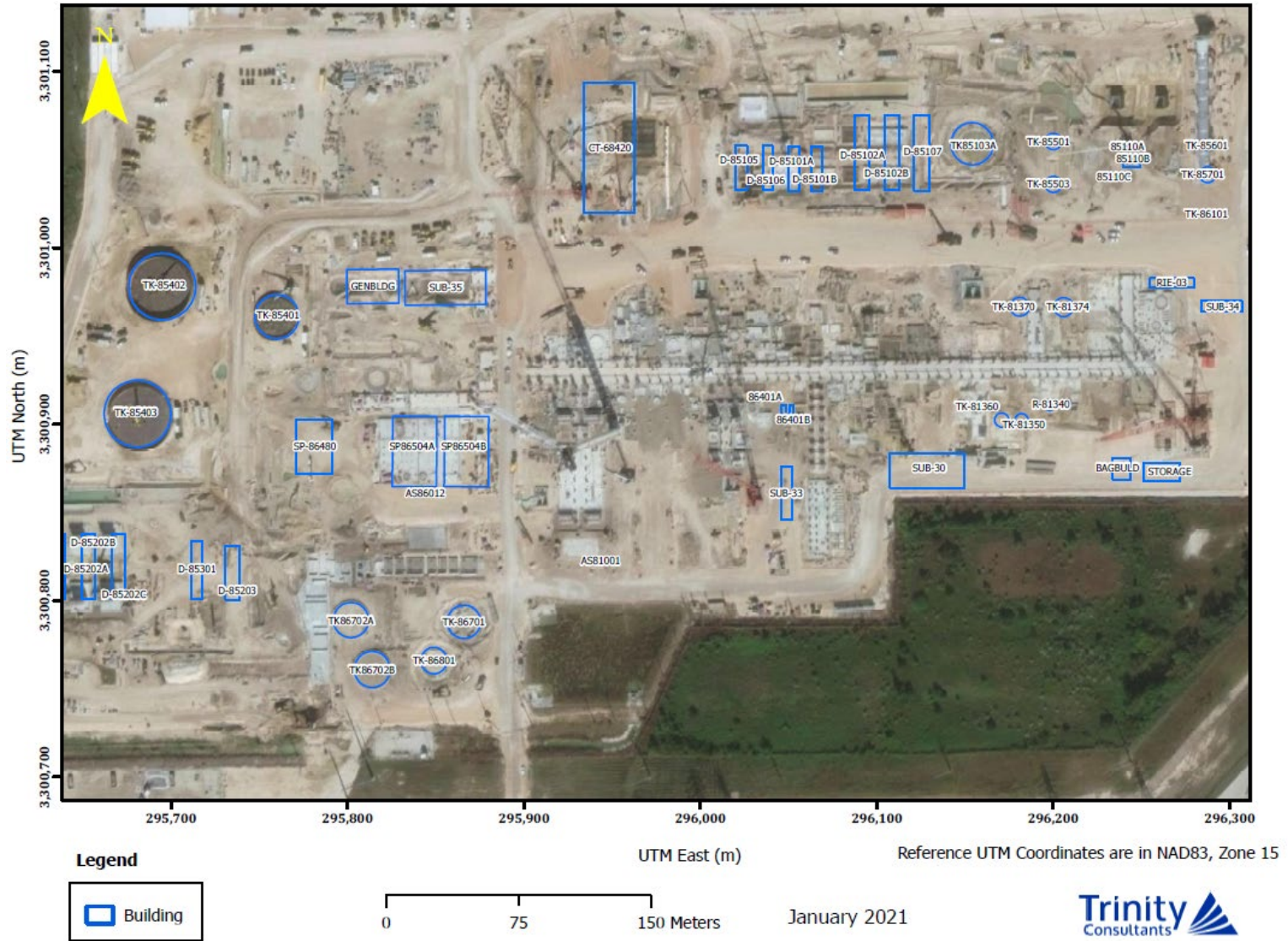


Figure 15. Site-wide Buildings – Detail 7

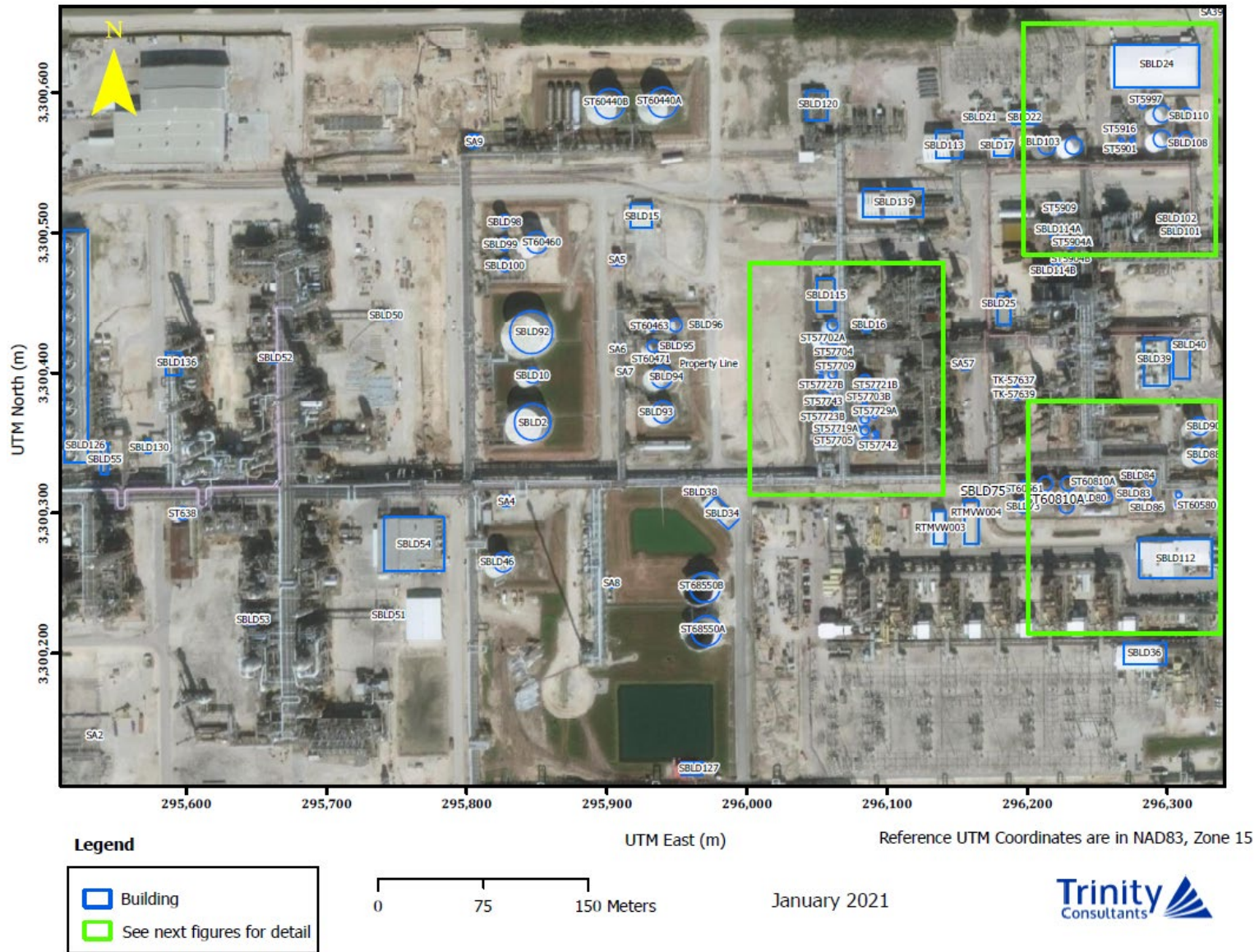


Figure 16. Site-wide Buildings – Detail 8



Figure 17. Site-wide Buildings – Detail 9



Figure 18. Site-wide Buildings – Detail 10



Figure 19. Site-wide Buildings – Detail 11

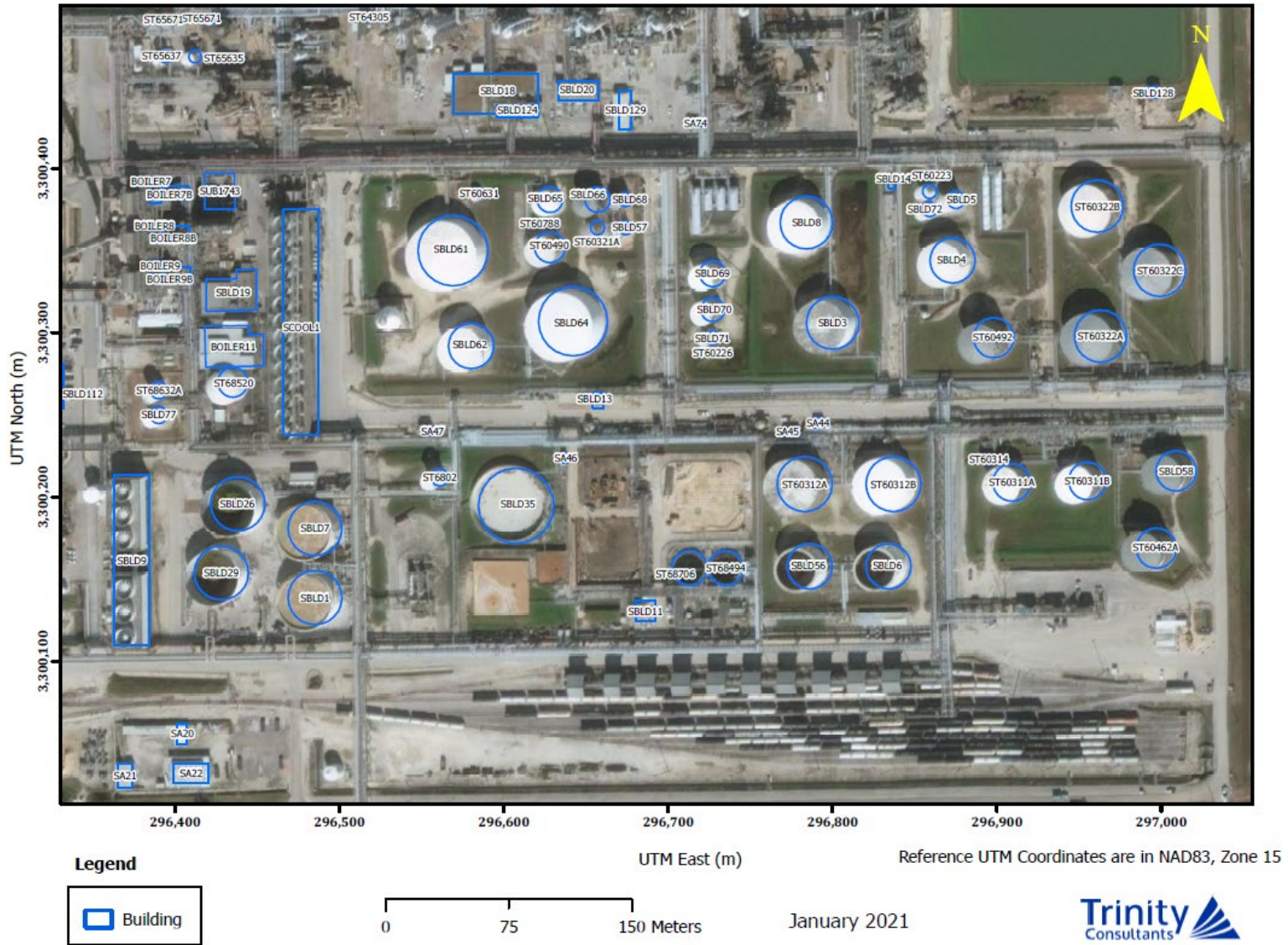


Figure 20. Site-wide Buildings – Detail 12



4. URBAN DISPERSION OPTION

Since the Channelview Site is located east of the Houston metropolitan area and within the Houston-The Woodlands-Sugarland Metropolitan Statistical Area (MSA), Equistar used the urban dispersion option for AERMOD in the modeling analysis to include the urban heat island effect.

Section 5.1 of the *AERMOD Implementation Guide* notes that the urban heat island “is not a localized effect, but is more regional in character”.¹ Further, according to Section 5.2 of the *AERMOD Implementation Guide*, “For urban areas adjacent to or near other urban areas, or part of urban corridors, the user should attempt to identify that part of the urban area that will contribute to the urban heat island plume affecting the source(s). If this approach results in the identification of clearly defined MSAs, then census data may be used as above to determine the appropriate population for input to AERMOD.”²

The Channelview Site and the entirety of the receptor grid (i.e., the “modeling domain”) is contained within a radius of approximately 19.8-km. This is shown below in Figure 13. Therefore, a 19.8-km radius around the site is an appropriate measure to use when estimating the population of the modeled area. This area is also shown projected onto satellite imagery in Figure 14. This map outlines the census tracts located within the modeled area, which can be used to estimate the population density within the modeled area.

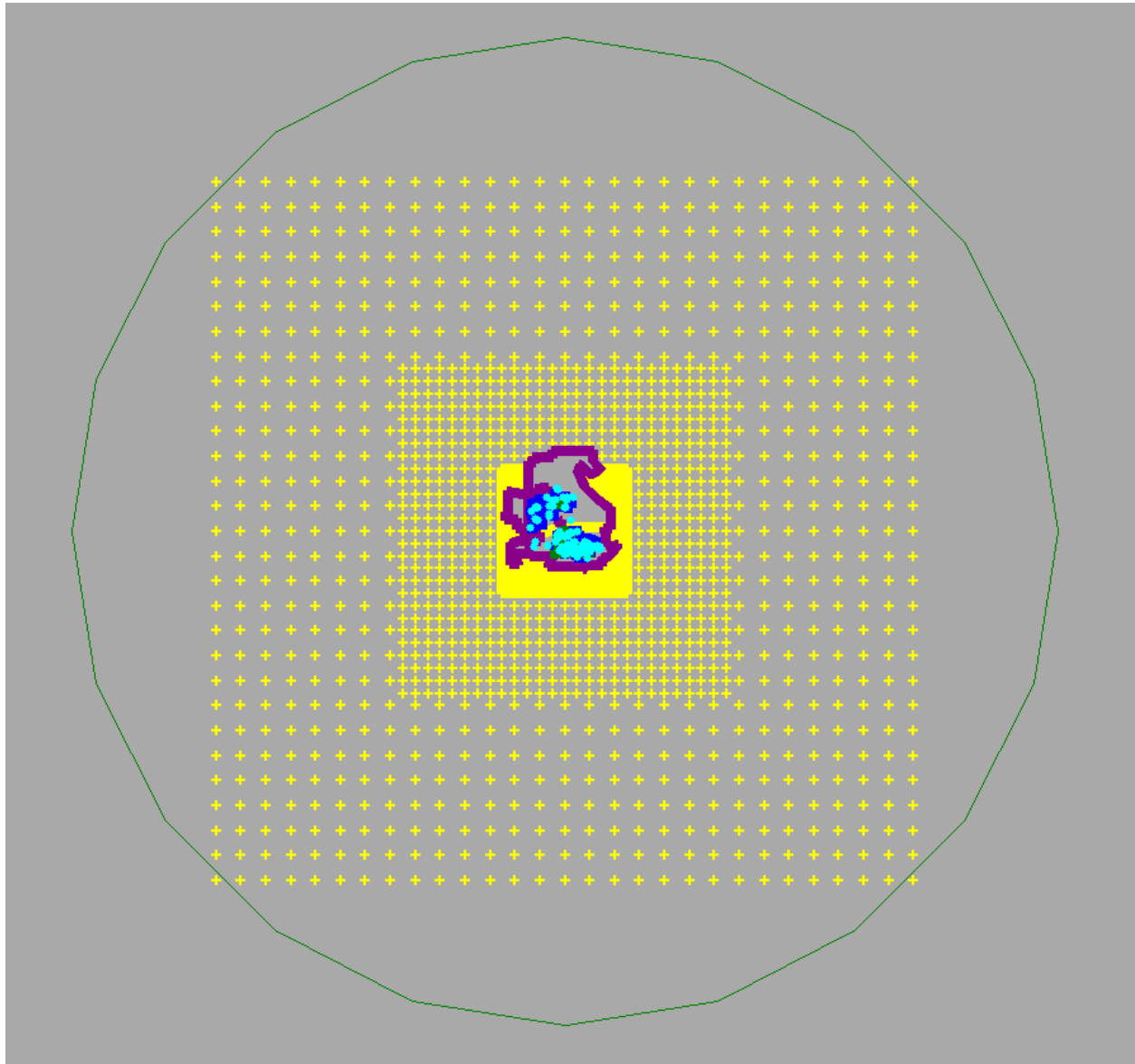
The census tracts identified within the 19.8-km radius are listed in Table 3-1 in Attachment 3 of this report. The total population and area of each census tract are obtained from United States Census data. The area within the modeling domain is estimated by tracing the outline of the census tract out to the edge of the radius. This area for each tract is calculated using the intersect tool in ArcGIS. For census tracts that are clearly completely contained within the radius, e.g., 2522, 2526, 2529, etc., the entire area is taken. The area within the modeling domain for each census tract is divided by the total area of the census tract to determine the percent of each census tract within the modeling domain. This percentage is multiplied by the respective total population of each census tract to determine the population of each census tract within the modeling domain, assuming an even distribution of people within each tract. The total population within the modeling domain is then estimated by summing the population within the modeling domain for each tract.

The population within the modeling domain is estimated to be 652,963 people. This method and estimate can be validated by the Missouri Census Data Center estimation of the population within the modeling domain. Similar to the method described above, this application works by breaking down an area of set radius around a central point (the Channelview Site in this case) into smaller areas, specifically census block groups or county subdivision levels. The census data of the small areas is then aggregated to estimate the population. In this case, the Missouri Census Data Center estimates the model domain population to be 622,304 people, based on 2010 census data. The Missouri Census data is provided in Attachment 3.

¹ AERMOD Implementation Guide, http://www.epa.gov/ttn/scram/7thconf/aermod/aermod_implmntn_guide_3August2015.pdf. Accessed in August 2015.

² *Ibid.*

Figure 13. Modeled Sources and Receptors within 19.8-km Radius of Channelview Site



5. SINGLE PROPERTY LINE DESIGNATION

The Channelview Site includes an SPLD consisting of Equistar Chemicals, LP, Lyondell Chemical Company (both owned and managed by LyondellBasell and are thus considered to be under common control), and EIF Channelview Cogeneration, LLC (RN100220276), which is referenced in the October 6, 2000 SPLD document under its former name, Reliant Energy Channelview. Additionally, Optim Energy Altura Cogen (Altura, RN100210863) leases property from Lyondell. As Lyondell maintains control of all property surrounding Altura and employees of Altura must access the property through a Lyondell-controlled gate, Lyondell considers that this property does not meet the definition of “ambient air” per the provisions of the U.S. EPA memo titled, “Interpretation of ‘Ambient Air’ in Situations Involving Leased Land Under the Regulations for Prevention of Significant Deterioration (PSD)”, dated June 22, 2007, as follows:

“When two (or more) companies operate separate sources on property owned by one company and leased in part to the other, and the lessor retains control over public access to the entire property and actually maintains a physical barrier around it to preclude public access:

- *The air over the entire property (including the leased portion) is not ambient air to the lessor.*
- *The air over the non-leased portion of the property is ambient air to the lessee*
- *The air over the leased portion is ambient air to the lessee unless the lessee undertakes its own separate action to preclude public access.”*

Copies of the October 6, 2000 SPLD document and June 22, 2007 U.S. EPA memo are included in Attachment 3.

Attachment 1. POSM I Bio Plant Emissions Documentation

Table 1-1. POSM I Bio Plant Source Emissions by Operational Scenario

EPN	FIN	Source ID	Source Description	Scenario description	alpha-METHYLBENZYL ALCOHOL		PROPYLENE OXIDE		Area (m ²)
					(lb/hr)	(g/s-m ²)	(lb/hr)	(g/s-m ²)	
EFUGBIO4	FUGBIO4	EFUGBIO4	AB4 Fugitives Bioplant	Bioplant Scenario 1 - Full Bioplant Operation	1.941E-02	1.379E-07	3.935E-01	2.794E-06	17,740.59
EFUGBIO4	FUGBIO4	EFUGBIO4	AB4 Fugitives Bioplant	Bioplant Scenario 2 - One Equalization tank down	1.957E-02	1.390E-07	3.973E-01	2.822E-06	
EFUGBIO4	FUGBIO4	EFUGBIO4	AB4 Fugitives Bioplant	Bioplant Scenario 3 - One Aeration tank down	2.647E-02	1.880E-07	5.699E-01	4.048E-06	
EFUGBIO4	FUGBIO4	EFUGBIO4	AB4 Fugitives Bioplant	Bioplant Scenario 4 - One Equalization and one Aeration tank down	2.669E-02	1.895E-07	5.775E-01	4.101E-06	
TK60897	TK60897 or TK60898	TK60897	First EQ tank	Bioplant Scenario 1 - Full Bioplant Operation	1.091E+00	3.058E-04	9.173E-01	2.572E-04	449.37844
TK60898	TK60897 or TK60898	TK60898	Second EQ tank		1.082E+00	3.033E-04	8.986E-01	2.520E-04	
TK68127	TK68127 or TK68128	TK68127	First Aeration tank		6.090E-02	9.016E-06	1.817E+00	2.689E-04	851.15672
TK68128	TK68127 or TK68128	TK68128	Second Aeration tank		6.090E-02	9.016E-06	1.817E+00	2.689E-04	
TK60897	TK60897 or TK60898	TK60897	First EQ tank	Bioplant Scenario 2 - One Equalization tank down	1.091E+00	3.058E-04	9.173E-01	2.572E-04	449.37844
TK60898	TK60897 or TK60898	TK60898	Second EQ tank		0	0	0	0	
TK68127	TK68127 or TK68128	TK68127	First Aeration tank		6.140E-02	9.089E-06	1.854E+00	2.745E-04	851.15672
TK68128	TK68127 or TK68128	TK68128	Second Aeration tank		6.140E-02	9.089E-06	1.854E+00	2.745E-04	
TK60897	TK60897 or TK60898	TK60897	First EQ tank	Bioplant Scenario 3 - One Aeration tank down	1.091E+00	3.058E-04	9.173E-01	2.572E-04	449.37844
TK60898	TK60897 or TK60898	TK60898	Second EQ tank		1.082E+00	3.033E-04	8.986E-01	2.520E-04	
TK68127	TK68127 or TK68128	TK68127	First Aeration tank		1.203E-01	1.781E-05	3.402E+00	5.035E-04	851.15672
TK68128	TK68127 or TK68128	TK68128	Second Aeration tank		0	0	0	0	
TK60897	TK60897 or TK60898	TK60897	First EQ tank	Bioplant Scenario 4 - One Equalization and one Aeration tank down	1.091E+00	3.058E-04	9.173E-01	2.572E-04	449.37844
TK60898	TK60897 or TK60898	TK60898	Second EQ tank		0	0	0	0	
TK68127	TK68127 or TK68128	TK68127	First Aeration tank		1.213E-01	1.795E-05	3.472E+00	5.140E-04	851.15672
TK68128	TK68127 or TK68128	TK68128	Second Aeration tank		0	0	0	0	

Attachment 2: Census Data

TABLE 3-1. POPULATION OF CENSUS TRACTS WITHIN THE MODELING DOMAIN

Census Tract ID	Census Tract Population	Census Tract Total Area		Area within Modeling Domain		% of Area within Modeling Domain	Population within Modeling Domain
		m ²	km ²	m ²	km ²		
3237.01	4003	2317597	2.32	1687182	1.69	73%	2,914
2124	3233	8145018	8.15	8112827	8.11	100%	3,220
2519.02	5264	17493199	17.49	17493199	17.49	100%	5,264
3420.02	3685	3713914	3.71	334351	0.33	9%	332
3433.01	4559	11554203	11.55	11554203	11.55	100%	4,559
3436	3417	71098840	71.10	66138458	66.14	93%	3,179
2337.01	5412	7511887	7.51	7511887	7.51	100%	5,412
2337.03	2435	7635737	7.64	7635737	7.64	100%	2,435
2522	7799	21725915	21.73	21725915	21.73	100%	7,799
7010	6212	183681259	183.68	36814831	36.81	20%	1,245
2332	5751	3181429	3.18	3181429	3.18	100%	5,751
2334	2881	2619924	2.62	2619924	2.62	100%	2,881
2335	7836	2790752	2.79	2790752	2.79	100%	7,836
3110	7535	2451214	2.45	950466	0.95	39%	2,922
3111	6040	2737330	2.74	1914007	1.91	70%	4,223
3114	1851	2624688	2.62	1898139	1.90	72%	1,339
2336	1765	3864202	3.86	3864202	3.86	100%	1,765
3115	7264	2326695	2.33	42479	0.04	2%	133
2520	13818	57475527	57.48	57475527	57.48	100%	13,818
2521	2058	25043207	25.04	25043207	25.04	100%	2,058
2530	3761	17248152	17.25	17248152	17.25	100%	3,761
2533	3771	21525734	21.53	21525734	21.53	100%	3,771
2534	684	13173383	13.17	13173383	13.17	100%	684
2535	8642	5881217	5.88	5881217	5.88	100%	8,642
2536	5209	5595208	5.60	5595208	5.60	100%	5,209
3239	3919	2834563	2.83	2834563	2.83	100%	3,919
3240	5404	7988964	7.99	2555005	2.56	32%	1,728
3205	5080	5813797	5.81	5003209	5.00	86%	4,372
3215	2620	941706	0.94	240159	0.24	26%	668
3216	7388	2888877	2.89	2377436	2.38	82%	6,080
3217	3352	1938237	1.94	553329	0.55	29%	957
3219	5879	2469459	2.47	2469459	2.47	100%	5,879

TABLE 3-1. POPULATION OF CENSUS TRACTS WITHIN THE MODELING DOMAIN (CONT.)

Census Tract ID	Census Tract Population	Census Tract Total Area		Area within Modeling Domain		% of Area within Modeling Domain	Population within Modeling Domain
		m ²	km ²	m ²	km ²		
3220	5261	717023	0.72	717023	0.72	100%	5,261
3221	4233	2177819	2.18	2177819	2.18	100%	4,233
3222	1434	958610	0.96	958610	0.96	100%	1,434
3227	7688	2069417	2.07	2069417	2.07	100%	7,688
3228	5980	3119090	3.12	3119090	3.12	100%	5,980
3229	4090	1661982	1.66	1661982	1.66	100%	4,090
3230	6595	1399677	1.40	1399677	1.40	100%	6,595
3231	3649	2058161	2.06	2058161	2.06	100%	3,649
3232	5127	2107070	2.11	2107070	2.11	100%	5,127
3233	3757	1310816	1.31	1310816	1.31	100%	3,757
3234	7926	1990388	1.99	1990388	1.99	100%	7,926
3235	5159	2673381	2.67	1397510	1.40	52%	2,697
3236	7694	5127401	5.13	577016	0.58	11%	866
3421	3908	4459132	4.46	4459132	4.46	100%	3,908
3422	3647	2879819	2.88	2879819	2.88	100%	3,647
3423	7151	2796176	2.80	2796176	2.80	100%	7,151
3424	3418	3432362	3.43	3432362	3.43	100%	3,418
3425	5711	6474634	6.47	6474634	6.47	100%	5,711
3427	5224	3462831	3.46	3462831	3.46	100%	5,224
3428	8904	7472347	7.47	7472347	7.47	100%	8,904
3430	7997	5747266	5.75	5747266	5.75	100%	7,997
3432	5145	4565992	4.57	4217633	4.22	92%	4,752
2311	4672	11184399	11.18	11184399	11.18	100%	4,672
2313	4386	4814035	4.81	4814035	4.81	100%	4,386
2315	2693	1160073	1.16	1160073	1.16	100%	2,693
2316	2842	1665522	1.67	1303971	1.30	78%	2,225
2517	7660	80180207	80.18	15892141	15.89	20%	1,518
2529	8173	18424342	18.42	18424342	18.42	100%	8,173
2303	2066	1745188	1.75	1355046	1.36	78%	1,604
3431	4611	2016148	2.02	2016148	2.02	100%	4,611
2318	2519	2824498	2.82	1533047	1.53	54%	1,367
2319	5859	9046582	9.05	9046582	9.05	100%	5,859
2320	4074	16470307	16.47	14745272	14.75	90%	3,647
2322	13225	20016425	20.02	14172953	14.17	71%	9,364
2333	5332	11676608	11.68	11676608	11.68	100%	5,332
2325	3547	11541269	11.54	11541269	11.54	100%	3,547
2328	5504	2045837	2.05	2045837	2.05	100%	5,504
3109	5196	1753103	1.75	2945	0.00	0%	9
2525	4389	40436936	40.44	40436936	40.44	100%	4,389
3218	4331	1309003	1.31	1141078	1.14	87%	3,775

TABLE 3-1. POPULATION OF CENSUS TRACTS WITHIN THE MODELING DOMAIN (CONT.)

Census Tract ID	Census Tract Population	Census Tract Total Area		Area within Modeling Domain		% of Area within Modeling Domain	Population within Modeling Domain
		m ²	km ²	m ²	km ²		
2326	3211	6123802	6.12	6123802	6.12	100%	3,211
2518	2096	36427055	36.43	30695428	30.70	84%	1,766
2526	7496	38531892	38.53	38531892	38.53	100%	7,496
2329	7294	3303965	3.30	3303965	3.30	100%	7,294
2528	6692	64298342	64.30	64298342	64.30	100%	6,692
2532	10042	36868280	36.87	36868280	36.87	100%	10,042
2547	2677	29996226	30.00	13680218	13.68	46%	1,221
3226	5786	2492192	2.49	2492192	2.49	100%	5,786
2312	7151	13975042	13.98	13975042	13.98	100%	7,151
2119	5529	1248045	1.25	1248045	1.25	100%	5,529
2115	7552	6053585	6.05	4918050	4.92	81%	6,135
2116	3061	1165006	1.17	511572	0.51	44%	1,344
2117	3747	4448127	4.45	4030479	4.03	91%	3,395
3429	6089	5946748	5.95	5946748	5.95	100%	6,089
2531	9543	29240331	29.24	29240331	29.24	100%	9,543
2314	2586	3364376	3.36	3364376	3.36	100%	2,586
2527	4010	47397082	47.40	46871515	46.87	99%	3,966
2302	5102	7787693	7.79	6681978	6.68	86%	4,378
2306	3023	2167439	2.17	1606296	1.61	74%	2,240
2307	2644	2699538	2.70	1630500	1.63	60%	1,597
2308	2771	1852647	1.85	1852647	1.85	100%	2,771
2309	3635	6362552	6.36	6362552	6.36	100%	3,635
2310	3851	4128542	4.13	4128542	4.13	100%	3,851
2542	2750	1260333	1.26	1260333	1.26	100%	2,750
2524	6522	5326642	5.33	5326642	5.33	100%	6,522
2502	9364	5997738	6.00	2413279	2.41	40%	3,768
2537	6034	4076618	4.08	4076618	4.08	100%	6,034
3202	7425	4175181	4.18	391182	0.39	9%	696
2538	7642	7554626	7.55	7554626	7.55	100%	7,642
2539	4110	4554553	4.55	4186855	4.19	92%	3,778
2540	4163	2724555	2.72	2435607	2.44	89%	3,721
2541	5538	3226137	3.23	3226137	3.23	100%	5,538
2543	4830	3097615	3.10	3097615	3.10	100%	4,830
2544	3076	2870342	2.87	2870342	2.87	100%	3,076
2545	2470	6921568	6.92	6921568	6.92	100%	2,470
2546	4300	8003901	8.00	8003901	8.00	100%	4,300
2523.02	12324	7687162	7.69	7687162	7.69	100%	12,324
3433.02	5336	4517721	4.52	4517721	4.52	100%	5,336
3241	5382	22964668	22.96	22964668	22.96	100%	5,382
3437	2952	41367794	41.37	8477901	8.48	20%	605

TABLE 3-1. POPULATION OF CENSUS TRACTS WITHIN THE MODELING DOMAIN (CONT.)

Census Tract ID	Census Tract Population	Census Tract Total Area		Area within Modeling Domain		% of Area within Modeling Domain	Population within Modeling Domain
		m ²	km ²	m ²	km ²		
2503.01	8096	11776660	11.78	10831298	10.83	92%	7,446
2503.02	10147	5013347	5.01	4501207	4.50	90%	9,110
2519.01	9796	51092076	51.09	51092076	51.09	100%	9,796
2323.02	10586	11972935	11.97	11972935	11.97	100%	10,586
2324.01	8779	14523805	14.52	14523805	14.52	100%	8,779
2324.02	3755	1489552	1.49	1489552	1.49	100%	3,755
2324.03	4001	2147459	2.15	2147459	2.15	100%	4,001
2327.02	6128	4524061	4.52	4524061	4.52	100%	6,128
2331.01	4118	1734806	1.73	1734806	1.73	100%	4,118
2330.03	2246	1009915	1.01	1009915	1.01	100%	2,246
2331.02	7044	2447585	2.45	2447585	2.45	100%	7,044
2327.01	9014	4670420	4.67	4670420	4.67	100%	9,014
2331.03	5437	1632266	1.63	1632266	1.63	100%	5,437
2337.02	3209	2495465	2.50	2495465	2.50	100%	3,209
3420.01	6960	5161815	5.16	1262647	1.26	24%	1,703
2330.01	3358	945962	0.95	945962	0.95	100%	3,358
2330.02	4217	1726644	1.73	1726644	1.73	100%	4,217
2523.01	9371	2739064	2.74	2739064	2.74	100%	9,371
3238.01	3485	1336040	1.34	1336040	1.34	100%	3,485
3238.02	5026	2412987	2.41	2412987	2.41	100%	5,026
2504.01	11826	4682578	4.68	4214917	4.21	90%	10,645
2125	3809	11436026	11.44	10254781	10.25	90%	3,416
3242	1630	7336744	7.34	7336744	7.34	100%	1,630
2504.02	16072	22301453	22.30	19811604	19.81	89%	14,278
2323.01	9234	25894174	25.89	25894174	25.89	100%	9,234
7102	16818	219567355	219.57	4081393	4.08	2%	313
7101	7874	128783718	128.78	27531907	27.53	21%	1,683
Total Population:							652,963

Circular Area Profiling System (CAPS)

Version 10C Using Data from Summary File 1, 2010 Census

Ground Zero Coordinates: Latitude= 29.823208 , Longitude=95.112133

Access the aggregated data as a csv file here: [caps10c023874.csv](#)

12.303-mile radius of specified point

Subject	Number	Percent
<u>1. Total Population Trends, Etc.</u>		
Universe: Total Population		
Total Population	622,304	
Total Population 2000	537,097	
Change in Population 2000-2010	85,207	15.9
Males	310,021	49.8
Females	312,283	50.2
Population Density	1547	
Land Area Sq. Miles	402	

Attachment 3. SPLD



January 17, 2000

Steve Smith
Principal Environmental Engineer
Southern HSE Region
Equistar Chemicals, L.P.
8280 Sheldon Rd.
Box. 777
Channelview, Texas 77530

Dear Steve,

Enclosed are copies of the transmittal letter from the TNRCC and a copy of the certified order designating the Channelview Site as a single property.

Let me know if you have questions or comments.

Best regards,

A handwritten signature in blue ink that reads "Craig Eckberg". The signature is written in a cursive, flowing style.

Craig Eckberg

BAKER BOTTS LLP

1600 SAN JACINTO CENTER
98 SAN JACINTO BLVD.
AUSTIN, TEXAS
78701-4039
512.322.2500
FAX 512.322.2501

AUSTIN
BAKU
DALLAS
HOUSTON
LONDON
MOSCOW
NEW YORK
WASHINGTON

January 10, 2000

064480.0141

Mr. Craig R. Eckberg
Reliant Energy
Environmental Department
P.O. Box 1700
Houston, Texas 77251-1700

Aileen M. Hooks
512.322.2616
FAX 512.322.2501
aileen.hooks@bakerbotts.com

Re: Channelview Single Property Designation

Dear Craig:

Enclosed please find a copy of the transmittal letter from the TNRCC and a copy of the certified order designating the Channelview Site as a single property. The effective date of the Order is the date it was mailed by the Chief Clerk's Office, which was January 6, 2000.

Should you have any questions or comments, please do not hesitate to contact me.

Sincerely,



Aileen M. Hooks

cc: Derek Furstenwerth
Steven Cook
Steve Smith

RECEIVED

ENVIRONMENTAL DEPT.

Robert J. Huston, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
John M. Baker, *Commissioner*
Jeffrey A. Saitas, *Executive Director*



TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

January 6, 2000

Aileen M. Hooks
Baker & Botts, L.L.P.
1600 San Jacinto Center
98 San Jacinto Boulevard
Austin, Texas 78701-4039

RE: Reliant Energy, Channelview L.P. and Equistar Chemicals, L.P.
TNRCC Docket No. 1999-1381-AIR
Order granting the petition for designation of single property

Enclosed is a certified copy of an order issued by the Commission regarding the referenced matter.

Should you have any questions, please contact Julie Albrecht of the Texas Natural Resource Conservation Commission's Office of the Chief Clerk (MC 105) at (512) 239-3141.

Sincerely,

A handwritten signature in cursive script, reading "LaDonna Castañuela".

LaDonna Castañuela
Chief Clerk

LC/jla

cc: TNRCC Region 12

Garrett Arthur, Staff Attorney, TNRCC Legal Division (MC 173)
Erik Hendrickson, Engineer, TNRCC Office of Air Quality, New Source Review (MC 162)
Blas Coy, Attorney, TNRCC Public Interest Counsel (MC 103)

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION



PETITION OF RELIANT ENERGY §
CHANNELVIEW L.P. AND §
EQUISTAR CHEMICALS, LP §
FOR §
DESIGNATION OF SINGLE PROPERTY §

THE STATE OF TEXAS
COUNTY OF TRAVIS
I hereby certify that this is a true and correct copy of a Texas Natural
Resource Conservation Commission document, which is filed in the
permanent records of the Commission.
Given under my hand and the seal of office on

Ladonna Castañuela JAN 06 20
Ladonna Castañuela, Acting Chief Clerk
Texas Natural Resource
Conservation Commission

DOCKET NO. 1999-1381-AIR

FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER
REGARDING DESIGNATION OF CHANNELVIEW SITE
AS SINGLE PROPERTY

On December 15, 1999, came to be considered by the Texas Natural Resource Conservation Commission (the "Commission" or "TNRCC") the Petition of RELIANT ENERGY CHANNELVIEW L.P. and EQUISTAR CHEMICALS, LP, (the "Project Company") ("Equistar") (the Project Company and Equistar being referred to collectively as the "Petitioners" and individually as a "Petitioner") to have their properties located in Channelview, Harris County, Texas (the "Site"), designated as a single property for purposes of demonstrating compliance with TNRCC air quality regulations and the control of air emissions TAC §101.2(b). Based on representations in the Petition, dated September 22, 1999, the Commission finds as follows:

1. The properties that are the subject of this Petition, which are more fully depicted in the map attached as Exhibit "A," are contiguous;
2. The Site, depicted on Exhibit "A" was originally under the sole control of Equistar, but the area marked "Cogen Site Operations" on Exhibit "A" has been placed under the control of the Project Company pursuant to a lease agreement, creating new property line configurations including Equistar and the Project Company; and
3. The Petition includes all information required by 30 T.A.C. § 101.2(b)(3), including (a) a general description of the manner in which the control of emissions and demonstration of compliance with TNRCC regulations will be administered and controlled; (b) a designation of the parties accepting responsibility for off-property impacts; (c) an executed written agreement between the property holders, in which they consent to a single property designation and detail the mechanisms of control; (d) a USGS-based map indicating geographical features, the property boundaries, and present land uses.

Based on these findings, the Commission concludes, as a matter of law,

1. That the Commission's decision concerning the substance of this Petition is governed by 30 T.A.C. § 101.2(b);
2. That Petitioners have demonstrated that their Petition satisfies the requirements of 30 T.A.C. § 101.2(b); and

3. That Section 382.023(a) of the Texas Clean Air Act ("the Act") authorizes the Commission to issue orders and make determinations as necessary to carry out the purposes of the Act, including an order granting a petition pursuant to 30 T.A.C. § 101.2.

It is, therefore, ORDERED as follows:

1. The Petition of Equistar and the Project Company dated September 22, 1999, is GRANTED.

2. For purposes of evaluating whether emissions from facilities owned and/or operated by Equistar and the Project Company at the Site cause or contribute to exceedances of any ambient air quality standards or guideline concentrations, the TNRCC shall not consider the property of either Equistar or the Project Company within the single, outer property line denoted on Exhibit "A," as an off-property receptor of the other.

3. This Order does not constitute a determination that the Site is a single property for any other purpose under state or federal law nor does it affect Petitioners' responsibilities under, or obligations to comply with, applicable federal air quality statutes and rules, including, but not limited to, permits issued pursuant to Parts C (Prevention of Significant Deterioration) and D (Nonattainment) of Title I, and Operating Permits pursuant to Title V, of the federal Clean Air Act, as amended.

4. This Order does not relieve the Petitioners from meeting the requirements of Tex. Health & Safety Code §382.0518(b) regarding best available control technology and protection of public health for the initial permits issued by the TNRCC or for any modification that trigger federal review for any party.

5. Each Petitioner shall be responsible under the Texas Clean Air Act and the rules, orders and permits issued by the TNRCC pursuant to that Act for controlling emissions from its own facilities.

6. If a Petitioner or any successor-in-interest seeks a change in emissions of an air contaminant that is or will be common to Petitioners, the Executive Director may require modeling of all sources for that air contaminant within the designated single property boundary. If such a requirement is imposed, all Petitioners must provide, in a timely manner, available information necessary for the applicant Petitioner to conduct the required modeling.

7. Upon becoming aware of any changes affecting the accuracy of the Findings of Fact set forth in this Order, Equistar and the Project Company are each responsible for ensuring that the TNRCC Executive Director is notified in writing of such changes. Upon determining that the facts no longer support this Order, the TNRCC Executive Director or any Petitioner may petition the Commission for modification or termination of this Order. The Single Property Designation Order is not applicable to subsequent divisions of the interests in real property that would result in the addition to new owners or operators at the site or change responsibility for control of emissions

under the Single Property Agreement dated as of September 17, 1999, among the petitioners that are the subject of this Order, unless authorized by the Commission or as provided by TNRCC rules.

8. This Order is binding upon Equistar and the Project Company and their successors and assigns as to the subject properties, unless and until amended or rescinded by further order of the Commission. Each Petitioner shall provide notice of this Order to any successor in interest prior to transfer of ownership of all or part of that Petitioner's facilities and properties affected by this Order and within ten days of any such transfer provide the appropriate TNRCC Regional Office with written confirmation that such notice has been given. This Single Property Designation Order is not applicable to subsequent divisions of the interests in real property that are the subject of this Order, unless authorized by the Commission or as provided by TNRCC rules.

9. If a Petitioner transfers the ownership or operational control of a source of emissions, the Petitioner must provide documentation to the Executive Director regarding (a) a list of current emissions sources and the associated emission point numbers (EPNs), and (b) a list of proposed emission sources and the associated EPNs.

10. The Chief Clerk shall provide a copy of this Order to the Petitioners.

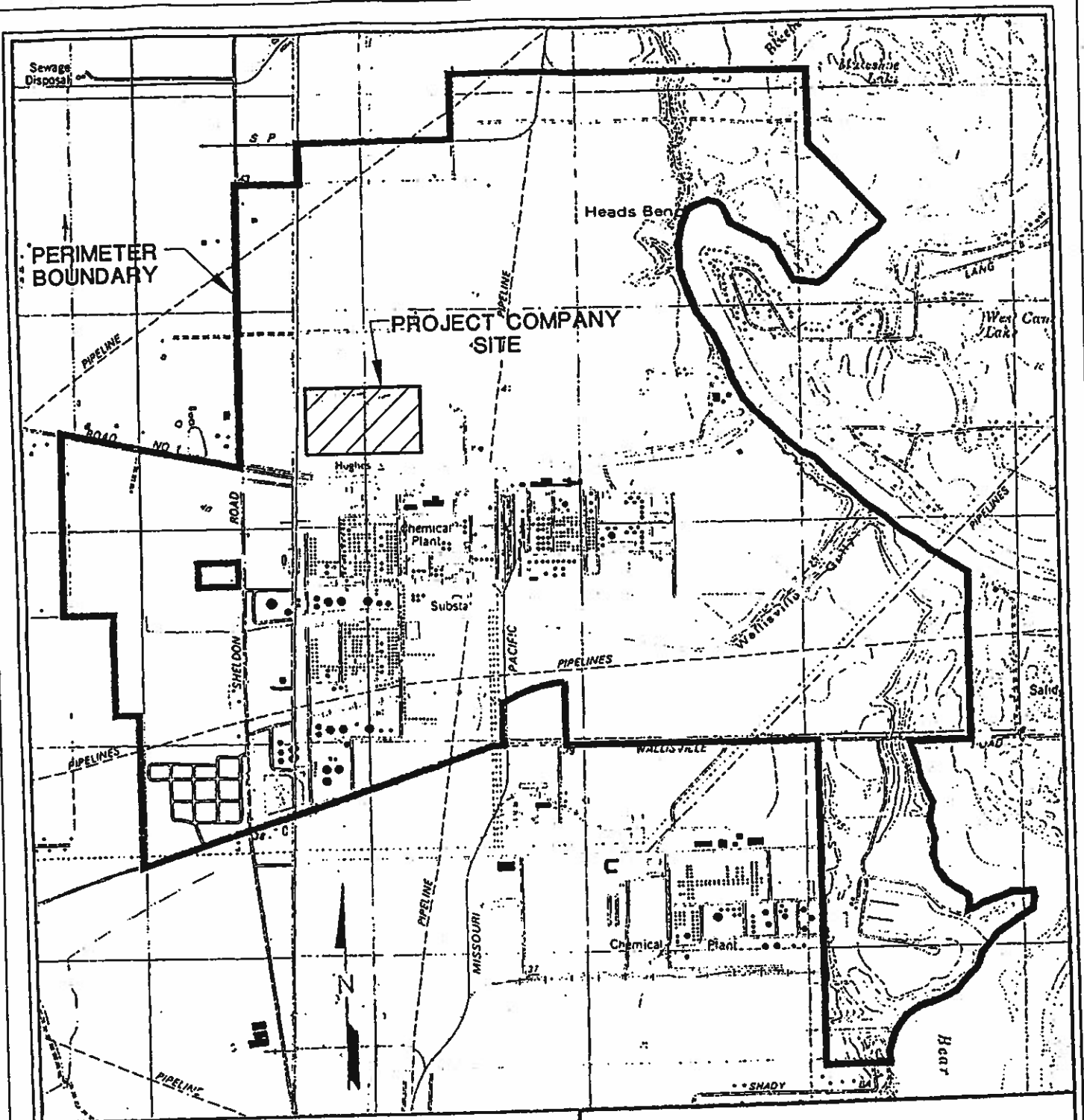
11. This Order will become effective on the date the Order is mailed to by the Chief Clerk to the Petitioners.

APPROVED AND ENTERED by the Commission on DEC 22 1999

ISSUE DATE: DEC 22 1999



For the Commission



SCALE: 1" = 2000'

SITE COORDINATES:
 LATITUDE: 29°49'50"
 LONGITUDE: 95°07'00"

NOTE:
 TOPOGRAPHY TAKEN FROM U.S.G.S. 7.5' QUADRANGLES, "JACINTO CITY, TEXAS", AND "HIGHLANDS, TEXAS", DATED 1982, AT A SCALE OF 1:24,000.

EQUISTAR

Equistar Chemicals, LP
 EXHIBIT A
 Channelview, Texas Facility

Figure 1-1
 UNIT LOCATION MAP



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

JUN 22 2007

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

MEMORANDUM

SUBJECT: Interpretation of "Ambient Air" In Situations Involving Leased Land Under the Regulations for Prevention of Significant Deterioration (PSD)

FROM: Stephen D. Page, Director *Steve Page*
Office of Air Quality Planning & Standards (C404-04)

TO: Regional Air Division Directors
Regions I-X

This memorandum responds to various inquiries about the Environmental Protection Agency's (EPA's) interpretation of the definitions of "ambient air" and "building, structure, facility, or installation" (as applied to air quality analyses under the Prevention of Significant Deterioration (PSD) program.¹ The inquiries pertain to the need by a PSD permit applicant to conduct a source impact analysis at particular locations.² Requests for this guidance on EPA's interpretation of the regulations generally have involved leasing arrangements where a source locates on land being leased to them by another source, and one source or the other must demonstrate compliance with ambient air standards. In some cases, the companies involved may be under some form of common ownership or control; in other cases, there is no apparent relation between the companies other than the leasing agreement. This memo and the supporting attachment describe EPA's interpretation of the applicable regulations under both scenarios.

The PSD source impact analysis involves the use of air quality dispersion models to predict the impact of a proposed PSD source's emissions (and other sources' emissions, where applicable) on pollutant concentrations in the ambient air. "Ambient air" is defined as "that portion of the atmosphere, external to buildings, to which the general public has access." The modeled prediction is used to determine whether the proposed source will cause or contribute to a violation of an ambient air standard, including any national ambient air quality standard (NAAQS) or PSD increment. A source is not required to model the impacts of its emissions at locations that are not

¹ The terms "ambient air" and "building, structure, facility, or installation" are defined at 40 CFR 50.1(e), and 40 CFR 52.21(b)(6), respectively.

² See 40 CFR 52.21(k) Source Impact Analysis.

considered to be ambient air. *See*, In the Matter of Hibbing Taconite Company, 2 E.A.D. 838 (Adm'r 1989). Accordingly, this guidance addresses which locations a source may exclude from the source impact analysis for purposes of PSD.

As a threshold matter, in order to identify the boundary between a source and ambient air in a leased-land scenario, it is important to determine whether you are dealing with one source or two (or more) sources. The determination of whether there is a single source or separate sources is based on the definition of "building, structure, facility, or installation" in our regulations.

With respect to a particular source, EPA's practice has been to exempt only an area from ambient air when the source (1) owns or controls the land or property; and (2) precludes public access to the land or property using a fence or other effective physical barrier. In the case of a leasing situation where there are two separate sources, the above conditions should be applied separately to both the lessor and the lessee(s).

In summary form, EPA interprets the regulations as follows in each of the ambient air scenarios set forth below:

1. When, under the existing business relationship, two (or more) operating companies constitute a single source:
 - If there is a barrier preventing public access, the air over the entire property (including the leased portion) is not ambient air to either the property owner (lessor) or the lessee.
 - In the absence of a barrier preventing public access, the air is ambient air for both the lessor and the lessee.
2. When two (or more) companies operate separate sources on property owned by one company and leased in part to the other, and the lessor retains control over public access to the entire property and actually maintains a physical barrier around it to preclude public access:
 - The air over the entire property (including the leased portion) is not ambient air to the lessor.
 - The air over the non-leased portion of the property is ambient air to the lessee.
 - The air over the leased portion is ambient air to the lessee unless the lessee undertakes its own separate action to preclude public access.
3. When two (or more) companies operate separate sources on property owned by one company and leased in part to the other, and the lessor grants the lessee sole control over who may access the leased property (e.g., leased property with direct access via entrance on outer perimeter of lessor's land):
 - The air over the property retained for use by the lessor is not ambient air to the lessor if public access is precluded.
 - The air over the lessor property is ambient air to the lessee.
 - The air over the leased property is ambient air to the lessor.

- The air over the leased property is ambient air to the lessee unless the lessee acts to preclude public access to the leased property.
4. When the property owner agrees to allow a lessee to operate a business on the leased land that is open to the general public (such as a restaurant, retail store, or office building) the outdoor areas that are accessible to the public, such as parking areas and entrances would be ambient air to the lessor and the lessee.

A more complete description of the relevant issues concerning “ambient air” and “single source,” which are important to the scenarios summarized above, is contained in the attachment to this memo.

Neither the memo nor the attachment should be regarded as a substitute for the applicable regulations, nor are they regulations in themselves. This memorandum does not announce any change in EPA’s interpretation of the cited regulations, but rather summarizes prior interpretative statements and provides guidance to the Regions on how to apply EPA’s interpretation of the regulations to the particular circumstances described.

Attachment

ATTACHMENT
Support Document

As a threshold matter, in order to identify the boundary between a source and ambient air in a leased-land scenario, it is important to determine whether you are dealing with one source or two (or more) sources. The determination of whether there is a single source or separate sources is based on the definition of "building, structure, facility, or installation" in sections 51.166(b)(6) and 52.21(b)(6) of the PSD regulations. This defined phrase is contained in the definition of "stationary source" in sections 51.166(b)(5) and 52.21(b)(5). The boundary between each stationary source and ambient air is then based on the definition of ambient air in section 50.1(e) of EPA's regulations. In scenarios where there is potentially a separate source within the boundaries of land owned by another source, the answer to the ambient air question is closely related to the question of whether there are one or two sources involved. In the following, we will address both the "single source" and "ambient air" questions together.

Under a business relationship involving two or more companies (one a lessor, the other a lessee) where the three criteria used to determine a single source scenario have been met, and a physical barrier is in place to preclude access to the general public, the air over the entire property may be excluded from ambient air by both the lessor and lessee for PSD purposes. However, as explained below, the situation may change as a result of possible future changes in the business relationship between the lessor and the lessee. We will address each of the potential scenarios below after outlining the general principles that EPA would apply under its interpretation of the regulations.

A. Single or Separate Source Analysis

According to EPA's definition, "a building, structure, facility, or installation" means all of the pollutant emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control). Thus, pollutant-emitting activities are generally considered part of a single stationary source when these activities are (1) part of the same industrial grouping (as determined by applicable SIC codes), (2) contiguous or adjacent, and (3) under common control. In several guidance documents, EPA has recognized that one or more of these criteria

can be satisfied when an emissions unit serves in a supporting role for a primary activity at a nearby location.

When two companies meet the first two criteria, i.e., within the same industrial grouping (operations are classified in the same major group), and properties are immediately contiguous and adjacent to each other, the principal question that needs to be answered is whether the issue of common control is affected by potentially changing business relationships. A case-by-case evaluation is usually required to determine if common control is present. Even where facilities have separate legal owners, EPA has found that common control may be established on the basis of a contract, which creates a support or dependency relationship through which one facility may have effective control over the other. See Letter from Richard R. Long, EPA Region 8 to Julie Wrend, Colorado Department of Public Health regarding "Single Source Determination for Coors/TriGen" (Nov. 12, 1998). We consider separately-owned sources to be under common control if one source is able to "exercise restraining or directing influence over," "have power over," "have power of authority to guide or manage," or "regulate economic activity over" the other by virtue of their contractual relationship. See Letter from William Spratlin, EPA Region 7 to Peter Hamlin, Iowa Department of Natural Resources re Common Control (September 18, 1995).

If one plant is purchasing supplies and services on the open market and accepts delivery from a number of different suppliers in minority proportions, then there would typically be no basis for a common control determination. Therefore, as long as traditional commodity transactions occur at arms length, the two companies would likely not be considered to be under common control for permitting purposes. On the other hand, if one source executes a contractual agreement with an adjacent or contiguous source to provide the bulk of its output, then it may be more difficult to demonstrate that the two entities are not under common control.

B. Ambient Air Analysis - Single Source

"Ambient air" is defined at 40 CFR 50.1(e) as "that portion of the atmosphere, external to buildings, to which the general public has access." EPA's longstanding interpretation has been that "exemption from ambient air is available only for the atmosphere over land owned or controlled by the source and to which public access is precluded by a fence or other physical barrier." Letter from Administrator Douglas M. Costle, EPA to

Senator Jennings Randolph, Chairman, Environment and Public Works Committee (Dec. 19, 1980).

With respect to a particular source, EPA's practice has been to allow the source to exempt from the source impact analysis areas that are not considered to be ambient air. That is, an area may be excluded when the source - (1) owns or controls the land or property; and (2) precludes public access to the land or property using a fence or other effective physical barrier. Under the first condition described above, "control" of the land means that the source has certain rights to the use of the land/property, including the power to control public access to it. Under the second condition, a source must actually take the necessary steps to preclude¹ the general public from accessing the property by relying on some type of physical barrier (such as a fence, wall or a natural obstruction). Where the appropriate barrier does not exist to prevent access by the general public, the air over the property should be regarded as ambient air for PSD purposes.

An internal leasing arrangement between a lessor and another business entity is not relevant if the facilities are considered one source. In such cases, the ambient air for both would begin at the fence line of the lessor if it controls the land and precludes access to the property.

C. Ambient Air Analysis - Separate Sources

In the case of a leasing situation where there are two separate sources, the above conditions are applied separately to both the lessor and the lessee(s). Consistent with this concept, EPA has stated that, for a source operating on leased property (the lessee), "ambient air is considered to exclude only the atmosphere over that land leased and controlled by the source." See "SO₂ Guideline," EPA-450/2-89-019, page 2-6, (October 1989); Memorandum from G.T. Helms, OAQPS, to W.S. Baker, Air Branch Chief, Region II (July 27, 1987). This means that the lessee must, in addition to controlling the leased property, actually preclude public access to that property.

When the lessor retains control over public access to the entire property and actually maintains a physical barrier around it to preclude public access, our interpretation is that the air

¹ "Preclude" does not necessarily imply that public access is absolutely impossible, but rather that the likelihood of such access is small.

over the entire property, including the leased portion, is not ambient air to the lessor, because the two key conditions are being satisfied by the lessor with respect to the entire property in question. However, if the lessor grants the lessee sole control over who may access the leased property and the lessee is the one who maintains the physical barrier around it, then the air over the leased property should be treated as ambient air by the lessor. This is further explained below.

1. Leased parcel within lessor's property

Where the leased land is within the confines of the lessor's property (i.e. not on the outer boundary) and the lessor maintains the power to exclude the general public from the leased land, and does so through reliance on a physical barrier, then we do not consider the leased land to be ambient air with respect to the lessor. An example of this situation would be a case where a company leases land on its plant site to another company or a joint venture but (1) the first company, as the lessor, continues to control access onto the entire parcel of property through a gate staffed by its employees or agents; and (2) the terms of the lease agreement preclude the lessee from permitting the general public to enter the property (including the leased land). Under these conditions, ambient air is the portion of the atmosphere external to the property owned by the lessor. The entire property, including that portion leased to another source, is excluded from ambient air to the extent that the host source adequately precludes public access to such property.

With respect to the lessee, the air over the leased property is not ambient air if the lessee precludes the general public (including employees of, or invitees to, the lessor's property) from accessing the leased property through the use of a physical barrier separate from the one used by the lessor. If the lessee does not use a physical barrier (i.e. erect a fence) to preclude the general public from accessing the leased land, then even the leased land is ambient air with respect to the lessee.²

2. Leased parcel on outer boundary of lessor's land

² For example, EPA has said that "for sources operating on leased property, ambient air is considered to exclude only the atmosphere over that land leased and controlled by the source [lessee]." SO₂ Guideline (October 1989). Herein, "controlled" is taken to mean that the lessee adequately controls access to its leased portion.

Where the leased parcel is on the outer boundary of the lessor's land and the lessee (not the lessor) controls a separate gate or access point onto the leased land, EPA's interpretation is that the leased land is ambient air to the lessor for PSD purposes. Thus, under these circumstances, leased land is ambient air to the lessor because the lessor has granted the power to exclude public access to the lessee and the lessor does not preclude public access. The same would be true in a situation where the lessor permits a lessee to operate a business on the leased land that is open to the general public (such as a restaurant, retail store, or office building). The outdoor areas of these businesses that are accessible to the general public, such as parking lots and entrances would be ambient air to the lessor. Consistent with the analysis described earlier, these areas would also be ambient air to the lessee if the lessee does not maintain physical barriers to exclude the general public from the leased property.

3. General public and business invitees

An important component of the general principles described above is the concept of "general public." We consider this term generally to include anyone who is not employed by or under control of the lessor, but, more specifically, persons who do not require lessor's permission to be on the property. Based on the latter condition, the general public may not include mail carriers, equipment and product suppliers, maintenance and repair persons, as well as persons who are permitted to enter restricted land for the business benefit of the person who has the power to control access to the land. For example, contractors or delivery persons that are expressly granted access to a plant site by the lessor are not the general public, but instead are considered "business invitees."

Where part of the owned property is leased to another source, employees of the lessee source are considered business invitees of the lessor source as are those who seek visitation rights to the lessee. Both must have the lessor's permission to be on the property (e.g., attain approved access via a security gate). However, a business invitee of the lessor is not necessarily a business invitee of a lessee. Thus, EPA considers the business invitee of the lessor to be part of the general public with respect to the lessee, unless it is agreed that the lessee also invites that person onto the leased land for the benefit of the lessee's business.

The general public includes customers of a business to which access is typically not restricted during business hours. For example, the customer of a restaurant or other retail business is a member of the general public even if the proprietor restricts public access during non-business hours by locking the entrance to the property. Thus, if a business leasing land from a host source depends upon the patronage of such persons as described above during the normal course of business, then the lessor should consider accessible outdoor areas on the leased land to be ambient air. For example, EPA previously considered leased land occupied by an office building to be ambient air for the lessor.

The general public also includes persons who are frequently permitted to enter restricted-access land for a purpose that does not ordinarily benefit the "business." For example, EPA has treated athletic facilities within the restricted fence line of a source as ambient air when persons unconnected to the business were regularly granted access for sporting events (which do not necessarily benefit a business). However, EPA would not consider an area within a fence line to be ambient air based on de minimis levels of public access, such as where a source on rare occasions allows persons without a business connection to the source onto its land for a family or community-oriented event (i.e. a picnic or fair held once a year).

D. Examples Concerning "Ambient Air" Under Various Business Relationships

Where the operations of two companies--company A (the lessor) and company B (the lessee)--meet the three criteria necessary to be considered a single source, the lessor and lessee may exclude the entire property from ambient air for PSD purposes follows. For example, common control would be established if company A held a controlling interest in company B, e.g., company A owns 51 percent of company B. Since the activities are conducted on the property by a single source, the focus of the ambient air analysis is on whether the operator of that one source has ownership or control of the land and maintains a physical barrier around the property. Under the current scenario, company A has ownership and control over all the land involved, has erected a fence around its property to exclude the general public, and permits only employees and business invitees of either company A or company B to enter the property. Thus, the lessor (company A) and the lessee (company

B) may exclude the entire property owned by company A from ambient air for PSD purposes.

Under a scenario where company A and company B own interests in a joint venture (company C) located on company A's land and company A sells its interest in the joint venture to company B, the single source determination and the ambient air analysis could change. If company C is now owned entirely by company B due to the sale and there is no contractual relationship between company A and company C, this would be sufficient to break the "common control" prong of the single source test. Thus, if company C and company A now operate separate sources but company C continues to lease land from company A, we would conduct the ambient air analysis for separate source described above. For example, if company C occupies a leased parcel within the boundaries of company A's land, and company A will continue to have exclusive control over access to company A's land and the leased property occupied by company C, even if the common control prong is broken and company A and company C operate separate sources, company A may continue to exclude all the land inside company A's boundary (including the land leased to company C) from ambient air. However, company C would not be allowed to exclude all of Company A's land from ambient air. If company C maintains a physical barrier that excludes the employees and business invitees of company A from the leased parcel, then company C could exclude the leased parcel from ambient air but not the surrounding land owned by company A because company C does not control access to Company A's property. The employees and business invitees (not otherwise linked to company C) of company A are considered general public with respect to company C. The analysis presented in this paragraph assumed that company A's sale of its interest in company C, and the lack of any continued contractual relationship, makes the operations of these two companies into separate sources.

However, the common control prong may not be broken if (after the sale of the company A's joint venture interest to company B) company C and company A retain a close business relationship. For example, if company A and company C continue to maintain certain contractual relationships even after the sale of company A's interest to company B, the contractual relationships may cause the two companies to be regarded as one source. For instance, company C may continue to be obligated to provide feedstock to Company A. Alternately, company A may continue to provide company C a number of facility services integral to the operations of company C. Thus, there may be

sufficient information to conclude that company A and company C will be under common control by virtue of either an exclusive contract for service relationship or a support or dependency relationship that effectively gives one entity control over both company A and company C. Accordingly, a single source, comprised of company A and company C, may exclude the atmosphere over the entire fenced property from ambient air considerations for PSD purposes.

Under a different example, companies A and B may be negotiating the extent to which company A will continue to be involved in the operational aspects of company C's business after the sale of company A's interest to company B. At one facility, company C could continue to be operated by the employees of company A or its subsidiary. At the other facility, the employees of company A that formerly worked for the joint venture would become sole employees of company C. These relationships could affect the determination of whether these sources are separate sources or a single source. For example, if company C is operated by employees of company A, company A and company C may be regarded as a single source because the arrangement makes company C dependent upon company A for labor to operate the facility, such that company A effectively controls company C. If company C is operated by its own employees, this arrangement would not provide grounds to establish common control. With respect to the ambient air issue, these relationships by themselves are not directly relevant unless the common control test is broken and company A and company C operate separate sources. If company C's facility is operated by its own employees and the sources are otherwise separate, then company A's employees would be considered general public with respect to company C while on company A's property. However, if the sources are separate and company A's employees are permitted access to company C's leased land to provide a limited range of services to company C (not amounting to complete operation of the facility), the EPA would consider the employees of company A to be business invitees of company C and not part of the general public when on the land controlled by company C.

An agreement between company A and company C to be treated as a single source for purposes of "major source" consideration is typically not enough to consider the two sources as one. Whether or not the two facilities constitute a single source is determined based on a review of the facts under the three prong-test described above. An agreement between two entities to treat a source as a single source by itself is not material if

the facts indicate that the sources are separate sources. However, the parties may agree to structure their business arrangement in a particular way so that the facts show that the operations of company A and company C constitute a single source. Thus, assuming this is case, the single source status would be relevant to determining the boundary between the source and ambient air, as discussed above.

Finally, if company A and company C agree to "joint security control" over the area of Company C's leasehold and company A's site, this could be relevant if the two are separate sources, but not if the two companies operations are considered a single source. If there are two sources, this could be relevant if company A is granting company C the power to permit the general public to enter the property. If "joint security control" means that company A gives company C the power to allow any member of the general public onto company A's property, then EPA would consider A to have given up control over the owned property. However, if "joint security control" means that company C has a limited right to allow a business invitee of company C onto the property of company A for purposes of accessing company C's property, then company A would still retain control over the property and would not be authorizing company C to allow the general public onto the property. Under such a scenario, company C's business invitees are also business invitees of company A. Accordingly, the location of ambient air for each source would be determined using the analysis described above for separate sources.

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)

Date: 01/12/2021
Permit #: 2993

General

Company Name: Lyondell Chemical Company

EMEW Version No.: Version 2.3

Purpose Statement:

This workbook is completed by the applicant and submitted to the Texas Commission on Environmental Quality (TCEQ), specifically, the Air Dispersion Modeling Team (ADMT) for review. This workbook is a tool available for all projects using AERSCREEN, AERMOD, or ISC/ISCPPrime for an impacts review and its use is required starting June 1, 2019. Provide the workbook with the permit application submittal for any Minor New Source Review project requiring a modeling impacts demonstration.

This workbook follows the guidance outlined in the Air Quality Modeling Guidelines (APDG 6232) which can be found here:

<https://www.tceq.texas.gov/assets/public/permitting/air/Modeling/guidance/airquality-mod-guidelines6232.pdf>

Workbook Instructions:

1. Save a copy of the workbook to your computer or desktop prior to entering data.
2. Complete all required sections leaving no blanks. You may use the "tab" button or the arrow keys to move to the next available cell. Use "enter" to move down a line. Note: drop-downs are case-sensitive.
3. Fill in the workbook in order, do not skip around as this will cause errors. Use caution if changing a previously entered entry.
4. Not applicable sections of this workbook will be hidden as data is entered. For example, answering "No" to "Is downwash applicable?" will hide these sections of the workbook required only for downwash entry.
5. Email the workbook electronic file (EMEW) and any attachments to the Air Permits Initial Review Team. The subject line should read "Company Name - Permit Number (if known) - NSR Permit Application". Email address: apirt@tceq.texas.gov
6. If printing the EMEW, follow the directions below to create a workbook header.
7. Printing the EMEW is not required for submitting to the Air Permits Division (APD); however, you may need to print it for sending to the regional offices, local programs, and for public access if notice is required. To print the workbook, follow the instructions below. Please be aware, several sheets contain large amounts of data and caution should be taken if printing, such as the Speciated Emissions sheet.
8. Updates may be necessary throughout the review process. Updated workbooks must be submitted in electronic format to APD. For submittal to regional offices, local programs, or public places you only have to print sheets that had updates. Be sure to change the headers accordingly.

Note: Since this will be part of the permit application, follow the instructions in the Form PI-1 General Application on where to send copies of your EMEW and permit application. The Form PI-1 General Application can be found here:

<https://www.tceq.texas.gov/permitting/air/guidance/newsourcereview/nsrapp-tools.html>

Create Headers Before Printing:

1. Right-click one of the workbook's sheet tabs and "Select All Sheets."
2. Enter the "Page Layout View" by using the navigation ribbon's View > Workbook Views > Page Layout, or by clicking the page layout icon in the lower-right corner of Excel.
3. Add the date, company name, and permit number (if known) to the upper-right header. Note that this may take up to a minute to update your spreadsheet. Select any tab to continue working on the spreadsheet.

Printing Tips:

While APD does not need a hard copy of the full workbook, you may need to print it for sending to the regional offices, local programs, and for public access if notice is required.

1. The default printing setup for each sheet in the workbook is set for the TCEQ preferred format. The print areas are set up to not include the instructions on each sheet.
2. You have access to change all printing settings to fit your needs and printed font size. Some common options include:
 - Change what area you are printing (whole active sheet or a selection);
 - Change the orientation (portrait or landscape);
 - Change the margin size; and
 - Change the scaling (all columns on one sheet, full size, your own custom selection, etc.).

Final Modeling Submittal:

Anytime final modeling files are being submitted the applicant should notify the following that modeling files are being sent: permit reviewer assigned, permit reviewer's supervisor, and the modeler assigned from the initial submittal.

The following options are available for an applicant to provide modeling (or any other files):

1. Applicant can mail or hand deliver the files on an external storage device.
2. Applicant can email files smaller than 25mb.
3. Applicant can transfer files through an FTP site:
 - a. Applicant may have their own FTP site and can share the files with TCEQ staff.
 - b. Applicants can use the TCEQ FTP site.

Instructions for setting up an account on the TCEQ FTP site are located at:

<https://ftps.tceq.texas.gov/help/>

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)

Date: 01/12/2021
 Permit #: 2993

General

Company Name: Lyondell Chemical Company

Acknowledgement:	Select from the drop down:
I acknowledge that I am submitting an authorized TCEQ Electronic Modeling Evaluation Workbook and any necessary attachments. Except for inputting the requested data, I have not changed the TCEQ Electronic Modeling Evaluation Workbook in any way, including but not limited to changing formulas, formatting, content, or protections.	I agree

Administrative Information:	
Data Type:	Facility Information:
Project Number (6 digits):	
Permit Number:	2993
Regulated Entity ID (9 digits):	100633650
Facility Name:	Channelview Site
Facility Address:	2502 Sheldon Rd, Channelview, TX 77530
Facility County (select one):	Harris
Company Name:	Lyondell Chemical Company
Company Contact Name:	Mason Green
Company Contact Number:	281-452-8371
Company Contact Email:	Mason.Green@lyondellbasell.com
Modeling Company Name, as applicable:	Trinity Consultants
Modeling Contact Name:	Michael Meister
Modeling Contact Number:	972-661-8100
Modeling Contact Email:	mmeister@trinityconsultants.com
New/Existing Site (select one):	Existing Site
Modeling Date (MM/DD/YYYY):	1/12/2021
Datum Used (select one):	NAD 83
UTM Zone (select one):	15

Sheet Instructions: Indicate in the Table of Contents which sections are applicable and included for this modeling demonstration. Select "X" from the drop down if the item below is included in the workbook. Note: This workbook is only for the following air dispersion models: AERSCREEN, ISC/ISCPrime, and/or AERMOD. If SCREEN3 is used, please use the separate Electronic Modeling Evaluation Workbook (EMEW) for SCREEN3 workbook.

Table of Contents:		
Section:	Sheet Title (Click to jump to specific sheet):	Select an X from the dropdown menu if included:
1	General	X
2	Model Options	X
3	Building Downwash	X
4	Flare Source Parameters	X
5	Point Source Parameters	X
6	Area Source Parameters	X
7	Volume Source Calculations	X
8	Volume Source Parameters	X
9	Point and Flare Source Emissions	X
10	Area Source Emissions	X
11	Volume Source Emissions	X
12	Speciated Emissions	X
13	Intermittent Sources	
14	Modeling Scenarios	X
15	Monitor Calculations	
16	Background Justification	
17	Secondary Formation of PM2.5	X
18	NAAQS/State Property Line (SPL) Modeling Results	X
19	Unit Impact Multipliers	X
20	Health Effects Modeling Results	X
21	Modeling File Names	X
22	Speciated Chemicals	X

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)

Date: 01/12/2021
 Permit #: 2993

General

Company Name: Lyondell Chemical Company

Included Attachments	
Instructions: The following are attachments that must be included with any modeling analysis. If providing the plot plan and area map with the permit application, ensure there is also a copy with the EMEW. The copy can be electronic.	Select an X from the dropdown menu if included:
Plot Plan:	
Instructions: Mark all that apply in the attached plot plan. For larger properties or dense source areas, provide multiple zoomed in plot plans that are legible.	
Property/Fence Lines all visible and marked.	X
North arrow included.	X
Clearly marked scale.	X
All sources and buildings are clearly labeled.	X
Area Map:	
Instructions: Mark all that apply in the attached area map.	
Annotate schools within 3,000ft of source's nearest property line.	X
All property lines are included.	X
Non-industrial receptors are identified.	X
Additional Attachments (as applicable):	
<i>Note: These are just a few examples of attachments that may need to be included. There may be others depending on the scope of the modeling analysis.</i>	Select an X from the dropdown menu if included:
Processed Met Data Information	
Excel spreadsheet of processed meteorology data.	Choose an item
Meteorological Files (all input and outputs).	Choose an item
Source Group Descriptions	
Description of modeling source groups (could be in a tabulated format).	Choose an item
Modeling Techniques and Scenarios	
<i>Provide all justification and discussion on modeling scenarios used for the modeling analyses. The following boxes are examples of approaches that should be provided but is not all inclusive.</i>	
Discussion on modeling techniques not discussed in workbook.	X
Justification for exceedance refinements, as applicable.	Choose an item
Discussion and images for worst-case determination, as applicable.	X
Single Property Line Designation, as applicable	
Include Agreement, Order, and map defining each petitioner.	X
Post Processing using Unit Impact Multipliers (UIMs)	
Include documentation on any calculations used with the UIMs (i.e., Step 3 of the MERA).	X
Tier 3 NO₂ analysis	
<i>If OLM or PVMRM are used, provide all justification and documentation on using this approach.</i>	
Description of model setup.	Choose an item
Description and justification of model options selected (i.e., NO ₂ to NO _x in-stack ratios).	Choose an item
Other Attachments	
<i>Provide a list in the box below of additional attachments being provided that are not listed above:</i>	
Memo providing supplemental modeling information, plot plans, area map, SPLD description, and urban option analysis.	X

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)

Date: 01/12/2021

Permit #: 2993

Model Options

Company Name: Lyondell Chemical Company

I. Project Information

A. Project Overview: In the box below, give a brief Project Overview. To type or insert text in box, double click in the box below. *Please limit your response to 2000 characters.*

Lyondell Chemical Company (Lyondell) is in the process of requesting an increase in emissions from the POSM1 Unit at the Channelview Site. Lyondell is submitting an amendment application to authorize the increase in emissions of speciated non-criteria pollutants, CO, NOx (annual only), PM10, PM2.5, and SO2 (short-term only).

II. Air Dispersion Modeling Preliminary Information

Instructions: Fill in the information below based on your modeling setup. The selections chosen in this sheet will carry throughout the sheet and workbook. Based on selections below, only portions of the sheet and workbook will be available. Therefore, it is vital the sheet and workbook are filled out in order, do NOT skip around.

For larger text boxes, double click to type or insert text.

A. Type of Model Used: *Select "X" in all that apply*

<input type="checkbox"/> AERSCREEN	<input checked="" type="checkbox"/>	<input type="checkbox"/> AERMOD
19191	Enter in all applicable Model Version(s).	

B. Building Downwash

<input type="checkbox"/> Yes	Is downwash applicable? (<i>Select "Yes" or "No"</i>)
4272	Enter BPIP version (AERMOD and ISCPrime only).

C. Type of Analyses: (*Select "X" in all that apply*)

*PSD projects should submit a protocol and not utilize this form.

<input checked="" type="checkbox"/> Minor NSR NAAQS	<input checked="" type="checkbox"/> State Property Line
<input checked="" type="checkbox"/> Health Effects	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)

Date: 01/12/2021

Permit #: 2993

Model Options

Company Name: Lyondell Chemical Company

D. Constituents Evaluating: (Select "X" in all that apply)			
NAAQS: List all pollutants that require a modeling review. <i>(Select "X" in all that apply)</i>			
<input checked="" type="checkbox"/>	SO ₂	<input checked="" type="checkbox"/>	PM ₁₀
<input checked="" type="checkbox"/>	CO	<input checked="" type="checkbox"/>	PM _{2.5}
<input type="checkbox"/>	Pb	<input checked="" type="checkbox"/>	NO ₂
Annual	Identify which averaging periods are being evaluated for NO ₂ .		
Tier 2: ARM 2	Identify the annual NO ₂ tier used for the AERMOD or AERSCREEN analyses.		
State Property Line: List all pollutants that require a modeling review. <i>(Select "X" in all that apply)</i>			
<input type="checkbox"/>	H ₂ S	<input checked="" type="checkbox"/>	SO ₂
<input type="checkbox"/>	H ₂ SO ₄	<input type="checkbox"/>	
Health Effects: Fill in the Speciated Emissions sheet with all applicable pollutants, CAS numbers, and ESLs.			

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)

Date: 01/12/2021
 Permit #: 2993

Model Options

Company Name: Lyondell Chemical Company

E. Dispersion Options: *If "Urban" has been selected and this project is using AERMOD or AERSCREEN, include the population used. Select "X" in the box to select an option.*

<input checked="" type="checkbox"/>	Urban	652963	Population Used
-------------------------------------	-------	--------	-----------------

Provide any additional justification on the dispersion option selected above:

Since the Channelview Site is located east of the Houston metropolitan area and within the Houston-The Woodlands-Sugarland Metropolitan Statistical Area (MSA), Lyondell proposes the use of the urban dispersion option for AERMOD in the modeling analysis to include the urban heat island effect. The population within the modeling domain is estimated to be 652,963 people based on 2010 census data.

The proposed urban option was also used in previous modeling projects and approved by TCEQ.

F. Determination of Surface Roughness: *If AERSCREEN or AERMOD is used, fill out the section below.*

Select basis for surface roughness: AERSURFACE

Select "X" in one of the three surface roughness categories:

<input type="checkbox"/>	Low	<input checked="" type="checkbox"/>	Medium
<input type="checkbox"/>		<input type="checkbox"/>	High

If you are using AERSURFACE, please complete the following section:

<u>13016</u>	AERSURFACE Version Number	
<u>296284</u>	Center UTM Easting (meters)	<u>3300144</u> Center UTM Northing (meters)
<u>1</u>	Study Radius (km)	
<u>No</u>	Airport? (Select Yes or No)	
<u>No</u>	Continuous Snow Cover (Select Yes or No)	
<u>Average</u>	Surface Moisture (Select Wet, Dry, or Average)	
<u>No</u>	Arid Region? (Select Yes or No)	
<u>Default</u>	Month/Season Assignment	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)

Date: 01/12/2021
 Permit #: 2993

Model Options

Company Name: Lyondell Chemical Company

H. Receptor Grid:		
For AERMOD or ISC/ISCPrime, fill in the following information on your modeled receptor grid. Note: Receptor grid resolution (tight, fine, medium, coarse) are based on recommended receptor grid spacing per the AQMG, if something outside of this is used, fully describe it below.		
25	Meters (m)	Tight Receptor Spacing
500	Meters (m)	Tight Receptor Distance
100	Meters (m)	Fine Receptor Spacing
1000	Meters (m)	Fine Receptor Distance
500	Meters (m)	Medium Receptor Spacing
5000	Meters (m)	Medium Receptor Distance
1000	Meters (m)	Coarse Receptor Spacing
10000	Meters (m)	Coarse Receptor Distance
Describe any other receptor grid designs (over water, GLC _{ni} , SPLD etc.):		
<p>The Channelview Site includes a Single Property Line Designation (SPLD) consisting of Equistar Chemicals, LP, Lyondell Chemical Company (both owned and managed by LyondellBasell and are thus considered to be under common control), and EIF Channelview Cogeneration, LLC (RN100220276), which is referenced in the October 6, 2000 SPLD document under its former name, Reliant Energy Channelview. Additionally, Optim Energy Altura Cogen (Altura, RN100210863) leases property from Lyondell. As Lyondell maintains control of all property surrounding Altura and employees of Altura must access the property through a Lyondell-controlled gate, Lyondell considers that this property does not meet the definition of "ambient air" per the provisions of the U.S. EPA memo titled, "Interpretation of 'Ambient Air' in Situations Involving Leased Land Under the Regulations for Prevention of Significant Deterioration (PSD)", dated June 22, 2007</p>		
I. Terrain:		
X	Elevated	
18081	AERMAP Version.	
For additional justification on terrain selection, fill in the box below:		

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Building Downwash

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Facility:

Downwash Type	Modeled Building ID	Tank Diameter (m)	Number of Tiers	Maximum Height (m)	Tier 1 Height (m)	Tier 2 Height (m)
Building	BLD135		1	6.096	6.096	
Building	BLD83		1	3.81	3.81	
Building	BLD111		1	3.66	3.66	
Building	BLD114		1	4.57	4.57	
Building	BLD113		1	4.57	4.57	
Building	BLD112		1	3.66	3.66	
Building	BLD119		1	3.66	3.66	
Building	BLD120		1	3.66	3.66	
Building	BLD121		1	9.14	9.14	
Building	BLD122		1	7.62	7.62	
Building	BLD145		1	3.66	3.66	
Building	BLD146		1	3.66	3.66	
Building	BLD147		1	3.66	3.66	
Building	BLD107		1	3.874008	3.874008	
Building	BLD116		1	2.13	2.13	
Building	BLD123		1	4.572	4.572	
Building	BLD117		1	4.27	4.27	
Building	BLD82		1	4.572	4.572	
Building	BLD108		1	10.668	10.668	
Building	BLD109		1	9.144	9.144	
Building	BLD141		1	4.8768	4.8768	
Building	BLD102		1	13.716	13.716	
Building	BLD103		1	13.716	13.716	
Building	BLD101		1	12.192	12.192	
Building	BLD110		1	10.3632	10.3632	
Building	BLD105		1	6.7056	6.7056	
Building	BLD106		1	12.192	12.192	
Building	BLD78		1	9.7536	9.7536	
Building	BLD48		1	12.192	12.192	
Building	BLD49		1	12.192	12.192	
Building	BLD84		1	7.3152	7.3152	
Building	BLD80		1	7.3152	7.3152	
Building	BLD79		1	9.144	9.144	
Building	BLD67		1	12.192	12.192	
Building	BLD51		1	12.192	12.192	
Building	BLD55		1	12.192	12.192	
Building	BLD68		1	14.6304	14.6304	
Building	BLD69		1	14.6304	14.6304	
Building	BLD62		1	14.6304	14.6304	
Building	BLD65		1	14.6304	14.6304	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Building Downwash

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Downwash Type	Modeled Building ID	Tank Diameter (m)	Number of Tiers	Maximum Height (m)	Tier 1 Height (m)	Tier 2 Height (m)
Building	BLD31		1	14.6304	14.6304	
Building	BLD52		1	14.6304	14.6304	
Building	BLD71		1	14.6304	14.6304	
Building	BLD57		1	14.6304	14.6304	
Building	BLD73		1	12.192	12.192	
Building	BLD74		1	12.192	12.192	
Building	BLD25		1	7.3152	7.3152	
Building	BLD24		1	7.3152	7.3152	
Building	BLD1		1	9.144	9.144	
Building	BLD91		1	14.6304	14.6304	
Building	BLD93		1	14.6304	14.6304	
Building	BLD88		1	14.6304	14.6304	
Building	BLD118		1	12.192	12.192	
Building	BLD81		1	12.192	12.192	
Building	BLD115		1	12.192	12.192	
Building	BLD124		1	14.6304	14.6304	
Building	BLD125		1	14.6304	14.6304	
Building	BLD23		1	14.6304	14.6304	
Building	BLD26		1	14.6304	14.6304	
Building	BLD27		1	14.6304	14.6304	
Building	BLD4		1	14.6304	14.6304	
Building	BLD5		1	14.6304	14.6304	
Building	BLD22		1	14.6304	14.6304	
Building	BLD3		1	14.6304	14.6304	
Building	BLD33		1	3.715512	3.715512	
Building	BLD30		1	13.66033	13.66033	
Building	BLD29		1	13.66033	13.66033	
Building	BLD131		1	9.424425	9.424425	
Building	BLD134		1	12.15895	12.15895	
Building	BLD39		1	10.67	10.67	
Building	BLD45		1	12.5	12.5	
Building	BLD46		1	12.5	12.5	
Building	BLD132		1	12.13482	12.13482	
Building	BLD133		1	12.13482	12.13482	
Building	BLD47		1	14.94	14.94	
Building	BLD6		1	12.5	12.5	
Building	BLD2		1	5.478445	5.478445	
Building	BLD42		1	14.94	14.94	
Building	BLD43		1	14.94	14.94	
Building	BLD40		1	5.49	5.49	
Building	BLD70		1	14.6304	14.6304	
Building	ST57701A		1	5.49	5.49	
Building	ST57701B		1	5.49	5.49	
Building	ST57702A		1	8.53	8.53	
Building	ST57702B		1	8.53	8.53	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Building Downwash

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Downwash Type	Modeled Building ID	Tank Diameter (m)	Number of Tiers	Maximum Height (m)	Tier 1 Height (m)	Tier 2 Height (m)
Building	ST57703A		1	9.75	9.75	
Building	ST57703B		1	9.75		
Building	ST57704		1	5.49	5.49	
Building	ST57705		1	5.49	5.49	
Building	ST57709		1	5.49	5.49	
Building	ST57713A		1	4.88	4.88	
Building	ST57713B		1	4.88	4.88	
Building	ST57717A		1	6.71	6.71	
Building	ST57717B		1	6.71	6.71	
Building	ST57719A		1	7.32	7.32	
Building	ST57719B		1	7.32	7.32	
Building	ST57721A		1	8.53	8.53	
Building	ST57721B		1	8.53	8.53	
Building	ST57723A		1	4.88	4.88	
Building	ST57723B		1	4.88	4.88	
Building	ST57725A		1	4.27	4.27	
Building	ST57725B		1	4.27	4.27	
Building	ST57727A		1	5.49	5.49	
Building	ST57727B		1	5.49	5.49	
Building	ST57729A		1	2.44	2.44	
Building	ST57729B		1	2.44	2.44	
Building	ST57741		1	4.88	4.88	
Building	ST57742		1	4.88	4.88	
Building	ST57743		1	7.32	7.32	
Building	ST57745		1	5.49	5.49	
Building	ST57747		1	5.49	5.49	
Building	ST5901		1	4.88	4.88	
Building	ST5902		1	4.88	4.88	
Building	ST5903		1	4.88	4.88	
Building	ST5904A		1	6.71	6.71	
Building	ST5904B		1	6.71	6.71	
Building	SBLD101		1	5.94	5.94	
Building	SBLD102		1	5.94	5.94	
Building	ST5908		1	4.88	4.88	
Building	ST5909		1	7.62	7.62	
Building	SBLD107		1	9.45	9.45	
Building	SBLD108		1	7.92	7.92	
Building	SBLD110		1	7.62	7.62	
Building	ST5913		1	5.33	5.33	
Building	SBLD109		1	9.45	9.45	
Building	SBLD104		1	9.45	9.45	
Building	ST5916		1	10.97	10.97	
Building	SBLD103		1	9.45	9.45	
Building	ST5997		1	6.1	6.1	
Building	ST5998		1	6.1	6.1	
Building	SBLD86		1	9.75	9.75	
Building	SBLD83		1	9.75	9.75	
Building	ST60003		1	4.57	4.57	
Building	ST60004		1	4.57	4.57	
Building	SBLD87		1	6.71	6.71	
Building	SBLD84		1	5.49	5.49	
Building	SBLD8		1	12.19	12.19	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Building Downwash

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Downwash Type	Modeled Building ID	Tank Diameter (m)	Number of Tiers	Maximum Height (m)	Tier 1 Height (m)	Tier 2 Height (m)
Building	SBLD3		1	10.97	10.97	
Building	SBLD4		1	12.8	12.8	
Building	SBLD69		1	12.19	12.19	
Building	SBLD70		1	12.19	12.19	
Building	SBLD5		1	10.97	10.97	
Building	ST60223		1	6.1	6.1	
Building	SBLD72		1	8.53	8.53	
Building	SBLD71		1	9.14	9.14	
Building	ST60226		1	3.66	3.66	
Building	SBLD74		1	10.06	10.06	
Building	SBLD75		1	10.06	10.06	
Building	SBLD78		1	10.06	10.06	
Building	ST60311A		1	12.19	12.19	
Building	ST60311B		1	12.19	12.19	
Building	ST60312A		1	12.19	12.19	
Building	ST60312B		1	12.19	12.19	
Building	ST60314		1	2.44	2.44	
Building	SBLD66		1	12.19	12.19	
Building	ST60321A		1	9.14	9.14	
Building	SBLD57		1	9.14	9.14	
Building	SBLD68		1	9.14	9.14	
Building	ST60322A		1	12.19	12.19	
Building	ST60322B		1	12.19	12.19	
Building	ST60322C		1	12.19	12.19	
Building	SBLD65		1	7.32	7.32	
Building	ST60440A		1	14.63	14.63	
Building	ST60440B		1	14.63	14.63	
Building	SBLD94		1	14.63	14.63	
Building	SBLD96		1	9.14	9.14	
Building	ST60460		1	14.63	14.63	
Building	SBLD98		1	10.97	10.97	
Building	SBLD99		1	10.97	10.97	
Building	SBLD100		1	10.97	10.97	
Building	ST60462A		1	14.63	14.63	
Building	SBLD58		1	14.63	14.63	
Building	ST60463		1	10.97	10.97	
Building	SBLD93		1	14.63	14.63	
Building	ST60471		1	10.97	10.97	
Building	SBLD2		1	14.63	14.63	
Building	SBLD92		1	13.11	13.11	
Building	SBLD10		1	12.8	12.8	
Building	SBLD95		1	5.49	5.49	
Building	ST60490		1	9.6	9.6	
Building	ST60492		1	14.63	14.63	
Building	ST60561		1	6.4	6.4	
Building	ST60580		1	4.27	4.27	
Building	SBLD61		1	12.19	12.19	
Building	ST60631		1	5.49	5.49	
Building	ST60788		1	4.57	4.57	
Building	SBLD64		1	14.63	14.63	
Building	ST60810A		1	7.32	7.32	
Building	SBLD82		1	7.32	7.32	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Building Downwash

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Downwash Type	Modeled Building ID	Tank Diameter (m)	Number of Tiers	Maximum Height (m)	Tier 1 Height (m)	Tier 2 Height (m)
Building	ST60810C		1	8.23	8.23	
Building	SBLD73		1	10.06	10.06	
Building	SBLD6		1	12.19	12.19	
Building	SBLD56		1	12.19	12.19	
Building	SBLD88		1	12.19	12.19	
Building	SBLD90		1	12.19	12.19	
Building	SBLD80		1	7.62	7.62	
Building	ST638		1	10.36	10.36	
Building	ST64305		1	3.96	3.96	
Building	ST65635		1	8.53	8.53	
Building	ST65637		1	8.53	8.53	
Building	ST65671		1	3.96	3.96	
Building	ST65672		1	5.18	5.18	
Building	ST6802		1	12.19	12.19	
Building	SBLD7		1	12.8	12.8	
Building	SBLD1		1	12.8	12.8	
Building	SBLD26		1	12.19	12.19	
Building	SBLD29		1	12.19	12.19	
Building	SBLD35		1	4.57	4.57	
Building	SBLD46		1	14.63	14.63	
Building	ST68494		1	1.83	1.83	
Building	ST68520		1	12.19	12.19	
Building	ST68550A		1	12.19	12.19	
Building	ST68550B		1	12.19	12.19	
Building	SBLD77		1	10.97	10.97	
Building	ST68632A		1	10.97	10.97	
Building	ST68706		1	1.83	1.83	
Building	SBLD62		1	12.19	12.19	
Building	BLD1147		1	14.94	14.94	
Building	BLD1148		1	14.94	14.94	
Building	BLD1149		1	14.94	14.94	
Building	BLD1150		1	14.94	14.94	
Building	BLD1151		1	14.94	14.94	
Building	STOR1		1	17.5	17.5	
Building	STOR2		1	17.5	17.5	
Building	STOR3		1	17.5	17.5	
Building	STOR4		1	17.5	17.5	
Building	STOR5		1	17.5	17.5	
Building	STOR6		1	17.5	17.5	
Building	STOR7		1	17.5	17.5	
Building	STOR8		1	17.5	17.5	
Building	STOR9		1	17.5	17.5	
Building	STOR10		1	17.5	17.5	
Building	STOR11		1	17.5	17.5	
Building	STOR12		1	15	15	
Building	STOR13		1	15	15	
Building	STOR14		1	15	15	
Building	STOR15		1	15	15	
Building	STOR16		1	15	15	
Building	STOR17		1	15	15	
Building	STOR18		1	15	15	
Building	STOR19		1	15	15	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Building Downwash

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Downwash Type	Modeled Building ID	Tank Diameter (m)	Number of Tiers	Maximum Height (m)	Tier 1 Height (m)	Tier 2 Height (m)
Building	STOR20		1	15	15	
Building	STOR21		1	15	15	
Building	STOR22		1	15	15	
Building	STOR23		1	15	15	
Building	STOR24		1	15	15	
Building	TK1		1	15	15	
Building	TK2		1	15	15	
Building	TK3		1	15	15	
Building	TK4		1	15	15	
Building	TK5		1	15	15	
Building	TK6		1	15	15	
Building	TK3105		1	14.63	14.63	
Building	TK8		1	15	15	
Building	TK9		1	15	15	
Building	TK10		1	15	15	
Building	TK11		1	15	15	
Building	BLD270		1	14.6304	14.6304	
Building	BLD278		1	9.7536	9.7536	
Building	STOR25		1	17.5	17.5	
Building	BLD44		1	6.096	6.096	
Building	BLD50		1	4.572	4.572	
Building	BLD18		1	16.764	16.764	
Building	BLD19		1	12.192	12.192	
Building	BLD35		1	14.02	14.02	
Building	BLD37		1	18.29	18.29	
Building	BLD38		1	6.096	6.096	
Building	BLD66		1	6.096	6.096	
Building	BLD87		1	6.096	6.096	
Building	BLD89		1	6.096	6.096	
Building	BLD92		1	5.4864	5.4864	
Building	BLD96		1	6.096	6.096	
Building	BLD126		1	9.144	9.144	
Building	BLD127		1	4.8768	4.8768	
Building	SBLD30		1	4.570001	4.570001	
Building	SBLD31		1	8.23	8.23	
Building	SBLD37		1	4.570001	4.570001	
Building	SBLD11		1	6.099999	6.099999	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Building Downwash

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Downwash Type	Modeled Building ID	Tank Diameter (m)	Number of Tiers	Maximum Height (m)	Tier 1 Height (m)	Tier 2 Height (m)
Building	SBLD15		1	4.27	4.27	
Building	SBLD111		1	4.570001	4.570001	
Building	SBLD36		1	6.099999	6.099999	
Building	SBLD112		1	7.62	7.62	
Building	SBLD9		1	11.89	11.89	
Building	SBLD113		1	10.06	10.06	
Building	SBLD17		1	6.099999	6.099999	
Building	SBLD115		1	3.960001	3.960001	
Building	SBLD16		1	5.18	5.18	
Building	SBLD25		1	5.18	5.18	
Building	SBLD44		1	7.010001	7.010001	
Building	SBLD55		1	3.659999	3.659999	
Building	SBLD116		1	7.320001	7.320001	
Building	SBLD117		1	3.659999	3.659999	
Building	SBLD118		1	3.960001	3.960001	
Building	SBLD119		1	6.709998	6.709998	
Building	SBLD120		1	5.18	5.18	
Building	SBLD121		1	6.400002	6.400002	
Building	SBLD42		1	4.570001	4.570001	
Building	SBLD38		1	4.270001	4.270001	
Building	SBLD122		1	3.960001	3.960001	
Building	SBLD32		1	5.18	5.18	
Building	SBLD22		1	3.960001	3.960001	
Building	SBLD21		1	3.96	3.96	
Building	SBLD24		1	6.1	6.1	
Building	SBLD14		1	3.05	3.05	
Building	SBLD13		1	3.049999	3.049999	
Building	SBLD39		1	10.06	10.06	
Building	SBLD40		1	4.57	4.57	
Building	SBLD124		1	4.270001	4.270001	
Building	SBLD45		1	5.49	5.49	
Building	SBLD126		1	10.36	10.36	
Building	SBLD127		1	5.789999	5.789999	
Building	SBLD128		1	4.880001	4.880001	
Building	SBLD129		1	4.270001	4.270001	
Building	SBLD18		1	4.570001	4.570001	
Building	SBLD20		1	6.099999	6.099999	
Building	SBLD52		1	3.960001	3.960001	
Building	SBLD53		1	3.960001	3.960001	
Building	SBLD51		1	3.960001	3.960001	
Building	SBLD50		1	3.960001	3.960001	
Building	SBLD54		1	6.709998	6.709998	
Building	SCOOL1		1	14.94	14.94	
Building	SBLD43		1	5.49	5.49	
Building	SBLD41		1	3.960001	3.960001	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Building Downwash

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Downwash Type	Modeled Building ID	Tank Diameter (m)	Number of Tiers	Maximum Height (m)	Tier 1 Height (m)	Tier 2 Height (m)
Building	STK11154		1	8.530002	8.530002	
Building	SBLD34		1	3.659999	3.659999	
Building	SBLD130		1	4.270001	4.270001	
Building	SA6		1	3.349999	3.349999	
Building	SA7		1	3.659999	3.659999	
Building	SA4		1	3.659999	3.659999	
Building	SA9		1	3.659999	3.659999	
Building	SA45		1	3.049999	3.049999	
Building	SA44		1	2.44	2.44	
Building	SA46		1	3.049999	3.049999	
Building	SA47		1	5.49	5.49	
Building	SA5		1	6.099999	6.099999	
Building	SBLD131		1	4.270001	4.270001	
Building	SBLD132		1	3.049999	3.049999	
Building	SBLD133		1	6.400002	6.400002	
Building	SBLD135		1	3.05	3.05	
Building	SBLD136		1	4.570001	4.570001	
Building	SBLD137		1	5.18	5.18	
Building	SBLD138		1	2.44	2.44	
Building	SA8		1	3.049999	3.049999	
Building	SA57		1	3.049999	3.049999	
Building	SA2		1	3.659999	3.659999	
Building	SA3		1	3.659999	3.659999	
Building	SA74		1	3.05	3.05	
Building	SA39		1	3.049999	3.049999	
Building	SA26		1	3.05	3.05	
Building	SA22		1	6.099999	6.099999	
Building	SA20		1	3.659999	3.659999	
Building	SA21		1	4.270001	4.270001	
Building	SBLD139		1	6.1	6.1	
Building	MEOHCT		1	15.24	15.24	
Building	BLDR		1	15	15	
Building	BLD200		1	9.14	9.14	
Building	BLD201		1	5	5	
Building	BLD202		1	6	6	
Building	BLD203		1	5	5	
Building	BLD208		1	5	5	
Building	TK-57639		1	7.62	7.62	
Building	TK-57637		1	5.49	5.49	
Building	TK-85401		1	14.6	14.6	
Building	TK-86701		1	14.6	14.6	
Building	TK-86801		1	14.6	14.6	
Building	TK-85403		1	14.6	14.6	
Building	TK-85402		1	14.6	14.6	
Building	TK86702A		1	27.4	27.4	
Building	TK86702B		1	27.4	27.4	
Building	D-85202A		1	13.4	13.4	
Building	D-85202B		1	13.4	13.4	
Building	D-85301		1	12.5	12.5	
Building	SUB-35		1	8.5	8.5	
Building	SUB-30		1	8.5	8.5	
Building	SP-86480		1	4.9	4.9	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Building Downwash

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Downwash Type	Modeled Building ID	Tank Diameter (m)	Number of Tiers	Maximum Height (m)	Tier 1 Height (m)	Tier 2 Height (m)
Building	SUB-33		1	6.1	6.1	
Building	TK-81370		1	12.2	12.2	
Building	TK-81374		1	12.2	12.2	
Building	STORAGE		1	6.1	6.1	
Building	TK-81360		1	7.3	7.3	
Building	TK-81350		1	7.3	7.3	
Building	R-81340		1	45.7	45.7	
Building	SUB-34		1	8.5	8.5	
Building	RIE-03		1	2.1	2.1	
Building	TK-85501		1	12.2	12.2	
Building	TK-85503		1	8.5	8.5	
Building	TK-85601		1	7.6	7.6	
Building	TK-85701		1	7.3	7.3	
Building	TK-86101		1	8.5	8.5	
Building	85110A		1	2.1	2.1	
Building	85110B		1	2.1	2.1	
Building	85110C		1	2.1	2.1	
Building	TK85103A		1	16.8	16.8	
Building	SUB-36		1	8.5	8.5	
Building	CONTROL		1	4.6	4.6	
Building	TK-6905		1	7.32	7.32	
Building	TK-6901		1	2.39	2.39	
Building	TK-6902		1	2.39	2.39	
Building	BARGE4		1	3.05	3.05	
Building	BARGE5		1	4.27	4.27	
Building	SUB1743		1	5.18	5.18	
Building	BOILER7		1	18.59	18.59	
Building	BOILER8		1	18.59	18.59	
Building	BOILER9		1	18.59	18.59	
Building	BOILER11		1	6.71	6.71	
Building	SBLD19		1	6.71	6.71	
Building	R-68790		1	15.1	15.1	
Building	R-68980		1	15.1	15.1	
Building	D-85102A		1	10.1	10.1	
Building	D-85102B		1	10.1	10.1	
Building	D-85107		1	10.1	10.1	
Building	BOILER7B		1	9.69	9.69	
Building	BOILER8B		1	9.69	9.69	
Building	BOILER9B		1	9.69	9.69	
Building	SP86504A		1	10.67	10.67	
Building	SP86504B		1	10.67	10.67	
Building	BAGBULD		1	9.14	9.14	
Building	CT-68420		1	14.6	14.6	
Building	AS81001		1	3.05	3.05	
Building	GENBLDG		1	8.5	8.5	
Building	HSHJH000		1	3.66	3.66	
Building	HSHJH001		1	3.66	3.66	
Building	HSHJH002		1	6.1	6.1	
Building	TK34		1	12.19	12.19	
Building	TK47		1	7.62	7.62	
Building	RTMVW003		1	3.66	3.66	
Building	RTMVW004		1	3.66	3.66	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Building Downwash

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Downwash Type	Modeled Building ID	Tank Diameter (m)	Number of Tiers	Maximum Height (m)	Tier 1 Height (m)	Tier 2 Height (m)
Building	GIM1		1	22.86	22.86	
Building	GIM2		1	22.86	22.86	
Building	GIM4		1	22.86	22.86	
Building	GIM3		1	22.86	22.86	
Building	D-85202C		1	13.4	13.4	
Building	D-85203		1	14.6	14.6	
Building	D-85105		1	7.9	7.9	
Building	D-85106		1	7	7	
Building	D-85101A		1	9.4	9.4	
Building	D-85101B		1	9.4	9.4	
Building	AS86012		1	2.7	2.7	
Building	86401A		1	2.3	2.3	
Building	86401B		1	2.3	2.3	
Building	TK1735		1	6.1	6.1	
Building	TK1736		1	2.13	2.13	
Building	TK1732		1	3.66	3.66	
Building	TK1750		1	3.66	3.66	
Building	TK1709		1	6.1	6.1	
Building	TK1740		1	6.1	6.1	
Building	SPLTR		1	6.1	6.1	
Building	TK1739		1	6.1	6.1	
Building	TK1708		1	3.66	3.66	
Building	TK1726		1	3.05	3.05	
Building	TK1734		1	3.66	3.66	
Building	TK1733		1	9.14	9.14	
Building	5P9YJ000		1	6.1	6.1	
Building	5P9YJ001		1	4.34	4.34	
Building	5P9YJ002		1	15.16	15.16	
Building	5P9YJ003		1	6.1	6.1	
Building	5P9YJ004		1	9.45	9.45	
Building	5P9YJ005		1	4.88	4.88	
Building	TK2812		1	4.57	4.57	
Building	SBLD114A		1	15.24	15.24	
Building	SBLD114B		1	15.24	15.24	
Building	TK3701		1	3.05	3.05	
Building	SHED		1	7.62	7.62	
Building	ELEC		1	3.66	3.66	
Building	BLD76		1	4.11	4.11	
Building	BLD76B		1	6.1	6.1	
Building	BLD200B		1	4.27	4.27	
Building	HTC1		1	7.01	7.01	
Building	HTC2		1	13.26	13.26	
Building	TK48E008		1	3.05	3.05	
Building	TK48E009		1	5.49	5.49	
Building	TK317		1	3.66	3.66	
Building	TK36		1	6.1	6.1	
Building	TK3210		1	5.18	5.18	
Building	TK3207		1	4.06	4.06	
Building	TK3215		1	7.32	7.32	
Building	TK3214		1	7.32	7.32	
Building	TK3213		1	7.32	7.32	
Building	TK3212		1	5.64	5.64	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Building Downwash

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Downwash Type	Modeled Building ID	Tank Diameter (m)	Number of Tiers	Maximum Height (m)	Tier 1 Height (m)	Tier 2 Height (m)
Building	TK3211		1	7.32	7.32	
Building	TK3219		1	7.32	7.32	
Building	TK3218		1	7.32	7.32	
Building	TK3217		1	7.32	7.32	
Building	TK3216		1	7.32	7.32	
Building	TK3209		1	5.18	5.18	
Building	TK3208		1	6.55	6.55	
Building	TK3223		1	7.32	7.32	
Building	TK3230		1	7.32	7.32	
Building	TK3203		1	4.72	4.72	
Building	TK3202		1	4.72	4.72	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Point Source Parameters

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Facility:

EPN	Model ID	Modeling Scenario	Source Description	Point Source Type	Point Source Justification	Easting: X [m]	Northing: Y [m]	Base Elevation [m]	Height [m]	Exit Temperature [K]	Exit Velocity [m/s]	Diameter [m]
EF86504	EF86504	Normal	Boilers (New), Boilers	POINT	vertical stack	295855.00	3300859.00	10.52	41.76	449.820	18.290	3.630
ECT86425	ECT86425	Normal	POTBA Plant Area Cooling Tower	POINT	vertical stack	295965.33	3301057.25	11.04	15.24	316.480	7.960	10.000
EF57180	EF57180	Normal	Hot Oil Heater	POINT	vertical stack	296194.00	3300355.00	9.94	38.10	733.150	6.710	1.230
EBOILER	EBOILER	Normal	Boilers	POINT	vertical stack	296365.00	3300358.00	9.86	75.90	413.710	19.810	4.570
EF68154A/B	EF68154A	Normal	CXO Bioplant Thermal	POINT	vertical stack	296663.00	3300209.00	12.13	9.14	922.040	15.790	0.760
ECT68420	ECT68420	Normal	Cooling Tower - Bio	POINT	vertical stack	296700.00	3300192.00	13.05	7.01	309.820	9.750	4.060
24E01 1	24E01 1	Normal	24E02 Cell 1	POINT	vertical stack	295439.15	3302053.86	11.96	16.46	305.370	9.700	4.570
24E01 2	24E01 2	Normal	24E02 Cell 2	POINT	vertical stack	295444.61	3302053.73	11.98	16.46	305.370	9.700	4.570
24E01 3	24E01 3	Normal	24E02 Cell 3	POINT	vertical stack	295450.06	3302053.65	11.98	16.46	305.370	9.700	4.570
24E01 4	24E01 4	Normal	24E02 Cell 4	POINT	vertical stack	295455.65	3302053.82	11.97	16.46	305.370	9.700	4.570
31E05	31E05	Normal	TK-3105 Acetone Feed	POINT	vertical stack	295441.00	3302214.00	12.15	6.10	305.370	0.001	0.001
69E05	69E05	Normal	Barge Docks 1, 2, 3, 4	POINT	vertical stack	297359.00	3300315.00	-0.19	3.05	338.710	0.003	0.610
69E06	69E06	Normal	Barge Docks 1, 2, 3, 4	POINT	vertical stack	297369.00	3300390.00	-0.19	3.05	338.710	0.003	0.610
HTCTO	HTCTO	Normal	HTC Thermal Oxidizer	POINT	vertical stack	295610.74	3302734.74	12.89	3.66	347.040	8.090	0.610
HTCVENT	HTCVENT	Normal	HTC Vent at Bay 6	POINT	vertical stack	295650.68	3302679.04	12.90	20.42	0.000	0.640	1.680
ED5968	ED5968	Normal	D-5968 Prepolymer Storage	POINT	vertical stack	296280.00	3300476.00	9.83	9.14	355.370	0.001	0.001
ELPOLY	ELPOLY	Normal	Polyol Product Loading	POINT	vertical stack	296105.00	3300517.00	10.32	4.57	324.820	0.030	0.090
ETK60311B	ETK60311	Normal	TK-60311B Barge Export Tank (Polyol Service Only)	POINT	vertical stack	296958.00	3300209.00	10.05	13.11	297.040	0.001	0.001
ETK5911	ETK5911	Normal	TK-5911	POINT	vertical stack	296315.00	3300567.00	9.98	9.14	383.150	0.003	0.370
ETK5912	ETK5912	Normal	TK-5912	POINT	vertical stack	296315.00	3300585.00	10.11	9.14	338.710	0.003	0.370
ETK68491	ETK68491	Normal	Tank 68491	POINT	vertical stack	295833.00	3300264.00	10.63	15.24	0.000	0.001	0.001
ETK5913	ETK5913	Normal	TK-5913	POINT	vertical stack	296278.00	3300573.00	10.29	9.14	355.370	0.003	0.370
ETK86701	ETK86701	Normal	POTBA Plant Contaminated Stormwater Tank	POINT	vertical stack	295870.00	3300778.00	10.33	15.24	0.000	0.001	0.001
ETK60451	ETK60451	Normal	Tank 60451	POINT	vertical stack	295952.00	3300435.00	10.79	9.75	366.480	0.001	0.001
ETK60460	ETK60460	Normal	Tank 60460	POINT	vertical stack	295857.00	3300493.00	10.73	15.24	0.000	0.001	0.001
ETK60470	ETK60470	Normal	Tank 60470	POINT	vertical stack	295947.00	3300373.00	11.18	15.24	355.370	0.001	0.001
ETK60481	ETK60481	Normal	Tank 60481	POINT	vertical stack	295853.00	3300429.00	10.64	15.24	324.820	0.001	0.001
ETK60482	ETK60482	Normal	Tank 60482	POINT	vertical stack	295850.00	3300398.00	10.61	12.80	316.480	0.001	0.001
EAVJAS993	AVJAS993	Normal	Analyzer Vent	POINT	vertical stack	295665.00	3300463.00	10.15	2.13	0.000	0.001	0.050
EAVJAS999	AVJAS999	Normal	Analyzer Vent	POINT	vertical stack	295617.00	3300428.00	10.27	2.13	0.000	0.001	0.050
EAVJAS994	AVJAS994	Normal	Analyzer Vent	POINT	vertical stack	295526.00	3300280.00	10.22	2.13	0.000	0.001	0.050
EAVAS68023	AVA68023	Normal	Analyzer Vent	POINT	vertical stack	295271.00	3300421.00	11.11	2.13	0.000	0.001	0.050
ETK60450	ETK60450	Normal	Tank 60450	POINT	vertical stack	295947.00	3300400.00	10.77	15.24	366.480	0.001	0.001
TK60461A	TK60461A	Normal	Tank 60461A	POINT	vertical stack	295831.00	3300508.00	10.75	11.58	307.040	0.001	0.001
TK60461B	TK60461B	Normal	Tank 60461B	POINT	vertical stack	295831.00	3300491.00	10.57	15.24	307.040	0.001	0.001
TK60461C	TK60461C	Normal	Tank 60461C	POINT	vertical stack	295832.00	3300477.00	10.49	14.63	307.040	0.001	0.001
EAVJAS995	AVJAS995	Normal	Analyzer Vent	POINT	vertical stack	295539.00	3300329.00	10.43	2.13	0.000	0.001	0.050
ESMSSTK	ESMSSTK	Normal	Tank Atmospheric Emissions	POINT	vertical stack	295804.00	3299953.00	9.90	7.32	310.930	0.310	0.610
EF64170	EF64170	Normal	Catalytic Converter/Incinerator F-64170	POINT	vertical stack	296749.00	3300604.00	10.28	30.48	377.590	21.340	0.910
EF65630	EF65630	Normal	Hot Oil Heater F-630	POINT	vertical stack	296437.00	3300440.00	10.26	39.62	449.820	7.680	2.130

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Point Source Parameters

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

EPN	Model ID	Modeling Scenario	Source Description	Point Source Type	Point Source Justification	Easting: X [m]	Northing: Y [m]	Base Elevation [m]	Height [m]	Exit Temperature [K]	Exit Velocity [m/s]	Diameter [m]
ETK60225	ETK60225	Normal	Octane Storage Tank 60225	POINT	vertical stack	296727.00	3300297.00	9.68	10.06	0	0.001	0.001
ETK6802	ETK6802	Normal	Stormwater Tank 6802	POINT	vertical stack	296561.00	3300212.00	11.01	12.50	305.370	0.001	0.001
ETK68784	ETK68784	Normal	Wastewater Tank 68784	POINT	vertical stack	296580.00	3300291.00	9.68	12.19	0	0.001	0.001
ECOOOL1	COOL1_1	Normal	PO/SM 1 Cooling Tower Cell 1	POINT	vertical stack	296473.00	3300371.00	9.82	19.91	310.930	8.530	9.140
ECOOOL1	COOL1_2	Normal	PO/SM 1 Cooling Tower Cell 2	POINT	vertical stack	296473.00	3300361.00	9.81	19.91	310.930	8.530	9.140
ECOOOL1	COOL1_3	Normal	PO/SM 1 Cooling Tower Cell 3	POINT	vertical stack	296473.00	3300351.00	9.80	19.91	310.930	8.530	9.140
ECOOOL1	COOL1_4	Normal	PO/SM 1 Cooling Tower Cell 4	POINT	vertical stack	296473.00	3300341.00	9.76	19.91	310.930	8.530	9.140
ECOOOL1	COOL1_5	Normal	PO/SM 1 Cooling Tower Cell 5	POINT	vertical stack	296473.00	3300331.00	9.71	19.91	310.930	8.530	9.140
ECOOOL1	COOL1_6	Normal	PO/SM 1 Cooling Tower Cell 6	POINT	vertical stack	296474.00	3300321.00	9.66	19.91	310.930	8.530	9.140
ECOOOL1	COOL1_7	Normal	PO/SM 1 Cooling Tower Cell 7	POINT	vertical stack	296474.00	3300311.00	9.64	19.91	310.930	8.530	9.140
ECOOOL1	COOL1_8	Normal	PO/SM 1 Cooling Tower Cell 8	POINT	vertical stack	296474.00	3300301.00	9.66	19.91	310.930	8.530	9.140
ECOOOL1	COOL1_9	Normal	PO/SM 1 Cooling Tower Cell 9	POINT	vertical stack	296474.00	3300292.00	9.67	19.91	310.930	8.530	9.140
ECOOOL1	COOL1_10	Normal	PO/SM 1 Cooling Tower Cell 10	POINT	vertical stack	296474.00	3300282.00	9.68	19.91	310.930	8.530	9.140
ECOOOL1	COOL1_11	Normal	PO/SM 1 Cooling Tower Cell 11	POINT	vertical stack	296474.00	3300272.00	9.66	19.91	310.930	8.530	9.140
ECOOOL1	COOL1_12	Normal	PO/SM 1 Cooling Tower Cell 12	POINT	vertical stack	296474.00	3300262.00	9.64	19.91	310.930	8.530	9.140
ECOOOL1	COOL1_13	Normal	PO/SM 1 Cooling Tower Cell 13	POINT	vertical stack	296474.00	3300252.00	9.64	19.91	310.930	8.530	9.140
ECOOOL1	COOL1_14	Normal	PO/SM 1 Cooling Tower Cell 14	POINT	vertical stack	296474.00	3300242.00	9.70	19.91	310.930	8.530	9.140
ELMBA	ELMBA	Normal	MBA Loading	POINT	vertical stack	296690.00	3300322.00	10.08	3.66	310.930	0.001	0.001
ELRFO635	LRFO635	Normal	RFO 635 Loading	POINT	vertical stack	296392.00	3300445.00	10.27	3.66	355.370	0.001	0.001
ELRFO637	LRFO637	Normal	RFO 637 Loading	POINT	vertical stack	296392.00	3300445.00	10.27	3.66	360.930	0.001	0.001
ETK60001	ETK60001	Normal	PEA Intermediate Storage Tank 60001	POINT	vertical stack	296286.00	3300308.00	9.97	11.58	313.710	0.001	0.001
ETK60220	ETK60220	Normal	Dehydration Feed Tank 60220	POINT	vertical stack	296727.00	3300336.00	9.60	12.80	349.820	0.001	0.001
ETK60221	ETK60221	Normal	Crude ACP Tank 60221	POINT	vertical stack	296727.00	3300314.00	9.75	15.24	319.260	0.001	0.001
ETK60285A	TK60285A	Normal	PEA Feed Tank 60285A	POINT	vertical stack	296213.00	3300321.00	10.12	10.36	327.590	0.001	0.001
ETK60285B	TK60285B	Normal	PEA Feed Tank 60285B	POINT	vertical stack	296229.00	3300321.00	10.16	10.36	327.590	0.001	0.001
ETK60320	ETK60320	Normal	Styrene Surge Tank 60320	POINT	vertical stack	296657.00	3300381.00	9.67	15.24	308.150	0.001	0.001
ETK60321B	TK60321B	Normal	Styrene Test Tank 60321B	POINT	vertical stack	296674.00	3300364.00	10.13	10.06	0	0.001	0.001
ETK68632A	TK68632A	Normal	RFO 637 tank	POINT	vertical stack	296390.00	3300265.00	9.76	11.13	360.930	0.001	0.001
ELPEA	ELPEA	Normal	PEA Loading	POINT	vertical stack	296339.00	3300313.00	9.83	3.66	310.930	0.001	0.001
ED6312A	ED6312A	Normal	PEA Product Test Tank	POINT	vertical stack	296402.00	3300493.00	10.17	6.25	339.260	0.001	0.001
ED6312B	ED6312B	Normal	PEA Product Test Tank	POINT	vertical stack	296402.00	3300490.00	10.18	6.25	339.260	0.001	0.001
ETK60003	ETK60003	Normal	Toluene Storage Tank 60003	POINT	vertical stack	296308.00	3300306.00	9.86	5.18	308.150	0.001	0.001
ETK60004	ETK60004	Normal	MPG Storage Tank 60004	POINT	vertical stack	296308.00	3300312.00	9.76	4.57	0.000	0.001	0.001

Texas Commission on Environmental Quality

Date: 01/12/2021

Electronic Modeling Evaluation Workbook (EMEW)

Permit #: 2993

Point Source Parameters

Company Name: Lyondell Chemical Company

EPN	Model ID	Modeling Scenario	Source Description	Point Source Type	Point Source Justification	Easting: X [m]	Northing: Y [m]	Base Elevation [m]	Height [m]	Exit Temperature [K]	Exit Velocity [m/s]	Diameter [m]
ETK60005	ETK60005	Normal	PEA Storage Tank 60005	POINT	vertical stack	296288.00	3300323.00	9.85	7.92	310.930	0.001	0.001
ETK60006	ETK60006	Normal	PEA Storage Tank 60006	POINT	vertical stack	296279.00	3300326.00	9.94	6.10	310.930	0.001	0.001
ETK60223	ETK60223	Normal	HAS Storage Tank 60223	POINT	vertical stack	296859.00	3300386.00	9.68	8.53	0.000	0.001	0.001
ETK60226	ETK60226	Normal	Octanoic Acid Tank 60226	POINT	vertical stack	296727.00	3300288.00	9.63	4.27	313.710	0.001	0.001
ETK60321A	TK60321A	Normal	Styrene Test Tank 60321A	POINT	vertical stack	296657.00	3300364.00	10.05	10.06	0.000	0.001	0.001
ETK60321C	TK60321C	Normal	Styrene Test Tank 60321C	POINT	vertical stack	296674.00	3300381.00	9.81	10.06	0.000	0.001	0.001
ETK60631	ETK60631	Normal	HAS Storage Tank 60631	POINT	vertical stack	296585.00	3300383.00	9.97	5.49	0.000	0.001	0.001
ETK60561	ETK60561	Normal	PEA Storage Tank 60561	POINT	vertical stack	296198.00	3300319.00	10.13	6.71	0.000	0.001	0.001
ETK64305	ETK64305	Normal	Catalyst Preparation Tank 64305	POINT	vertical stack	296518.00	3300491.00	10.18	19.81	316.480	0.001	0.001

Texas Commission on Environmental Quality

Electronic Modeling Evaluation Workbook (EMEW)

Area Source Parameters

Date: 01/12/2021
Permit #: 2993

Company Name: Lyondell Chemical Company

Facility:

EPN	Model ID	Modeling Scenario	Area Source Type	Eastings: X [m]	Northings: Y [m]	Base Elevation [m]	Modeled Release Height [m]	Length X [m]	Length Y [m]	Rotation Angle [deg]	Radius [m]	Initial Vertical Sigma (m)	Area Source Initial Sigma Justification	Area Source Size Justification	Area Source Release Height Justification	Source Description
F26E00	F26E00	Normal	AREA	295512.73	3302128.00	11.84	4.84	76.20	24.38	0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	IPOH Unit Fugitives
EFUGEB1	EFUGEB1	Normal	AREA	296811.00	3300437.00	8.74	6.10	45.72	96.01	0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	EB 1 Fugitive Emissions
EFUGBDO	EFUGBDO	Normal	AREA	296052.67	3300325.26	10.12	7.12	106.68	152.40	0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	BDO Fugitive Emissions
EFUGMTBE	EFUGMTBE	Normal	AREA	296209.00	3300296.00	10.09	5.49	135.64	167.64	0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	MTBE Process fugitives
EFUGPOLY	EFUGPOLY	Normal	AREA	296205.00	3300463.00	9.78	9.45	137.16	134.11	0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	Polyols Fugitives
EFUGBIO4	EFUGBIO4	Normal	AREA	296582.00	3300127.00	11.12	4.42	173.74	102.11	0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	AB4 Fugitives Bioplant
TK60897	ETK60897	Normal	AREACIRC	296834.00	3300158.00	9.97	12.19				11.96	0.00		Based on the cross-sectional area of the open-top tank	Release height modeled at the top of the open-top tank	EQ Tank 60897
TK60898	ETK60898	Normal	AREACIRC	296786.00	3300158.00	9.65	12.19				11.96	0.00		Based on the cross-sectional area of the open-top tank	Release height modeled at the top of the open-top tank	EQ Tank 60898
TK68127	ETK68127	Normal	AREACIRC	296485.00	3300181.00	10.24	12.80				16.46	0.00		Based on the cross-sectional area of the open-top tank	Release height modeled at the top of the open-top tank	Aeration Tank 68127
TK68128	ETK68128	Normal	AREACIRC	296485.00	3300139.00	10.08	12.80				16.46	0.00		Based on the cross-sectional area of the open-top tank	Release height modeled at the top of the open-top tank	Aeration Tank 68128
EPOTBA-ANL, EPOTBAFUG, EPOTBAMSS	POTBAFUG	Normal	AREAPOLY	295784.00	3300790.00	10.76	6.10			0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	POTBA Unit Fugitives
F16E00	F16E00	Normal	AREAPOLY	295756.00	3302071.00	11.75	5.49			0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	C4 Equipment Fugitives (East, West Train and East Plant Utility)
F1E00	F1E00	Normal	AREAPOLY	295756.00	3302071.00	11.75	5.49			0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	C4 Equipment Fugitives (East, West Train and East Plant Utility)
F24E00	F24E00	Normal	AREAPOLY	295756.00	3302071.00	11.75	5.49			0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	C4 Equipment Fugitives (East, West Train and East Plant Utility)
F8E00	F8E00	Normal	AREAPOLY	295756.00	3302071.00	11.75	5.49			0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	C4 Equipment Fugitives (East, West Train and East Plant Utility)
F9E00	F9E00	Normal	AREAPOLY	295756.00	3302071.00	11.75	5.49			0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	C4 Equipment Fugitives (East, West Train and East Plant Utility)
F3E00	F3E00	Normal	AREAPOLY	295756.00	3302071.00	11.75	5.49			0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	C4 Equipment Fugitives (East, West Train and East Plant Utility)
C4 Sampling Fugitives	C4SAMPL	Normal	AREAPOLY	295756.00	3302071.00	11.75	1.52			0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	C4 Sample Fugitives
EFUGOSM2EB2, EFUGOS2	EFUGPOS2	Normal	AREAPOLY	295495.00	3300221.00	10.76	7.62			0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	POSM 2 Equipment Fugitives
EFUGPO1	EFUGPO1	Normal	AREAPOLY	296360.00	3300507.00	10.04	5.79			0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	Clearing Emissions, Water/Gas Blowdowns, Deaerator Vents

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Area Source Parameters

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

EPN	Model ID	Modeling Scenario	Area Source Type	Eastings: X [m]	Northings: Y [m]	Base Elevation [m]	Modeled Release Height [m]	Length X [m]	Length Y [m]	Rotation Angle [deg]	Radius [m]	Initial Vertical Sigma (m)	Area Source Initial Sigma Justification	Area Source Size Justification	Area Source Release Height Justification	Source Description
FUGPOS2M	FUGPOS2M	Normal	AREAPOLY	295495.00	3300221.00	10.76	7.62			0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	MSS POSMI Vac Tk, MSS Vessel clear POSMI, MSS Routine POSMI, MSS Screen Clearing POSMI, MSS POSM Analyzer Clearing
EFUGPOS1	EFUGPOS1	Normal	AREAPOLY	296360.00	3300507.00	10.04	7.32			0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	POSM 1 Fugitives
ANAPOS1	ANAPOS1	Normal	AREAPOLY	296360.00	3300507.00	10.04	7.32			0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	POSM 1 Analyzers
EFUGDW	EFUGDW	Normal	AREAPOLY	296487.00	3299952.00	10.17	5.49			0.00		0.00		Based on the footprint of the process equipment contributing to the modeled emissions	Release height modeled at the approximate average height of the components contributing to the modeled emissions	Deepwell Area Fugitives

Texas Commission on Environmental Quality

Electronic Modeling Evaluation Workbook (EMEW)

Volume Source Calculations

Date: 01/12/2021
Permit #: 2993

Company Name: Lyondell Chemical Company

Facility:

EPN	Model ID	Footprint of Source Length (m)	Footprint of Source Width (m)	Length of Side (making it a square) SQRT(L * W)	Type of Volume Source (sigma y) <i>Pick from drop-down</i>	Sigma Y (m)	Vertical Span Min Release (m)	Vertical Span Max Release (m)	Vertical Dimension (m)	Type of Volume Source (sigma z) <i>Pick from drop-down</i>	Release Height (middle point of vertical span) (m)	Building Name (if on/adjacent to a building) <i>Pick from drop-down</i>	Adjacent Building Height, if applicable (m)	Sigma Z (m)
ELHAS	ELHAS T	14.02	11.58	12.74	Single Volume Source	2.96	0.00	10.06	10.06	Elevated Source: Not on or adjacent to Building	5.03			2.34
ELHAS	ELHAS R	6.10	6.10	6.10	Single Volume Source	1.42	0.00	4.27	4.27	Elevated Source: Not on or adjacent to Building	2.14			0.99
				0.00		Incomplete			0.00		0.00			Incomplete
				0.00		Incomplete			0.00		0.00			Incomplete
				0.00		Incomplete			0.00		0.00			Incomplete
				0.00		Incomplete			0.00		0.00			Incomplete
				0.00		Incomplete			0.00		0.00			Incomplete
				0.00		Incomplete			0.00		0.00			Incomplete

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Point + Flare Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Facility:

EPN	Model ID	Modeling Scenario	Pollutant	Modeled Averaging Time	Standard Type	Review Context	Intermittent Source?	Modeled Emission Rate lb/hr	Basis of Emission Rate	Scalars or Factors Used?	Scalar/Factor in Use
EGOOL1	COOL1 1	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	7.41E-04	Project increases	No	
EGOOL1	COOL1 1	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	6.73E-04	Project increases	No	
EGOOL1	COOL1 1	Normal	PM10	24-hr	NAAQS	SIL analysis	No	0.108	Project increases	No	
EGOOL1	COOL1 2	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	7.41E-04	Project increases	No	
EGOOL1	COOL1 2	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	6.73E-04	Project increases	No	
EGOOL1	COOL1 2	Normal	PM10	24-hr	NAAQS	SIL analysis	No	0.108	Project increases	No	
EGOOL1	COOL1 3	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	7.41E-04	Project increases	No	
EGOOL1	COOL1 3	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	6.73E-04	Project increases	No	
EGOOL1	COOL1 3	Normal	PM10	24-hr	NAAQS	SIL analysis	No	0.108	Project increases	No	
EGOOL1	COOL1 4	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	7.41E-04	Project increases	No	
EGOOL1	COOL1 4	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	6.73E-04	Project increases	No	
EGOOL1	COOL1 4	Normal	PM10	24-hr	NAAQS	SIL analysis	No	0.108	Project increases	No	
EGOOL1	COOL1 5	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	7.41E-04	Project increases	No	
EGOOL1	COOL1 5	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	6.73E-04	Project increases	No	
EGOOL1	COOL1 5	Normal	PM10	24-hr	NAAQS	SIL analysis	No	0.108	Project increases	No	
EGOOL1	COOL1 6	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	7.41E-04	Project increases	No	
EGOOL1	COOL1 6	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	6.73E-04	Project increases	No	
EGOOL1	COOL1 6	Normal	PM10	24-hr	NAAQS	SIL analysis	No	0.108	Project increases	No	
EGOOL1	COOL1 7	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	7.41E-04	Project increases	No	
EGOOL1	COOL1 7	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	6.73E-04	Project increases	No	
EGOOL1	COOL1 7	Normal	PM10	24-hr	NAAQS	SIL analysis	No	0.108	Project increases	No	
EGOOL1	COOL1 8	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	7.41E-04	Project increases	No	
EGOOL1	COOL1 8	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	6.73E-04	Project increases	No	
EGOOL1	COOL1 8	Normal	PM10	24-hr	NAAQS	SIL analysis	No	0.108	Project increases	No	
EGOOL1	COOL1 9	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	7.41E-04	Project increases	No	
EGOOL1	COOL1 9	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	6.73E-04	Project increases	No	
EGOOL1	COOL1 9	Normal	PM10	24-hr	NAAQS	SIL analysis	No	0.108	Project increases	No	
EGOOL1	COOL1 10	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	7.41E-04	Project increases	No	
EGOOL1	COOL1 10	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	6.73E-04	Project increases	No	
EGOOL1	COOL1 10	Normal	PM10	24-hr	NAAQS	SIL analysis	No	0.108	Project increases	No	
EGOOL1	COOL1 11	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	7.41E-04	Project increases	No	
EGOOL1	COOL1 11	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	6.73E-04	Project increases	No	
EGOOL1	COOL1 11	Normal	PM10	24-hr	NAAQS	SIL analysis	No	0.108	Project increases	No	
EGOOL1	COOL1 12	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	7.41E-04	Project increases	No	
EGOOL1	COOL1 12	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	6.73E-04	Project increases	No	
EGOOL1	COOL1 12	Normal	PM10	24-hr	NAAQS	SIL analysis	No	0.108	Project increases	No	
EGOOL1	COOL1 13	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	7.41E-04	Project increases	No	
EGOOL1	COOL1 13	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	6.73E-04	Project increases	No	
EGOOL1	COOL1 13	Normal	PM10	24-hr	NAAQS	SIL analysis	No	0.108	Project increases	No	
EGOOL1	COOL1 14	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	7.41E-04	Project increases	No	
EGOOL1	COOL1 14	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	6.73E-04	Project increases	No	
EGOOL1	COOL1 14	Normal	PM10	24-hr	NAAQS	SIL analysis	No	0.108	Project increases	No	
EFL68910	EFL68910	Normal	NOx	Annual	NAAQS	SIL analysis	No	0.126	Project increases	No	
EF64170	EF64170	Normal	CO	1-hr	NAAQS	SIL analysis	No	35.25	Project increases	No	
EF64170	EF64170	Normal	CO	8-hr	NAAQS	SIL analysis	No	35.25	Project increases	No	
EF64170	EF64170	Normal	SO2	1-hr	NAAQS	SIL analysis	No	0.00444	Project increases	No	

Texas Commission on Environmental Quality

Electronic Modeling Evaluation Workbook (EMEW)

Point + Flare Emissions

Date: 01/12/2021

Permit #: 2993

Company Name: Lyondell Chemical Company

EPN	Model ID	Modeling Scenario	Pollutant	Modeled Averaging Time	Standard Type	Review Context	Intermittent Source?	Modeled Emission Rate [lb/hr]	Basis of Emission Rate	Scalars or Factors Used?	Scalar/Factor in Use
EF64170	EF64170	Normal	SO2	3-hr	NAAQS	SIL analysis	No	0.00444	Project increases	No	
EF64170	EF64170	Normal	SO2	24-hr	NAAQS	SIL analysis	No	0.00444	Project increases	No	
EGOOL1	COOL1_1	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_2	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_3	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_4	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_5	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_6	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_7	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_8	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_9	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_10	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_11	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_12	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_13	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_14	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EF64170	EF64170	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EF65630	EF65630	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EFL68910	EFL68910	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ELMBA	ELMBA	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ELPEA	ELPEA	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ELRF0635	LRFO635	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ELRF0637	LRFO637	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ED6312A	ED6312A	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ED6312B	ED6312B	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK6802	ETK6802	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60001	ETK60001	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60003	ETK60003	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60004	ETK60004	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60005	ETK60005	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60006	ETK60006	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60220	ETK60220	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60221	ETK60221	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60223	ETK60223	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60225	ETK60225	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60226	ETK60226	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60285A	TK60285A	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60285B	TK60285B	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60320	ETK60320	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60321A	TK60321A	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60321B	TK60321B	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60321C	TK60321C	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60631	ETK60631	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60561	ETK60561	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK64305	ETK64305	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK68632A	TK68632A	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK68784	ETK68784	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_1	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_2	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_3	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_4	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_5	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EGOOL1	COOL1_6	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	

Texas Commission on Environmental Quality

Electronic Modeling Evaluation Workbook (EMEW)

Point + Flare Emissions

Date: 01/12/2021

Permit #: 2993

Company Name: Lyondell Chemical Company

EPN	Model ID	Modeling Scenario	Pollutant	Modeled Averaging Time	Standard Type	Review Context	Intermittent Source?	Modeled Emission Rate [lb/hr]	Basis of Emission Rate	Scalars or Factors Used?	Scalar/Factor in Use
EC00L1	COOL1_7	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EG00L1	COOL1_8	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EG00L1	COOL1_9	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EG00L1	COOL1_10	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EG00L1	COOL1_11	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EG00L1	COOL1_12	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EG00L1	COOL1_13	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EG00L1	COOL1_14	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EF64170	EF64170	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EF65630	EF65630	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EFL68910	EFL68910	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ELMBA	ELMBA	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ELPEA	ELPEA	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ELRFO635	LRFO635	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ELRFO637	LRFO637	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ED6312A	ED6312A	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ED6312B	ED6312B	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK6802	ETK6802	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60001	ETK60001	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60003	ETK60003	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60004	ETK60004	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60005	ETK60005	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60006	ETK60006	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60220	ETK60220	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60221	ETK60221	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60223	ETK60223	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60225	ETK60225	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60226	ETK60226	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60285A	TK60285A	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60285B	TK60285B	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60320	ETK60320	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60321A	TK60321A	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60321B	TK60321B	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60321C	TK60321C	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60631	ETK60631	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK60561	ETK60561	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK64305	ETK64305	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK68632A	TK68632A	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ETK68784	ETK68784	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EFL86901	EFL86901	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EF86504	EF86504	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ECT86425	ECT86425	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EFL6104	EFL6104	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EF57180	EF57180	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EBOILER	EBOILER	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EF68154A/B	EF68154A	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ECT68420	ECT68420	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
24E01_1	24E01_1	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
24E01_2	24E01_2	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
24E01_3	24E01_3	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
24E01_4	24E01_4	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
25E01	25E01	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
	31E05		Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
	69E05		Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
	69E06		Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
HTCTO	HTCTO	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
HTCVENT	HTCVENT	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ED5968	ED5968	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EFL60731	EFL60731	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Point + Flare Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

EPN	Model ID	Modeling Scenario	Pollutant	Modeled Averaging Time	Standard Type	Review Context	Intermittent Source?	Modeled Emission Rate (lb/hr)	Basis of Emission Rate	Scalars or Factors Used?	Scalar/Factor in Use
EFL68491	EFL6105	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ELPOLY	ELPOLY	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK80311B	ETK80311	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK5911	ETK5911	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK5912	ETK5912	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK68491	ETK68491	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK5913	ETK5913	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK86701	ETK86701	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK60451	ETK60451	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK60460	ETK60460	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK60470	ETK60470	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK60481	ETK60481	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK60482	ETK60482	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EAVJAS993	AVJAS993	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EAVJAS999	AVJAS999	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EAVJAS994	AVJAS994	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EAVAS8023	AVA8023	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK60450	ETK60450	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
TK60461A	TK60461A	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
TK60461B	TK60461B	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
TK60461C	TK60461C	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EAVJAS995	AVJAS995	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ESMSSTK	ESMSSTK	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EF64170	EF64170	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EF65630	EF65630	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EFL68910	EFL68910	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK6802	ETK6802	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK68784	ETK68784	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ECOOL1	COOL1_1	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ECOOL1	COOL1_2	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ECOOL1	COOL1_3	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ECOOL1	COOL1_4	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ECOOL1	COOL1_5	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ECOOL1	COOL1_6	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ECOOL1	COOL1_7	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ECOOL1	COOL1_8	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ECOOL1	COOL1_9	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ECOOL1	COOL1_10	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ECOOL1	COOL1_11	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ECOOL1	COOL1_12	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ECOOL1	COOL1_13	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ECOOL1	COOL1_14	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ELMBA	ELMBA	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ELRF0635	LRFO635	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ELRF0637	LRFO637	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK60001	ETK60001	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK60220	ETK60220	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK60221	ETK60221	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK60285A	TK60285A	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK60285B	TK60285B	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK60320	ETK60320	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK60321B	TK60321B	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ETK68632A	TK68632A	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Area Source Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Facility:

EPN	Model ID	Modeling Scenario	Pollutant	Modeled Averaging Time	Standard Type	Review Context	Intermittent Source?	Modeled Emission Rate [lb/hr]	Basis of Emission Rate	Scalars or Factors Used?	Scalar/Factor in Use
EFUGBIO4	EFUGBIO4	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
TK60897	ETK60897	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
TK60898	ETK60898	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
TK68127	ETK68127	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
TK68128	ETK68128	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EFUGDW	EFUGDW	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EFUGPOSM1	EFUGPOS1	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
ANAPOSM1	ANAPOSM1	Normal	Generic	1-hr			No	1.00	Generic Modeling at 1 lb/hr	No	
EFUGBIO4	EFUGBIO4	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
TK60897	ETK60897	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
TK60898	ETK60898	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
TK68127	ETK68127	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
TK68128	ETK68128	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EFUGDW	EFUGDW	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EFUGPOSM1	EFUGPOS1	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
ANAPOSM1	ANAPOSM1	Normal	Generic	Annual			No	1.00	Generic Modeling at 1 lb/hr	No	
EFUGBIO4	EFUGBIO4	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
F26E00	F26E00	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EFUGEB1	EFUGEB1	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EFUGBDO	EFUGBDO	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EFUGMTBE	EFUGMTBE	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EFUGPOLY	EFUGPOLY	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
TK60897	ETK60897	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
TK60898	ETK60898	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
TK68127	ETK68127	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
TK68128	ETK68128	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EFUGPOSM1	EFUGPOS1	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
ANAPOSM1	ANAPOSM1	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
NL_EPOTBAFUG_EPOT	POTBAFUG	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
F16E00	F16E00	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
F1E00	F1E00	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
F24E00	F24E00	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
F8E00	F8E00	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
F9E00	F9E00	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
F3E00	F3E00	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
C4 Sampling Fugitives	C4SAMPL	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
JGPOSM2EB2_EFUGP	EFUGPOS2	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
EFUGPO1	EFUGPO1	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	
FUGPOS2M	FUGPOS2M	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No		Site Wide	No	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by Model ID

CAS #	Chemical Species	Other Species	Short-Term ESL ($\mu\text{g}/\text{m}^3$)	Long-Term ESL ($\mu\text{g}/\text{m}^3$)	Modeled Project Wide Emission Rate [lb/hr] EFL86901	Modeled Site Wide Emission Rate [lb/hr] EFL86901	Modeled Project Wide Emission Rate [tpy] EFL86901	Modeled Site Wide Emission Rate [tpy] EFL86901
98-85-1	alpha-methylbenzyl alcohol		200	20	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75-56-9	propylene oxide		70	7	0.00E+00	195.24	0.00E+00	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]
	EF86504	EF86504	EF86504	EF86504	ECT86425	ECT86425	ECT86425	ECT86425	EFL6104	EFL6104	EFL6104	EFL6104	EF57180	EF57180	EF57180
98-85-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75-56-9	0.00E+00	0.328	0.00E+00	0.00E+00	0.00E+00	22.54	0.00E+00	0.00E+00	0.00E+00	0.190	0.00E+00	0.00E+00	0.00E+00	0.00132	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]
	EF57180	EBOILER	EBOILER	EBOILER	EBOILER	EF68154A	EF68154A	EF68154A	EF68154A	ECT68420	ECT68420	ECT68420	ECT68420	24E01_1	24E01_1
98-85-1	0.00E+00	0.00E+00	0.115	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75-56-9	0.00E+00	0.00E+00	0.145	0.00E+00	0.00E+00	0.00E+00	0.0571	0.00E+00	0.00E+00	0.00E+00	0.0194	0.00E+00	0.00E+00	0.00E+00	0.00144

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	
	24E01_1	24E01_1	24E01_2	24E01_2	24E01_2	24E01_2	24E01_3	24E01_3	24E01_3	24E01_3	24E01_3	24E01_4	24E01_4	24E01_4	24E01_4	25E01
98-85-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75-56-9	0.00E+00	0.00E+00	0.00E+00	0.00144	0.00E+00	0.00E+00	0.00E+00	0.00144	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00144	0.00E+00	0.00E+00	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]
	25E01	25E01	25E01	31E05	31E05	31E05	31E05	69E05	69E05	69E05	69E05	69E06	69E06	69E06	69E06
98-85-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75-56-9	2.56	0.00E+00	0.00E+00	0.00E+00	0.0405	0.00E+00	0.00E+00	0.00E+00	0.0344	0.00E+00	0.00E+00	0.00E+00	0.0344	0.00E+00	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]
CAS #	HTCTO	HTCTO	HTCTO	HTCTO	HTCVENT	HTCVENT	HTCVENT	HTCVENT	ED5968	ED5968	ED5968	ED5968	EFL60731	EFL60731	EFL60731
98-85-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75-56-9	0.00E+00	0.117	0.00E+00	0.00E+00	0.00E+00	0.0122	0.00E+00	0.00E+00	0.00E+00	0.102	0.00E+00	0.00E+00	0.00E+00	3.08	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]
	EFL60731	EFL6105	EFL6105	EFL6105	EFL6105	EFL68491	EFL68491	EFL68491	EFL68491	ELPOLY	ELPOLY	ELPOLY	ELPOLY	ETK60311	ETK60311
98-85-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	10.71	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75-56-9	0.00E+00	0.00E+00	0.181	0.00E+00	0.00E+00	0.00E+00	3.30	0.00E+00	0.00E+00	0.00E+00	0.0504	0.00E+00	0.00E+00	0.00E+00	0.133

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]
	ETK60311	ETK60311	ETK5911	ETK5911	ETK5911	ETK5911	ETK5912	ETK5912	ETK5912	ETK5912	ETK68491	ETK68491	ETK68491	ETK68491	ETK5913
98-85-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.0251	0.00E+00	0.00E+00	0.00E+00
75-56-9	0.00E+00	0.00E+00	0.00E+00	0.127	0.00E+00	0.00E+00	0.00E+00	0.0376	0.00E+00	0.00E+00	0.00E+00	0.0195	0.00E+00	0.00E+00	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]
	ETK5913	ETK5913	ETK5913	ETK86701	ETK86701	ETK86701	ETK86701	ETK60451	ETK60451	ETK60451	ETK60451	ETK60460	ETK60460	ETK60460	ETK60460
98-85-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.728	0.00E+00	0.00E+00	0.00E+00	0.137	0.00E+00	0.00E+00
75-56-9	0.114	0.00E+00	0.00E+00	0.00E+00	5.75E-07	0.00E+00	0.00E+00	0.00E+00	0.0441	0.00E+00	0.00E+00	0.00E+00	0.0738	0.00E+00	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]
	ETK60470	ETK60470	ETK60470	ETK60470	ETK60481	ETK60481	ETK60481	ETK60481	ETK60482	ETK60482	ETK60482	ETK60482	AVJAS993	AVJAS993	AVJAS993
98-85-1	0.00E+00	0.141	0.00E+00	0.00E+00	0.00E+00	0.324	0.00E+00	0.00E+00	0.00E+00	0.976	0.00E+00	0.00E+00	0.00E+00	0.00133	0.00E+00
75-56-9	0.00E+00	0.0747	0.00E+00	0.00E+00	0.00E+00	0.00704	0.00E+00	0.00E+00	0.00E+00	0.00183	0.00E+00	0.00E+00	0.00E+00	0.00270	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]
	AVJAS993	AVJAS999	AVJAS999	AVJAS999	AVJAS999	AVJAS994	AVJAS994	AVJAS994	AVJAS994	AVA68023	AVA68023	AVA68023	AVA68023	ETK60450	ETK60450
98-85-1	0.00E+00	0.00E+00	0.00595	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	14.76
75-56-9	0.00E+00	0.00E+00	3.50E-04	0.00E+00	0.00E+00	0.00E+00	2.56E-04	0.00E+00	0.00E+00	0.00E+00	0.00455	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]
	ETK60450	ETK60450	TK60461A	TK60461A	TK60461A	TK60461A	TK60461B	TK60461B	TK60461B	TK60461B	TK60461C	TK60461C	TK60461C	TK60461C	AVJAS995
98-85-1	0.00E+00	0.00E+00	0.00E+00	0.00968	0.00E+00	0.00E+00	0.00E+00	0.00968	0.00E+00	0.00E+00	0.00E+00	0.00968	0.00E+00	0.00E+00	0.00E+00
75-56-9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]
	AVJAS995	AVJAS995	AVJAS995	ESMSSTK	ESMSSTK	ESMSSTK	ESMSSTK	EF64170	EF64170	EF64170	EF64170	EF65630	EF65630	EF65630	EF65630
98-85-1	0.00155	0.00E+00	0.00E+00	0.00E+00	12.38	0.00E+00	0.00E+00	0.00E+00	1.87	0.00E+00	0.00E+00	0.00E+00	0.419	0.00E+00	0.00E+00
75-56-9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.309	0.00E+00	0.00E+00	0.00E+00	0.552	0.00E+00	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]
	EFL68910	EFL68910	EFL68910	EFL68910	ETK6802	ETK6802	ETK6802	ETK6802	ETK68784	ETK68784	ETK68784	ETK68784	COOL1_1	COOL1_1	COOL1_1
98-85-1	0.00E+00	1.99	0.00E+00	0.00E+00	0.00E+00	0.00515	0.00E+00	0.00E+00	0.00E+00	1.74E-04	0.00E+00	0.00E+00	0.00E+00	0.143	0.00E+00
75-56-9	0.00E+00	0.0366	0.00E+00	0.00E+00	0.00E+00	0.679	0.00E+00	0.00E+00	0.00E+00	0.156	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]
COOL1_1	COOL1_2	COOL1_2	COOL1_2	COOL1_2	COOL1_2	COOL1_3	COOL1_3	COOL1_3	COOL1_3	COOL1_4	COOL1_4	COOL1_4	COOL1_4	COOL1_5	COOL1_5
98-85-1	0.00E+00	0.00E+00	0.143	0.00E+00	0.00E+00	0.00E+00	0.143	0.00E+00	0.00E+00	0.00E+00	0.143	0.00E+00	0.00E+00	0.00E+00	0.143
75-56-9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	
	COOL1_5	COOL1_5	COOL1_6	COOL1_6	COOL1_6	COOL1_6	COOL1_7	COOL1_7	COOL1_7	COOL1_7	COOL1_7	COOL1_8	COOL1_8	COOL1_8	COOL1_8	COOL1_9
98-85-1	0.00E+00	0.00E+00	0.00E+00	0.143	0.00E+00	0.00E+00	0.00E+00	0.143	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.143	0.00E+00	0.00E+00	0.00E+00
75-56-9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]
COOL1_9	COOL1_9	COOL1_9	COOL1_10	COOL1_10	COOL1_10	COOL1_10	COOL1_10	COOL1_11	COOL1_11	COOL1_11	COOL1_11	COOL1_12	COOL1_12	COOL1_12	COOL1_12
98-85-1	0.143	0.00E+00	0.00E+00	0.00E+00	0.143	0.00E+00	0.00E+00	0.00E+00	0.143	0.00E+00	0.00E+00	0.00E+00	0.143	0.00E+00	0.00E+00
75-56-9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]
	COOL1_13	COOL1_13	COOL1_13	COOL1_13	COOL1_14	COOL1_14	COOL1_14	COOL1_14	ELMBA	ELMBA	ELMBA	ELMBA	LRFO635	LRFO635	LRFO635
98-85-1	0.00E+00	0.143	0.00E+00	0.00E+00	0.00E+00	0.143	0.00E+00	0.00E+00	0.00E+00	1.45	0.00E+00	0.00E+00	0.00E+00	1.59	0.00E+00
75-56-9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]
	LRFO635	LRFO637	LRFO637	LRFO637	LRFO637	ETK60001	ETK60001	ETK60001	ETK60001	ETK60220	ETK60220	ETK60220	ETK60220	ETK60221	ETK60221
98-85-1	0.00E+00	0.00E+00	5.16	0.00E+00	0.00E+00	0.00E+00	0.520	0.00E+00	0.00E+00	0.00E+00	16.96	0.00E+00	0.00E+00	0.00E+00	10.48
75-56-9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	
	ETK60221	ETK60221	TK60285A	TK60285A	TK60285A	TK60285A	TK60285B	TK60285B	TK60285B	TK60285B	TK60285B	TK60285B	ETK60320	ETK60320	ETK60320	TK60321B
98-85-1	0.00E+00	0.00E+00	0.00E+00	0.135	0.00E+00	0.00E+00	0.00E+00	0.135	0.00E+00	0.00E+00	0.00E+00	2.69	0.00E+00	0.00E+00	0.00E+00	
75-56-9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]
	TK60321B	TK60321B	TK60321B	TK68632A	TK68632A	TK68632A	TK68632A	EFUGBIO4	EFUGBIO4	EFUGBIO4	EFUGBIO4	F26E00	F26E00	F26E00	F26E00
98-85-1	0.00591	0.00E+00	0.00E+00	0.00E+00	7.94	0.00E+00	0.00E+00	0.00E+00	0.0194	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75-56-9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.393	0.00E+00	0.00E+00	0.00E+00	0.0245	0.00E+00	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]
	EFUGEB1	EFUGEB1	EFUGEB1	EFUGEB1	EFUGBDO	EFUGBDO	EFUGBDO	EFUGBDO	EFUGMTBE	EFUGMTBE	EFUGMTBE	EFUGMTBE	EFUGPOLY	EFUGPOLY	EFUGPOLY
98-85-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75-56-9	0.00E+00	2.13E-04	0.00E+00	0.00E+00	0.00E+00	0.352	0.00E+00	0.00E+00	0.00E+00	0.00827	0.00E+00	0.00E+00	0.00E+00	0.0326	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]
	EFUGPOLY	ETK60897	ETK60897	ETK60897	ETK60897	ETK60898	ETK60898	ETK60898	ETK60898	ETK68127	ETK68127	ETK68127	ETK68127	ETK68128	ETK68128
98-85-1	0.00E+00	0.00E+00	1.09	0.00E+00	0.00E+00	0.00E+00	1.08	0.00E+00	0.00E+00	0.00E+00	0.0609	0.00E+00	0.00E+00	0.00E+00	0.0609
75-56-9	0.00E+00	0.00E+00	0.917	0.00E+00	0.00E+00	0.00E+00	0.899	0.00E+00	0.00E+00	0.00E+00	1.82	0.00E+00	0.00E+00	0.00E+00	1.82

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]
	ETK68128	ETK68128	EFUGPOS1	EFUGPOS1	EFUGPOS1	EFUGPOS1	ANAPOS1	ANAPOS1	ANAPOS1	ANAPOS1	POTBAFUG	POTBAFUG	POTBAFUG	POTBAFUG	F16E00
98-85-1	0.00E+00	0.00E+00	0.00E+00	1.05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75-56-9	0.00E+00	0.00E+00	0.00E+00	1.85	0.00E+00	0.00E+00	0.00E+00	0.0123	0.00E+00	0.00E+00	0.00E+00	5.02	0.00E+00	0.00E+00	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]
	F16E00	F16E00	F16E00	F1E00	F1E00	F1E00	F1E00	F24E00	F24E00	F24E00	F24E00	F8E00	F8E00	F8E00	F8E00
98-85-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75-56-9	9.30E-05	0.00E+00	0.00E+00	0.00E+00	1.22E-04	0.00E+00	0.00E+00	0.00E+00	8.44E-04	0.00E+00	0.00E+00	0.00E+00	0.00608	0.00E+00	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	
	F9E00	F9E00	F9E00	F9E00	F3E00	F3E00	F3E00	F3E00	C4SAMPL	C4SAMPL	C4SAMPL	C4SAMPL	EFUGPOS2	EFUGPOS2	EFUGPOS2	
98-85-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.543	0.00E+00
75-56-9	0.00E+00	0.00182	0.00E+00	0.00E+00	0.00E+00	0.00730	0.00E+00	0.00E+00	0.00E+00	0.00181	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.28	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Speciated Emissions

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Speciated Emissions by

CAS #	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]	Modeled Project Wide Emission Rate [lb/hr]	Modeled Site Wide Emission Rate [lb/hr]	Modeled Project Wide Emission Rate [tpy]	Modeled Site Wide Emission Rate [tpy]
	EFUGPOS2	EFUGPO1	EFUGPO1	EFUGPO1	EFUGPO1	FUGPOS2M	FUGPOS2M	FUGPOS2M	FUGPOS2M
98-85-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.275	0.00E+00	0.00E+00
75-56-9	0.00E+00	0.00E+00	1.01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)

Date: 01/12/2021
 Permit #: 2993

Combined Emissions

Company Name: Lyondell Chemical Company

EPN	Model ID	Modeling Scenario	Pollutant	Modeled Averaging Time	Standard Type	Review Context	Intermittent	Source Type	Modeled Emission Rate [lb/hr]
ECOO1	COOL1 1	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 1	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 1	Normal	PM10	24-hr	NAAQS	SIL analysis	No	Point	0.11
ECOO1	COOL1 2	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 2	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 2	Normal	PM10	24-hr	NAAQS	SIL analysis	No	Point	0.11
ECOO1	COOL1 3	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 3	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 3	Normal	PM10	24-hr	NAAQS	SIL analysis	No	Point	0.11
ECOO1	COOL1 4	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 4	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 4	Normal	PM10	24-hr	NAAQS	SIL analysis	No	Point	0.11
ECOO1	COOL1 5	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 5	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 5	Normal	PM10	24-hr	NAAQS	SIL analysis	No	Point	0.11
ECOO1	COOL1 6	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 6	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 6	Normal	PM10	24-hr	NAAQS	SIL analysis	No	Point	0.11
ECOO1	COOL1 7	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 7	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 7	Normal	PM10	24-hr	NAAQS	SIL analysis	No	Point	0.11
ECOO1	COOL1 8	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 8	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 8	Normal	PM10	24-hr	NAAQS	SIL analysis	No	Point	0.11
ECOO1	COOL1 9	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 9	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 9	Normal	PM10	24-hr	NAAQS	SIL analysis	No	Point	0.11
ECOO1	COOL1 10	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 10	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 10	Normal	PM10	24-hr	NAAQS	SIL analysis	No	Point	0.11
ECOO1	COOL1 11	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 11	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 11	Normal	PM10	24-hr	NAAQS	SIL analysis	No	Point	0.11
ECOO1	COOL1 12	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 12	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 12	Normal	PM10	24-hr	NAAQS	SIL analysis	No	Point	0.11
ECOO1	COOL1 13	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 13	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 13	Normal	PM10	24-hr	NAAQS	SIL analysis	No	Point	0.11
ECOO1	COOL1 14	Normal	PM2.5	24-hr	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 14	Normal	PM2.5	Annual	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 14	Normal	PM10	24-hr	NAAQS	SIL analysis	No	Point	0.11
EFL68910	EFL68910	Normal	NOx	Annual	NAAQS	SIL analysis	No	Flare	0.13
EF64170	EF64170	Normal	CO	1-hr	NAAQS	SIL analysis	No	Point	35.25
EF64170	EF64170	Normal	CO	8-hr	NAAQS	SIL analysis	No	Point	35.25
EF64170	EF64170	Normal	SO2	1-hr	NAAQS	SIL analysis	No	Point	0.00
EF64170	EF64170	Normal	SO2	3-hr	NAAQS	SIL analysis	No	Point	0.00
EF64170	EF64170	Normal	SO2	24-hr	NAAQS	SIL analysis	No	Point	0.00
ECOO1	COOL1 1	Normal	Generic	1-hr			No	Point	1.00
ECOO1	COOL1 2	Normal	Generic	1-hr			No	Point	1.00
ECOO1	COOL1 3	Normal	Generic	1-hr			No	Point	1.00
ECOO1	COOL1 4	Normal	Generic	1-hr			No	Point	1.00
ECOO1	COOL1 5	Normal	Generic	1-hr			No	Point	1.00
ECOO1	COOL1 6	Normal	Generic	1-hr			No	Point	1.00
ECOO1	COOL1 7	Normal	Generic	1-hr			No	Point	1.00
ECOO1	COOL1 8	Normal	Generic	1-hr			No	Point	1.00
ECOO1	COOL1 9	Normal	Generic	1-hr			No	Point	1.00
ECOO1	COOL1 10	Normal	Generic	1-hr			No	Point	1.00
ECOO1	COOL1 11	Normal	Generic	1-hr			No	Point	1.00
ECOO1	COOL1 12	Normal	Generic	1-hr			No	Point	1.00
ECOO1	COOL1 13	Normal	Generic	1-hr			No	Point	1.00
ECOO1	COOL1 14	Normal	Generic	1-hr			No	Point	1.00
EF64170	EF64170	Normal	Generic	1-hr			No	Point	1.00
EF65630	EF65630	Normal	Generic	1-hr			No	Point	1.00
EFL68910	EFL68910	Normal	Generic	1-hr			No	Flare	1.00
ELMBA	ELMBA	Normal	Generic	1-hr			No	Point	1.00
ELPEA	ELPEA	Normal	Generic	1-hr			No	Point	1.00
ELRFO635	LRFO635	Normal	Generic	1-hr			No	Point	1.00
ELRFO637	LRFO637	Normal	Generic	1-hr			No	Point	1.00
ED6312A	ED6312A	Normal	Generic	1-hr			No	Point	1.00
ED6312B	ED6312B	Normal	Generic	1-hr			No	Point	1.00
ETK6802	ETK6802	Normal	Generic	1-hr			No	Point	1.00
ETK60001	ETK60001	Normal	Generic	1-hr			No	Point	1.00
ETK60003	ETK60003	Normal	Generic	1-hr			No	Point	1.00
ETK60004	ETK60004	Normal	Generic	1-hr			No	Point	1.00
ETK60005	ETK60005	Normal	Generic	1-hr			No	Point	1.00
ETK60006	ETK60006	Normal	Generic	1-hr			No	Point	1.00
ETK60220	ETK60220	Normal	Generic	1-hr			No	Point	1.00
ETK60221	ETK60221	Normal	Generic	1-hr			No	Point	1.00
ETK60223	ETK60223	Normal	Generic	1-hr			No	Point	1.00
ETK60225	ETK60225	Normal	Generic	1-hr			No	Point	1.00
ETK60226	ETK60226	Normal	Generic	1-hr			No	Point	1.00
ETK60285A	TK60285A	Normal	Generic	1-hr			No	Point	1.00
ETK60285B	TK60285B	Normal	Generic	1-hr			No	Point	1.00
ETK60320	ETK60320	Normal	Generic	1-hr			No	Point	1.00
ETK60321A	TK60321A	Normal	Generic	1-hr			No	Point	1.00
ETK60321B	TK60321B	Normal	Generic	1-hr			No	Point	1.00
ETK60321C	TK60321C	Normal	Generic	1-hr			No	Point	1.00
ETK60631	ETK60631	Normal	Generic	1-hr			No	Point	1.00

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)

Date: 01/12/2021
 Permit #: 2993

Combined Emissions

Company Name: Lyondell Chemical Company

EPN	Model ID	Modeling Scenario	Pollutant	Modeled Averaging Time	Standard Type	Review Context	Intermittent	Source Type	Modeled Emission Rate [lb/hr]
ETK60561	ETK60561	Normal	Generic	1-hr			No	Point	1.00
ETK64305	ETK64305	Normal	Generic	1-hr			No	Point	1.00
ETK68632A	TK68632A	Normal	Generic	1-hr			No	Point	1.00
ETK68784	ETK68784	Normal	Generic	1-hr			No	Point	1.00
ECOO1	COOL1_1	Normal	Generic	Annual			No	Point	1.00
ECOO1	COOL1_2	Normal	Generic	Annual			No	Point	1.00
ECOO1	COOL1_3	Normal	Generic	Annual			No	Point	1.00
ECOO1	COOL1_4	Normal	Generic	Annual			No	Point	1.00
ECOO1	COOL1_5	Normal	Generic	Annual			No	Point	1.00
ECOO1	COOL1_6	Normal	Generic	Annual			No	Point	1.00
ECOO1	COOL1_7	Normal	Generic	Annual			No	Point	1.00
ECOO1	COOL1_8	Normal	Generic	Annual			No	Point	1.00
ECOO1	COOL1_9	Normal	Generic	Annual			No	Point	1.00
ECOO1	COOL1_10	Normal	Generic	Annual			No	Point	1.00
ECOO1	COOL1_11	Normal	Generic	Annual			No	Point	1.00
ECOO1	COOL1_12	Normal	Generic	Annual			No	Point	1.00
ECOO1	COOL1_13	Normal	Generic	Annual			No	Point	1.00
ECOO1	COOL1_14	Normal	Generic	Annual			No	Point	1.00
EF64170	EF64170	Normal	Generic	Annual			No	Point	1.00
EF65630	EF65630	Normal	Generic	Annual			No	Point	1.00
EFL68910	EFL68910	Normal	Generic	Annual			No	Flare	1.00
ELMBA	ELMBA	Normal	Generic	Annual			No	Point	1.00
ELPEA	ELPEA	Normal	Generic	Annual			No	Point	1.00
ELRFO635	LRFO635	Normal	Generic	Annual			No	Point	1.00
ELRFO637	LRFO637	Normal	Generic	Annual			No	Point	1.00
ED6312A	ED6312A	Normal	Generic	Annual			No	Point	1.00
ED6312B	ED6312B	Normal	Generic	Annual			No	Point	1.00
ETK6802	ETK6802	Normal	Generic	Annual			No	Point	1.00
ETK60001	ETK60001	Normal	Generic	Annual			No	Point	1.00
ETK60003	ETK60003	Normal	Generic	Annual			No	Point	1.00
ETK60004	ETK60004	Normal	Generic	Annual			No	Point	1.00
ETK60005	ETK60005	Normal	Generic	Annual			No	Point	1.00
ETK60006	ETK60006	Normal	Generic	Annual			No	Point	1.00
ETK60220	ETK60220	Normal	Generic	Annual			No	Point	1.00
ETK60221	ETK60221	Normal	Generic	Annual			No	Point	1.00
ETK60223	ETK60223	Normal	Generic	Annual			No	Point	1.00
ETK60225	ETK60225	Normal	Generic	Annual			No	Point	1.00
ETK60226	ETK60226	Normal	Generic	Annual			No	Point	1.00
ETK60285A	TK60285A	Normal	Generic	Annual			No	Point	1.00
ETK60285B	TK60285B	Normal	Generic	Annual			No	Point	1.00
ETK60320	ETK60320	Normal	Generic	Annual			No	Point	1.00
ETK60321A	TK60321A	Normal	Generic	Annual			No	Point	1.00
ETK60321B	TK60321B	Normal	Generic	Annual			No	Point	1.00
ETK60321C	TK60321C	Normal	Generic	Annual			No	Point	1.00
ETK60631	ETK60631	Normal	Generic	Annual			No	Point	1.00
ETK60561	ETK60561	Normal	Generic	Annual			No	Point	1.00
ETK64305	ETK64305	Normal	Generic	Annual			No	Point	1.00
ETK68632A	TK68632A	Normal	Generic	Annual			No	Point	1.00
ETK68784	ETK68784	Normal	Generic	Annual			No	Point	1.00
EFL86901	EFL86901	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Flare	--
EF86504	EF86504	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
ECT86425	ECT86425	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
EFL6104	EFL6104	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Flare	--
EF57180	EF57180	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
EBOILER	EBOILER	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
EF68154A/B	EF68154A	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
ECT68420	ECT68420	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
24E01_1	24E01_1	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
24E01_2	24E01_2	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
24E01_3	24E01_3	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
24E01_4	24E01_4	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
25E01	25E01	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Flare	--
0	31E05	0	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
0	69E05	0	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
0	69E06	0	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
HTCTO	HTCTO	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
HTCVENT	HTCVENT	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
ED5968	ED5968	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
EFL60731	EFL60731	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Flare	--
0	EFL6105	0	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
EFL68491	EFL68491	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Flare	--
ELPOLY	ELPOLY	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
ETK60311B	ETK60311	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
ETK5911	ETK5911	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
ETK5912	ETK5912	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
ETK68491	ETK68491	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
ETK5913	ETK5913	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
ETK86701	ETK86701	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
ETK60451	ETK60451	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
ETK60460	ETK60460	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
ETK60470	ETK60470	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
ETK60481	ETK60481	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
ETK60482	ETK60482	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
EAVJAS993	AVJAS993	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
EAVJAS999	AVJAS999	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
EAVJAS994	AVJAS994	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
EAVAS68023	AVA68023	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
ETK60450	ETK60450	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--
TK60461A	TK60461A	Normal	Health Effects Pollutant	1-hr	Health Effects	Site Wide	No	Point	--

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
Secondary Formation of PM_{2.5}

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Facility:

Modeled Emission Rates for Precursors (MERPs) Demonstration Tool for Calculating Secondary PM _{2.5} Impacts								
Precursor	Project Increases (tpy)	Source Selection	Selection of Variables		MERP Value		Total Secondary Value (µg/m ³)	
			Emission Rate (tpy)	Height (m)	24-hr	Annual	24-hr PM _{2.5}	Annual PM _{2.5}
Nitrogen Oxide (NO _x)	0.55	20_Harris	500	L	5263	10742	0.00013	0.00001
Sulfur Dioxide (SO ₂)	0							

MERPs Demonstration Justification

A. Provide justification for selection of worst-case MERP and/or site-specific source here. *Please limit your response to 2000 characters.*

The site is located in Harris county; therefore, the MERP for Harris county was selected.

B. If a site-specific source is selected, provide justification for the selected emission rate variable(s) here. *Please limit your response to 2000 characters.*

The project increases is 0.55 tpy; therefore, the 500 tpy emission rate is reflective of the site.

C. If a site specific MERP value is selected, provide justification for the selected height variable(s) here. *Please limit your response to 2000 characters.*

The stack height is 32 m; therefore, the option of L height was selected.

Applicability
 All internal comments

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
NAAQS-SPL Modeling Results

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Table 1. Project-Related Modeling Results for State Property Line

Pollutant	Averaging Time	GLCmax (µg/m ³)	De Minimis (µg/m ³)
SO ₂	1-hr	0.00274	14.3
H ₂ SO ₄	1-hr		1
H ₂ SO ₄	24-hr		0.3
H ₂ S	1-hr		2.16 <i>(If property is residential, recreational, business, or commercial)</i>
H ₂ S	1-hr		3.24 <i>(If property is not residential, recreational, business, or commercial)</i>

Table 2. Site-wide Modeling Results for State Property Line

Pollutant	Averaging Time	GLCmax (µg/m ³)	Standard (µg/m ³)
SO ₂	1-hr		715
H ₂ SO ₄	1-hr		50
H ₂ SO ₄	24-hr		15
H ₂ S	1-hr		108 <i>(If property is residential, recreational, business, or commercial)</i>
H ₂ S	1-hr		162 <i>(If property is not residential, recreational, business, or commercial)</i>

Table 3. Modeling Results for Minor NSR De Minimis

Pollutant	Averaging Time	GLCmax (µg/m ³)	De Minimis (µg/m ³)
SO ₂	1-hr	0.00274	7.8*
SO ₂	3-hr	0.00269	25
SO ₂	24-hr	0.00180	5
SO ₂	Annual		1
PM ₁₀	24-hr	0.412	5
NO ₂	1-hr		7.5**
NO ₂	Annual	0.00341	1
CO	1-hr	21.77968	2000
CO	8-hr	19.52622	500

Additional information for the De Minimis values listed above can be found at:
 * <https://www.epa.gov/sites/production/files/2015-07/documents/appws02.pdf>
 ** https://www.tceq.texas.gov/assets/public/permitting/air/memos/guidance_1hr_no2naaqs.pdf

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
NAAQS-SPL Modeling Results

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Table 4. PM_{2.5} Modeling Results for Minor NSR De Minimis

Pollutant	Averaging Time	GLCmax (µg/m ³)	Secondary PM _{2.5} Contribution (µg/m ³)	Total Conc. = Secondary PM _{2.5} + GLCmax (µg/m ³)	De Minimis (µg/m ³)
PM _{2.5}	24-hr	0.00282	0.000125404	0.00295	1.2*
PM _{2.5}	Annual	2.10E-04	1.02402E-05	0.00022	0.2*

Additional information for the De Minimis values listed above can be found at:
[* https://www.tceq.texas.gov/permitting/air/modeling/epa-mod-guidance.html](https://www.tceq.texas.gov/permitting/air/modeling/epa-mod-guidance.html)

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
NAAQS-SPL Modeling Results

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

Table 5. Total Concentrations for Minor NSR NAAQS (Concentrations > De Minimis)

Pollutant	Averaging Time	GLCmax ($\mu\text{g}/\text{m}^3$)	Background ($\mu\text{g}/\text{m}^3$)	Total Conc. = [Background + GLCmax] ($\mu\text{g}/\text{m}^3$)	Standard ($\mu\text{g}/\text{m}^3$)
SO ₂	1-hr		0	0	196
SO ₂	3-hr		0	0	1300
SO ₂	24-hr		0	0	365
SO ₂	Annual		0	0	80
PM ₁₀	24-hr		0	0	150
Pb	3-mo		0	0	0.15
NO ₂	1-hr		0	0	188
NO ₂	Annual		0	0	100
CO	1-hr		0	0	40000
CO	8-hr		0	0	10000

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)
NAAQS-SPL Modeling Results

Date: 01/12/2021
 Permit #: 2993

Company Name: Lyondell Chemical Company

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

Pollutant	Averaging Time	GLCmax ($\mu\text{g}/\text{m}^3$)	Secondary $\text{PM}_{2.5}$ Contribution ($\mu\text{g}/\text{m}^3$)	Background ($\mu\text{g}/\text{m}^3$)	Total Conc. = [Background + Secondary + GLCmax] ($\mu\text{g}/\text{m}^3$)	Standard ($\mu\text{g}/\text{m}^3$)
$\text{PM}_{2.5}$	24-hr		0.000125404	0	1.25E-04	35
$\text{PM}_{2.5}$	Annual		1.02402E-05	0	1.02E-05	12

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)

Date: 01/12/2021
 Permit #: 2993

Unit Impact Multipliers

Company Name: Lyondell Chemical Company

Facility:

EPN	Model ID	Modeling Scenario	Averaging Time	GLCmax ($\mu\text{g}/\text{m}^3$ per lb/hr)	GLCmax ($\mu\text{g}/\text{m}^3$ per tpy)
ECOOL1	COOL1_1	Normal	1-hr	0.434	
ECOOL1	COOL1_2	Normal	1-hr	0.440	
ECOOL1	COOL1_3	Normal	1-hr	0.439	
ECOOL1	COOL1_4	Normal	1-hr	0.435	
ECOOL1	COOL1_5	Normal	1-hr	0.433	
ECOOL1	COOL1_6	Normal	1-hr	0.433	
ECOOL1	COOL1_7	Normal	1-hr	0.433	
ECOOL1	COOL1_8	Normal	1-hr	0.437	
ECOOL1	COOL1_9	Normal	1-hr	0.439	
ECOOL1	COOL1_10	Normal	1-hr	0.441	
ECOOL1	COOL1_11	Normal	1-hr	0.441	
ECOOL1	COOL1_12	Normal	1-hr	0.442	
ECOOL1	COOL1_13	Normal	1-hr	0.443	
ECOOL1	COOL1_14	Normal	1-hr	0.448	
EF64170	EF64170	Normal	1-hr	0.618	
EF65630	EF65630	Normal	1-hr	0.320	
EFL68910	EFL68910	Normal	1-hr	0.690	
ELMBA	ELMBA	Normal	1-hr	11.22	
ELPEA	ELPEA	Normal	1-hr	1.73	
ELRFO635	LRFO635	Normal	1-hr	1.28	
ELRFO637	LRFO637	Normal	1-hr	1.28	
ED6312A	ED6312A	Normal	1-hr	1.15	
ED6312B	ED6312B	Normal	1-hr	1.14	
ETK6802	ETK6802	Normal	1-hr	2.88	
ETK60001	ETK60001	Normal	1-hr	2.26	
ETK60003	ETK60003	Normal	1-hr	6.26	
ETK60004	ETK60004	Normal	1-hr	3.92	
ETK60005	ETK60005	Normal	1-hr	2.33	
ETK60006	ETK60006	Normal	1-hr	2.76	
ETK60220	ETK60220	Normal	1-hr	2.70	
ETK60221	ETK60221	Normal	1-hr	2.45	
ETK60223	ETK60223	Normal	1-hr	1.66	
ETK60225	ETK60225	Normal	1-hr	1.79	
ETK60226	ETK60226	Normal	1-hr	1.78	
ETK60285A	TK60285A	Normal	1-hr	2.90	
ETK60285B	TK60285B	Normal	1-hr	2.93	
ETK60320	ETK60320	Normal	1-hr	1.99	
ETK60321A	TK60321A	Normal	1-hr	1.43	
ETK60321B	TK60321B	Normal	1-hr	1.58	
ETK60321C	TK60321C	Normal	1-hr	1.52	
ETK60631	ETK60631	Normal	1-hr	12.35	
ETK60561	ETK60561	Normal	1-hr	1.57	
ETK64305	ETK64305	Normal	1-hr	2.14	
ETK68632A	TK68632A	Normal	1-hr	2.28	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)

Date: 01/12/2021
 Permit #: 2993

Unit Impact Multipliers

Company Name: Lyondell Chemical Company

EPN	Model ID	Modeling Scenario	Averaging Time	GLCmax ($\mu\text{g}/\text{m}^3$ per lb/hr)	GLCmax ($\mu\text{g}/\text{m}^3$ per tpy)
ETK68784	ETK68784	Normal	1-hr	5.70	
ECOOL1	COOL1_1	Normal	Annual	0.0235	
ECOOL1	COOL1_2	Normal	Annual	0.0234	
ECOOL1	COOL1_3	Normal	Annual	0.0233	
ECOOL1	COOL1_4	Normal	Annual	0.0233	
ECOOL1	COOL1_5	Normal	Annual	0.0232	
ECOOL1	COOL1_6	Normal	Annual	0.0232	
ECOOL1	COOL1_7	Normal	Annual	0.0231	
ECOOL1	COOL1_8	Normal	Annual	0.0229	
ECOOL1	COOL1_9	Normal	Annual	0.0228	
ECOOL1	COOL1_10	Normal	Annual	0.0225	
ECOOL1	COOL1_11	Normal	Annual	0.0222	
ECOOL1	COOL1_12	Normal	Annual	0.0218	
ECOOL1	COOL1_13	Normal	Annual	0.0214	
ECOOL1	COOL1_14	Normal	Annual	0.0211	
EF64170	EF64170	Normal	Annual	0.0700	
EF65630	EF65630	Normal	Annual	0.0287	
EFL68910	EFL68910	Normal	Annual	0.0270	
ELMBA	ELMBA	Normal	Annual	0.223	
ELPEA	ELPEA	Normal	Annual	0.229	
ELRFO635	LRFO635	Normal	Annual	0.191	
ELRFO637	LRFO637	Normal	Annual	0.191	
ED6312A	ED6312A	Normal	Annual	0.222	
ED6312B	ED6312B	Normal	Annual	0.220	
ETK6802	ETK6802	Normal	Annual	0.329	
ETK60001	ETK60001	Normal	Annual	0.256	
ETK60003	ETK60003	Normal	Annual	0.251	
ETK60004	ETK60004	Normal	Annual	0.229	
ETK60005	ETK60005	Normal	Annual	0.238	
ETK60006	ETK60006	Normal	Annual	0.234	
ETK60220	ETK60220	Normal	Annual	0.238	
ETK60221	ETK60221	Normal	Annual	0.250	
ETK60223	ETK60223	Normal	Annual	0.198	
ETK60225	ETK60225	Normal	Annual	0.251	
ETK60226	ETK60226	Normal	Annual	0.245	
ETK60285A	TK60285A	Normal	Annual	0.251	
ETK60285B	TK60285B	Normal	Annual	0.242	
ETK60320	ETK60320	Normal	Annual	0.228	
ETK60321A	TK60321A	Normal	Annual	0.212	
ETK60321B	TK60321B	Normal	Annual	0.215	
ETK60321C	TK60321C	Normal	Annual	0.210	
ETK60631	ETK60631	Normal	Annual	0.300	
ETK60561	ETK60561	Normal	Annual	0.228	
ETK64305	ETK64305	Normal	Annual	0.275	
ETK68632A	TK68632A	Normal	Annual	0.279	
ETK68784	ETK68784	Normal	Annual	0.260	
EFUGBIO4	EFUGBIO4	Normal	1-hr	7.84	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook (EMEW)

Date: 01/12/2021
 Permit #: 2993

Modeling File Names

Company Name: Lyondell Chemical Company

Facility:

Model File Base Name	Pollutant	Averaging Time	File Extensions	Additional File Description
P2S160D02	PM2.5	24-hr	*.ami, .aml, .plt	de minimis
P2S160A02	PM2.5	Annual	*.ami, .aml, .plt	de minimis
P1S160D02	PM10	24-hr	*.ami, .aml, .plt	de minimis
NS16A02	NOx	Annual	*.ami, .aml, .plt	de minimis
SOS1602	SO2	1-hr	*.ami, .aml, .plt	de minimis
SOS1602	SO2	3-hr	*.ami, .aml, .plt	de minimis
SOS1602	SO2	24-hr	*.ami, .aml, .plt	de minimis
CS1602	CO	1-hr	*.ami, .aml, .plt	de minimis
CS1602	CO	8-hr	*.ami, .aml, .plt	de minimis
UIM1603	Generic	1-hr	*.ami, .aml	MERA Step 3 UIM
UIM1603	Generic	Annual	*.ami, .aml	MERA Step 3 UIM
MBA12H_1_08	alpha-methylbenzyl alcohol	1-hr	*.ami, .aml, .plt	MERA Step 7 Scenario 1 (All Receptors)
MBA12H_1_08NI	alpha-methylbenzyl alcohol	1-hr	*.ami, .aml, .plt	MERA Step 7 Scenario 1 (Non-industrial Receptors)
MBA12H_2_08	alpha-methylbenzyl alcohol	1-hr	*.ami, .aml, .plt	MERA Step 7 Scenario 2 (All Receptors)
MBA12H_2_08NI	alpha-methylbenzyl alcohol	1-hr	*.ami, .aml, .plt	MERA Step 7 Scenario 2 (Non-industrial Receptors)
MBA12H_3_08	alpha-methylbenzyl alcohol	1-hr	*.ami, .aml, .plt	MERA Step 7 Scenario 3 (All Receptors)
MBA12H_3_08NI	alpha-methylbenzyl alcohol	1-hr	*.ami, .aml, .plt	MERA Step 7 Scenario 3 (Non-industrial Receptors)
MBA12H_4_08	alpha-methylbenzyl alcohol	1-hr	*.ami, .aml, .plt	MERA Step 7 Scenario 4 (All Receptors)
MBA12H_4_08NI	alpha-methylbenzyl alcohol	1-hr	*.ami, .aml, .plt	MERA Step 7 Scenario 4 (Non-industrial Receptors)
PO12H_1_08	propylene oxide	1-hr	*.ami, .aml, .plt	MERA Step 7 Scenario 1 (All Receptors)
PO12H_1_08NI	propylene oxide	1-hr	*.ami, .aml, .plt	MERA Step 7 Scenario 1 (Non-industrial Receptors)
PO12H_2_08	propylene oxide	1-hr	*.ami, .aml, .plt	MERA Step 7 Scenario 2 (All Receptors)
PO12H_2_08NI	propylene oxide	1-hr	*.ami, .aml, .plt	MERA Step 7 Scenario 2 (Non-industrial Receptors)
PO12H_3_08	propylene oxide	1-hr	*.ami, .aml, .plt	MERA Step 7 Scenario 3 (All Receptors)
PO12H_3_08NI	propylene oxide	1-hr	*.ami, .aml, .plt	MERA Step 7 Scenario 3 (Non-industrial Receptors)
PO12H_4_08	propylene oxide	1-hr	*.ami, .aml, .plt	MERA Step 7 Scenario 4 (All Receptors)
PO12H_4_08NI	propylene oxide	1-hr	*.ami, .aml, .plt	MERA Step 7 Scenario 4 (Non-industrial Receptors)
Bpip input file_UIM Bpip output file_UIM Bpip summary file_UIM	Generic	All	N/A	Downwash files for MERA Step 3 UIM
Bpip input file_CRI Bpip output file_CRI Bpip summary file_CRI	All Criteria Pollutants	All	N/A	Downwash files for de minimis analysis
Bpip input file_MBA Bpip output file_MBA Bpip summary file_MBA	alpha-methylbenzyl alcohol	All	*.txt, .out	Downwash files for MERA Step 7 analyses
Bpip input file_PO Bpip output file_PO Bpip summary file_PO	propylene oxide	All	*.txt, .out	Downwash files for MERA Step 7 analyses
AERSURF	All	All	*.txt, .out	AERSURFACE files
POSM1_MERA Steps 1 through 3 2021-0112	All	All	*.xlsx	MERA Steps 2, 3, and 7 Analyses
HARRIS_IAHLCH16M	All	All	*.pfl, .sfc	1-year surface and upper air met files for MERA Step 3 and 7