

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

July 15, 2020

MR STEPHEN G GOFF
COMPLEX MANAGER
EQUISTAR CHEMICALS LP
PO DRAWER D
DEER PARK TX 77536-1900

Re: Amendment and Nonattainment Permit Application
Permit Numbers: 18978 and N162M1
Equistar Chemicals, LP
Equistar Chemicals La Porte Complex
La Porte, Harris County
Regulated Entity Number: RN100210319
Customer Reference Number: CN600124705
Associated Permit Number: PSDTX752M5

Dear Mr. Goff:

The Texas Commission on Environmental Quality (TCEQ) has made a preliminary decision on the above-referenced applications. In accordance with Title 30 Texas Administrative Code § 39.419(b), you are now required to publish Notice of Application and Preliminary Decision. You must provide a copy of this preliminary decision letter with the draft permit at the public place referenced in the public notice.

If you have any questions, please call Ms. Ariel Ramirez at (512) 239-4935, 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, appearing to read "Samuel Short", with a long horizontal line extending to the right.

Samuel Short, Director
Air Permits Division
Office of Air

Enclosure

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

Project Number: 309847

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

July 15, 2020

THE HONORABLE LINA HIDALGO
COUNTY JUDGE
COUNTY COURTHOUSE
1001 PRESTON, SUITE 911
HOUSTON TX 77002

Re: Amendment and Nonattainment Permit Application
Permit Numbers: 18978 and N162M1
Equistar Chemicals, LP
Equistar Chemicals La Porte Complex
La Porte, Harris County
Regulated Entity Number: RN100210319
Customer Reference Number: CN600124705
Associated Permit Number: PSDTX752M5

Dear Judge Hidalgo:

This letter serves as notification that the Texas Commission on Environmental Quality (TCEQ) has completed the technical review of the above application and has prepared a preliminary decision and draft permit. Equistar Chemicals, LP is now required to publish notice which would authorize modification of the Equistar Chemicals La Porte Complex at 1515 Miller Cut Off Road, La Porte, Harris County, Texas 77571. This application was processed in an expedited manner, as allowed by the commission's rules in 30 Texas Administrative Code, Chapter 101, Subchapter J. You may view the following documents through the Commission's Web site at www.tceq.texas.gov/goto/cid: the TCEQ's preliminary decision which includes the draft permit, the TCEQ's preliminary determination summary, the air quality analysis, and, once available, the TCEQ's response to comments and the final decision on this application. Access the Commissioners' Integrated Database (CID) using the above link and enter the permit number for this application. We will accept comments concerning the proposed project for a period of 30 days following publication of the public notice.

Sincerely,

A handwritten signature in black ink, appearing to read "Samuel Short", with a long horizontal line extending to the right.

Samuel Short, Director
Air Permits Division
Office of Air

Enclosure

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

July 15, 2020

THE HONORABLE LOUIS R. RIGBY
MAYOR OF LA PORTE
604 WEST FAIRMONT PARKWAY
LA PORTE TX 77571

Re: Amendment and Nonattainment Permit Application
Permit Numbers: 18978 and N162M1
Equistar Chemicals, LP
Equistar Chemicals La Porte Complex
La Porte, Harris County
Regulated Entity Number: RN100210319
Customer Reference Number: CN600124705
Associated Permit Number: PSDTX752M5

Dear Mayor Rigby:

This letter serves as notification that the Texas Commission on Environmental Quality (TCEQ) has completed the technical review of the above application and has prepared a preliminary decision and draft permit. Equistar Chemicals, LP is now required to publish notice which would authorize construction of the Equistar Chemicals La Porte Complex at 1515 Miller Cut Off Road, La Porte, Harris County, Texas 77571. This application was processed in an expedited manner, as allowed by the commission's rules in 30 Texas Administrative Code, Chapter 101, Subchapter J. You may view the following documents through the Commission's Web site at www.tceq.texas.gov/goto/cid: the TCEQ's preliminary decision which includes the draft permit, the TCEQ's preliminary determination summary, the air quality analysis, and, once available, the TCEQ's response to comments and the final decision on this application. Access the Commissioners' Integrated Database (CID) using the above link and enter the permit number for this application. We will accept comments concerning the proposed project for a period of 30 days following publication of the public notice.

Sincerely,

A handwritten signature in black ink, appearing to read "Samuel Short", with a long horizontal line extending to the right.

Samuel Short, Director
Air Permits Division
Office of Air

Enclosure

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

July 15, 2020

MR JACK STEELE
HOUSTON-GALVESTON AREA COUNCIL
3555 TIMMONS LANE, SUITE 120
HOUSTON TX 77227

Re: Amendment and Nonattainment Permit Application
Permit Numbers: 18978 and N162M1
Equistar Chemicals, LP
Equistar Chemicals La Porte Complex
La Porte, Harris County
Regulated Entity Number: RN100210319
Customer Reference Number: CN600124705
Associated Permit Number: PSDTX752M5

Dear Mr. Steele:

This letter serves as notification that the Texas Commission on Environmental Quality (TCEQ) has completed the technical review of the above application and has prepared a preliminary decision and draft permit. Equistar Chemicals, LP is now required to publish notice which would authorize construction of the Equistar Chemicals La Porte Complex at 1515 Miller Cut Off Road, La Porte, Harris County, Texas 77571. This application was processed in an expedited manner, as allowed by the commission's rules in 30 Texas Administrative Code, Chapter 101, Subchapter J. You may view the following documents through the Commission's Web site at www.tceq.texas.gov/goto/cid: the TCEQ's preliminary decision which includes the draft permit, the TCEQ's preliminary determination summary, the air quality analysis, and, once available, the TCEQ's response to comments and the final decision on this application. Access the Commissioners' Integrated Database (CID) using the above link and enter the permit number for this application. We will accept comments concerning the proposed project for a period of 30 days following publication of the public notice.

Sincerely,

A handwritten signature in black ink, appearing to read "Samuel Short", with a long horizontal line extending to the right.

Samuel Short, Director
Air Permits Division
Office of Air

Enclosure

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



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

July 15, 2020

MR STEPHEN G GOFF
COMPLEX MANAGER
EQUISTAR CHEMICALS LP
PO DRAWER D
DEER PARK TX 77536-1900

Re: Nonattainment Permit Application
Permit Numbers: 18978 and N162M1
Equistar Chemicals, LP
Equistar Chemicals La Porte Complex
La Porte, Harris County
Regulated Entity Number: RN100210319
Customer Reference Number: CN600124705
Associated Permit Number: PSDTX752M5

Dear Mr. Goff:

The Texas Commission on Environmental Quality (TCEQ) has completed the technical review of your application and has prepared a preliminary decision and draft permit.

You are now required to publish notice of your proposed activity. To help you meet the regulatory requirements associated with this notice, we have included the following items:

- Notices for Newspaper Publication (Examples A and B)
- Public Notice Checklist
- Instructions for Public Notice
- Affidavit of Publication for Air Permitting (Form TCEQ-20533) and Alternative Language Affidavit of Publication for Air Permitting (Form TCEQ-20534)
- Web link to download Public Notice Verification Form (refer to Public Notice Instructions)
- Notification List
- Draft Permit

Please note that it is **very important** that you follow **all** directions in the enclosed instructions. If you do not, you may be required to republish the notice. A common mistake is the unauthorized changing of notice wording or font. If you have any questions, please contact us before you proceed with publication.

A "Public Notice Checklist" is enclosed which notes the time limitations for each step of the public notice process. **The processing of your application may be delayed if these time limitations are not met (i.e.; submitting proof of publication of the notice within 10 business days after publication, affidavits of publication within 30 calendar days after the date of publication, and public notice verification form within 10 business days after the end of the designated comment period).** This checklist should be used as a tool in conjunction with the enclosed, detailed instructions.

If you do not comply with **all** requirements described in the instructions, further processing of your application may be suspended or the agency may take other actions.

Mr. Stephen G Goff
Page 2
July 15, 2020

Re: Permits: 18978, N162M1

If you have any questions regarding publication requirements, please contact the Office of the Chief Clerk at (512) 239-3300. If you have any other questions, please contact Ms. Ariel Ramirez at (512) 239-4935.

Sincerely,

A handwritten signature in black ink that reads "Bridget C. Bohac". The signature is written in a cursive, flowing style.

Bridget C. Bohac
Chief Clerk
Office of the Chief Clerk
Texas Commission on Environmental Quality

Enclosure

cc: Director, Harris County, Pollution Control Services, Pasadena
Air Section Manager, Region 12 - Houston
Air Permits Section Chief, New Source Review Section (6MM-AP), U.S. Environmental Protection
Agency, Region 6, Dallas

Project Number:309847



Equistar Chemicals, LP

1515 Miller Cut-Off Road
P.O. Drawer D
Deer Park, TX 77536

7018 3090 0001 3113 2023
CERTIFIED MAIL – RETURN RECEIPT REQUESTED

December 11, 2019

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

Re: Equistar Chemicals, LP – La Porte Chemical Complex
TCEQ Air Quality Permits No. 18978
Permit Amendment Application
La Porte, Texas Harris County
TCEQ Account ID No. HG-0770-G; RN100210319; CN600124705

Equistar Chemicals, LP (Equistar) operates an Olefins Unit (QE1) under Texas Commission on Environmental Quality (TCEQ) Air Quality Permit No. 18978. Equistar requests the amendment of this permit to authorize additional assist gas usage to the Main Flare (QE8050B) to achieve 270 But/scf net heating value in the combustion zone. Equistar is also requesting to update the Main Flare DRE from 99.5% to 98%-99% in accordance with TCEQ guidance, update the SO₂ calculations from loading Dimethyl Sulfide, and update the streams speciation.

Required TCEQ Form PI-1 General Application and relevant documents (emissions details, process description, flow diagram, BACT analysis, area map, plot plan, etc.) are included in this application submittal to assist in TCEQ's review. The amendment application fees have been paid electronically and the receipt is included in the application. **CONFIDENTIAL** information is clearly labeled within the application. If you have any questions regarding this application submittal, please contact Maria F. Anker at (713) 336-5258 or maria.anker@LYB.com.

Sincerely,

Maria F. Anker
Environmental Engineer, La Porte Complex

cc: TCEQ Region 12
Air Section Manager
5425 Polk Ave, Suite H
Houston, TX 77023-1452
7018 3090 0001 3113 2016

Director
Harris County Public Health and Environmental Service
101 S. Richey St Suite G
Pasadena, TX 77506
7018 3090 0001 3113 2030

**NEW SOURCE REVIEW PERMIT
AMENDMENT APPLICATION**

Permit No. 18978/PSDTX752M5/N162

Submitted by:

Equistar Chemicals, L.P. – La Porte

TCEQ Account Number HG-0770-G

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**

December 2019

TABLE OF CONTENTS

SECTION 1 Introduction	1-1
1.1 Introduction.....	1-1
1.2 Facility Information.....	1-3
1.3 Prevention of Significant Deterioration (PSD) and Non-attainment Review (NNSR).....	1-3
1.4 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 Main Flare.....	3-1
SECTION 4 Best Available Control Technology	4-1
4.1 Main Flare.....	4-1
4.2 Boilers.....	4-2
4.3 Fugitives	4-3
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 TABLES

Table 1-1 Summary of Roll-in PBRs/SP	1-2
Table 1-2 Proposed Changes to MAERT	1-3
Table 1-3 Federal NSR Applicability Analysis Summary.....	1-5
Table 1-4 Federal NSR Applicability Retrospective Analysis Summary.....	1-6
Table 1-5 Federal NSR Applicability Retrospective Analysis Summary.....	1-7
Table 4-1 Main Flare BACT Requirements.....	4-2
Table 4-2 Boilers BACT Requirements.....	4-2
Table 4-3 Fugitive Requirements.....	4-3

TABLE OF CONTENTS (CONTINUED)

LIST OF FIGURES

Figure 1-1 Area Map..... 1-8
Figure 1-2 Plot Plan 1-9
Figure 2-1 Olefins Unit Process Flow Diagram (**CONFIDENTIAL**) 2-2

LIST OF APPENDICES

Appendix A Administrative Considerations and Application Forms
Appendix B TCEQ NNSR Tables
Appendix C Emission Calculations (**CONFIDENTIAL**)

SECTION 1 INTRODUCTION

1.1 Introduction

Equistar Chemicals, L.P., La Porte Complex (Equistar) operates an Olefins Unit (QE-1 Unit) under Texas Commission on Environmental Quality (TCEQ) Air Quality Permit No. 18978/PSD-TX-752M5/N162, and various Permits by Rule (PBR). With this permit amendment Equistar, requests to increase the assist gas usage to the Main Flare (EPN: QE8050B) to achieve the 270 Btu/scf net heating value in the combustion zone. Moreover, Equistar is making the following updates:

- Update the main flare destruction removal efficiency (DRE) from 99.5% to 99% for straight chained organic compounds consisting of three carbon compounds or less, and 98% for other compounds in accordance with TCEQ guidance.
- Update the main flare SO₂ calculations from loading Dimethyl Sulfide (DMS).
- Update speciation of the streams vented to the main flare.
- Roll in the following Permits by Rule (PBR) and Standard Permit (SP):
 - PBR Registration No. 126212;
 - PBR Registration No. 153800;
 - PBR Registration No. 154294;
 - PBR Registration No. 155981; and
 - SP Registration No. 118577.
- Void PBR No. 151971 as the authorized engine was taken off-site.

Table 1-1 below contains a summary for the requested PBRs/SP. Table 1-2 provides a summary of all changes requested in this permit amendment application that affect the Maximum Allowable Emission Rate Table (MAERT).

Table 1-1 Summary of Roll-in PBRs/SP

Permit Number	Project Description	Pollutants	Emissions		Comments
			lb/hr	tpy	
126212	Degassed Oil emissions routed to the main flare	VOC	0.01	0.01	The flare emissions (under EPN: QE8050B) from this PBR will be incorporated into the permit 18978 via this amendment action.
		NO _x	0.01	0.01	
	Degassed Oil emissions additional fugitives	VOC	0.01	0.01	The fugitive emissions (under EPN: QEFUG) from this PBR will be incorporated into the permit 18978 via this amendment action.
151971	Stationary Engine to provide compressed air to the Olefins Unit	VOC	0.29	0.32	The engine (EPN: QE1AIRCOMP) was taken off-site therefore Equistar is requesting for this permit to be voided.
		NO _x	0.62	0.68	
		CO	5.43	5.95	
		PM10	0.03	0.03	
		PM2.5	0.03	0.03	
		SO ₂	1.08	1.18	
		HCHO	0.24	0.27	
153800	Spare C4 pump to allow simultaneous loading and unloading.	VOC	0.03	0.13	The fugitive emissions (under EPN: QEFUG) from this PBR will be incorporated into the permit 18978 via this amendment action.
154294	Installation of CO ₂ Analyzer	NO _x	0.00	0.00	The flare emissions (under EPN: QE8050B) from this PBR will be incorporated into the permit 18978 via this amendment action.
		CO	0.00	0.02	
155981	Permit new feed called "Y Grade"	VOC	0.30	1.32	The fugitive emissions (under EPN: QEFUG) from this PBR will be incorporated into the permit 18978 via this amendment action
		VOC	0.30	0.04	The flare emissions (under EPN: QE8050B) from this PBR will be incorporated into the permit 18978 via this amendment action.
		VOC	0.30	0.04	The boiler emissions (under EPN: QE5802UA) from this PBR will be incorporated into the permit 18978 via this amendment action.
		VOC	0.30	0.04	The boiler emissions (under EPN: QE5802UB) from this PBR will be incorporated into the permit 18978 via this amendment action.
118577	Main Flare Tip Replacement	NO _x	0.00	-0.01	The flare emissions (under EPN: QE8050B) from this PBR will be incorporated into the permit 18978 via this amendment action.
		CO	-0.02	-0.12	
		SO ₂	-1.60	-0.05	

Table 1-2 Proposed Changes to MAERT

EPN	Description	Pollutant	Current MAERT		Proposed MAERT	
			lb/hr	TPY	lb/hr	TPY
QE8050B	Elevated Flare	CO (PSD)	171.60	49.50	266.51	87.55
		NO _x (PSD)	76.74	23.20	85.14	30.09
		SO ₂	10.30	0.30	78.58	4.11
		VOC	44.95	10.95	131.82	28.84
QE8050MAINT	Elevated Flare Maintenance	CO	62.10	0.10	82.80	0.30
		NO _x	12.00	0.20	16.23	0.20
		SO ₂	10.30	0.01	0.10	0.10
		VOC	58.00	0.10	223.85	0.57
QEFUG	Process Fugitives	VOC	19.62	85.89	19.96	87.34
QE5802UA	Boiler A	VOC	1.43	1.91	1.73	1.95
QE5802UB	Boiler B	VOC	1.43	1.91	1.73	1.95

1.2 Facility Information

The project described in this application will authorize emissions increases for the Main Flare (EPNs: QE8050B, QE8050MAINT) at the Equistar La Porte Facility. The Equistar La Porte Facility is located in Miller Cut-Off Road, La Porte, TX. This unit operates under the Operating Permit No. O2223. The La Porte Facility is located in Harris County, which is currently classified as a serious nonattainment National Ambient Air Quality Standard (NAAQS) area for the 8-hour NAAQS for ozone. VOCs and NO_x are considered to be precursors to ozone.

Figure 1-1 shows the location of the La Porte Facility on the Area Map. A detailed plot plan of the Facility showing the location of the main flare at the site is also provided in Figure 1-2.

1.3 Prevention of Significant Deterioration (PSD) and Non-attainment Review (NNSR)

Table 1-3, Table 1-4, and Table 1-5 present the federal NNSR and PSD applicability analyses associated with the proposed amendment. Table 1-3 summarizes the project increases from the main flare (EPN: QE8050B) due to additional assist gas from the modification requested as part of the proposed amendment and compares them to the relevant PSD and NNSR applicability thresholds. Table 1-4 is summarizes the emissions increases from the Main Flare routine operations (EPN: QE8050B) associated with the flare DRE update, DMS loading, and updated streams speciations. Table 1-4 emissions increases are included retrospectively in the scope of Project No. 60942 for federal applicability purposes. Table 1-5 summarizes the emissions increase from the main flare maintenance activities (EPN:

QE8050MAINT) associated with the flare DRE update, which are retrospectively assigned to the scope of Project No. 118469 for federal applicability purposes. As demonstrated in these tables, the changes requested in the permit amendment do not trigger federal NSR permitting requirements. Supporting TCEQ NNSR tables are provided in Appendix B.

1.4 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 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 comprises administrative consideration and completed TCEQ NSR workbook general application forms.
- Appendix B comprises applicable TCEQ NNSR Tables.
- Appendix C comprises emission rate calculations for the proposed amendment.

Table 1-3 Federal NSR Applicability Analysis Summary

Equistar Chemicals
Laporte Complex
Olefins Unit Permit Amendment Application # 18978
Federal NSR Applicability Analysis Summary
Table 1-3

EPN	Facility Description	Federal NSR Classification	Permit No.	NOx			CO		
				Baseline	Proposed	Project Increase	Baseline	Proposed	Project Increase
				tpy	tpy	tpy	tpy	tpy	tpy
QE8050B	Elevated Flare	New	18978	-	4.96	4.96	-	9.05	9.05
<i>Project Increase (tpy)</i>						4.96			9.05
<i>Major Source Threshold (tpy)</i>						50			100
<i>Existing Major Source (Yes/No)</i>						Yes			Yes
<i>Project Major Source By Itself (Yes/No)</i>						No			No
<i>Netting Threshold (tons)</i>						5			100
<i>Netting Required (Yes/No)</i>						No			No
<i>Contemporaneous Period Change (tons)</i>						NA			NA
<i>Significant Modification Threshold (tons)</i>						25			100
<i>Federal Review Required (Yes/No)</i>						No			No

Table 1-4 Federal NSR Applicability Retrospective Analysis Summary

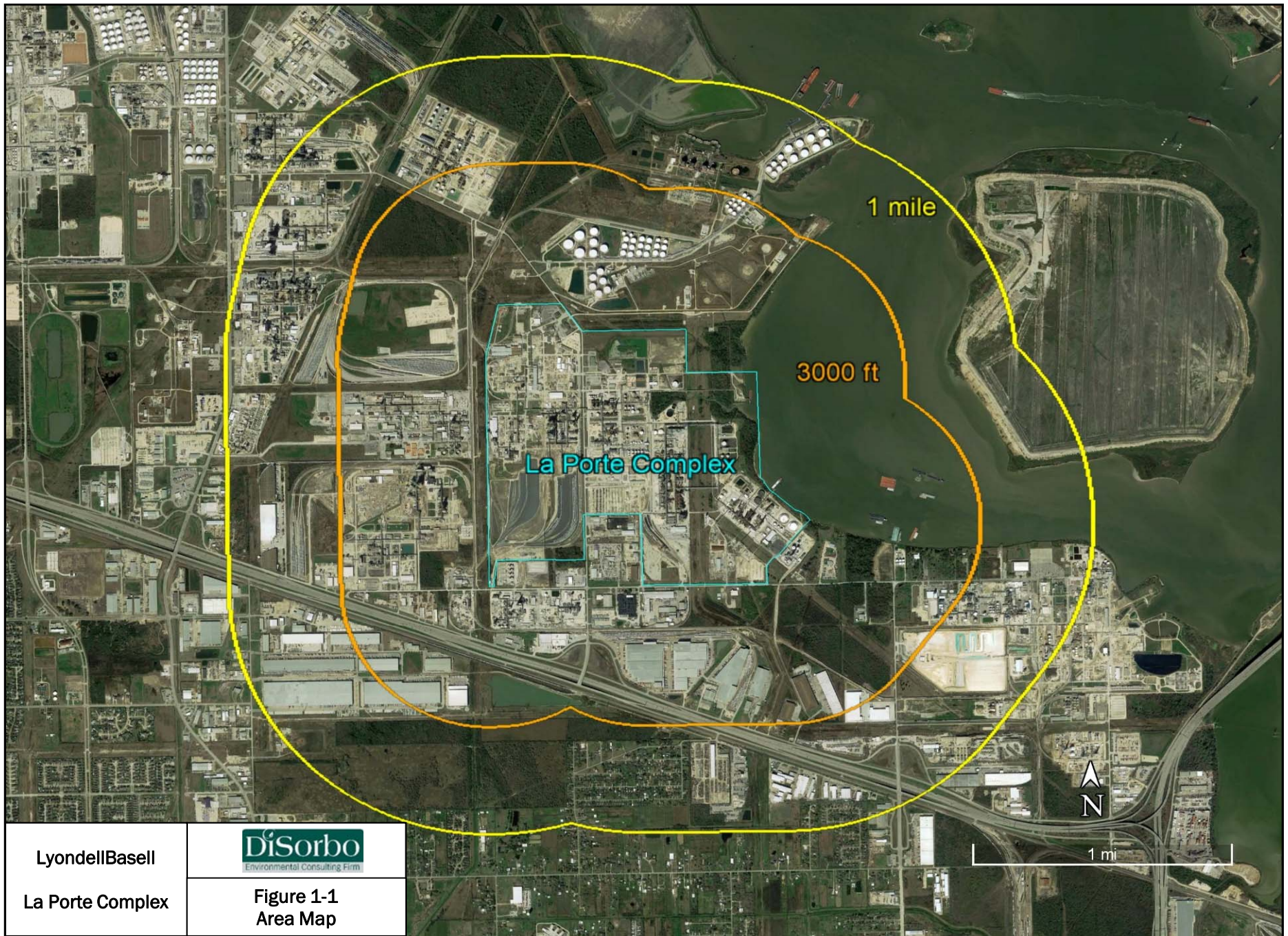
Equistar Chemicals
 Laporte Complex
 Olefins Unit Permit Amendment Application # 18978
 Federal NSR Applicability Retrospective Analysis Summary
 Table 1-4

EPN	Facility Description	Federal NSR Classification	Permit No.	VOC			NOx			CO			SO2		
				Baseline tpy	Proposed tpy	Project Increase tpy	Baseline tpy	Proposed tpy	Project Increase tpy	Baseline tpy	Proposed tpy	Project Increase tpy	Baseline tpy	Proposed tpy	Project Increase tpy
QE8050B	Elevated Flare	Modified	18978	5.46	28.79	23.33	5.21	25.13	19.92	26.12	78.59	52.47	0.02	4.16	4.15
<i>Project Increase (tpy)</i>						23.33			19.92			52.47			4.15
<i>Major Source Threshold (tpy)</i>						25			25			100			100
<i>Existing Major Source (Yes/No)</i>						Yes			Yes			Yes			Yes
<i>Project Major Source By Itself (Yes/No)</i>						No			No			No			No
<i>Netting Threshold (tons)</i>						5			5			100			40
<i>Netting Required (Yes/No)</i>						Yes			Yes			No			No
<i>Contemporaneous Period Change (tons)</i>						-30.82			2.63			NA			NA
<i>Significant Modification Threshold (tons)</i>						25			25			100			40
<i>Federal Review Required (Yes/No)</i>						No			No			No			No

Table 1-5 Federal NSR Applicability Retrospective Analysis Summary

Equistar Chemicals
 Laporte Complex
 Olefins Unit Permit Amendment Application # 18978
 Federal NSR Applicability Retrospective Analysis Summary
 Table 1-5

EPN	Facility Description	Federal NSR Classification	Permit No.	VOC			NOx			CO			SO2		
				Baseline tpy	Proposed tpy	Project Increase tpy	Baseline tpy	Proposed tpy	Project Increase tpy	Baseline tpy	Proposed tpy	Project Increase tpy	Baseline tpy	Proposed tpy	Project Increase tpy
QE8050BMAINT	Elevated Flare Maintenance	New	18978	-	0.57	0.57	-	0.20	0.20	-	0.30	0.30	-	0.10	0.10
<i>Project Increase (tpy)</i>						0.57			0.20			0.30			0.10
<i>Major Source Threshold (tpy)</i>						25			25			100			100
<i>Existing Major Source (Yes/No)</i>						Yes			Yes			Yes			Yes
<i>Project Major Source By Itself (Yes/No)</i>						No			No			No			No
<i>Netting Threshold (tons)</i>						5			5			100			40
<i>Netting Required (Yes/No)</i>						No			No			No			No
<i>Contemporaneous Period Change (tons)</i>						NA			NA			NA			NA
<i>Significant Modification Threshold (tons)</i>						25			25			100			40
<i>Federal Review Required (Yes/No)</i>						No			No			No			No

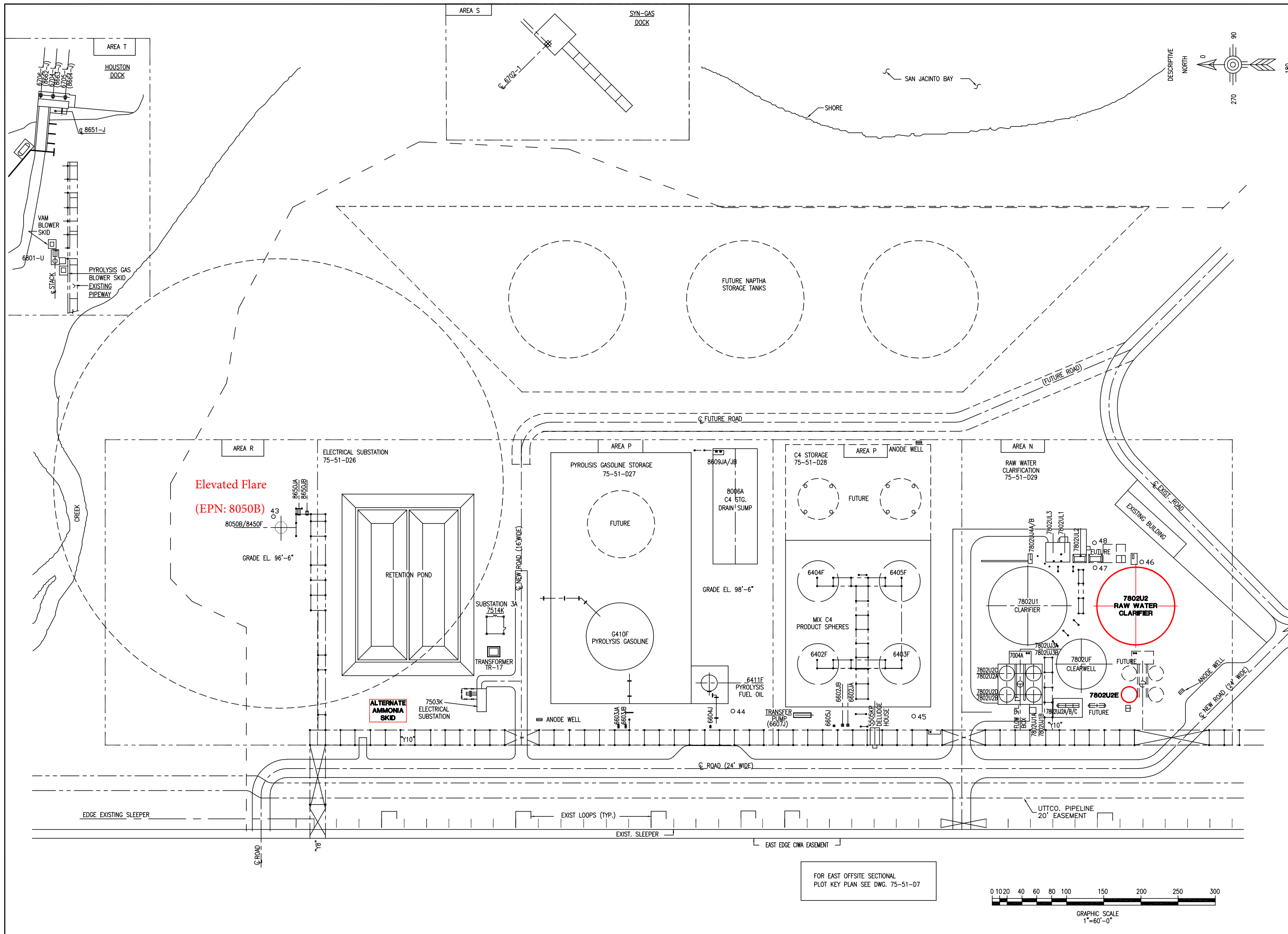


LyondellBasell

La Porte Complex



Figure 1-1
Area Map



REFERENCE DRAWINGS	
75-51-D26	.
75-51-D27	.
75-51-D28	.
75-51-D29	.
.	.
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.	.
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.	.
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- NOTES**
1. M.W. KELLOGG GRADE ELEV. OF 100'-0" EQUALS QUANTUM GRADE ELEV. OF 23.5'
 2. FOR UNIT PLOT PLAN SEE DWG. 75-51-D1.
 3. ALL COORDINATES AND ELEVATIONS ARE IN FT./IN EXCEPT AS NOTED.
 4. ALL COORDINATES AND ELEVATIONS INSIDE UNIT LIMITS ARE PER QUANTUM CHEMICAL CORPORATION COORD. SYSTEM.
 5. Ⓢ ELEVATION OF INLINE PUMPS INDICATES Ⓢ ELEV. OF SUCTION NOZZLE.

NO.	DATE	DESCRIPTION	BY	APPR.
P2	08/18/11	REVISED PER COMMENTS	CC	GW
P1	08/10/11	PRELIMINARY ISSUE	CC	GW

REVISIONS

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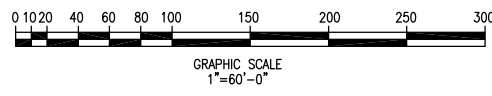
Equistar Chemicals, LP and
LyondellBasell Acetyls, LLC
1515 Miller Cut-Off Road
La Porte, TX 77571
P.O. Drawer D
Deer Park, TX 77536

**LA PORTE COMPLEX
QE-1
ETHYLENE EXPANSION
EAST OFFSITES
PLOT PLAN**

DATE	5/04/89	SCALE	1"=60'
DRAWN BY	SELGER	CHECKED BY	BILL HOLM
DEPT. APPR.	ENG. APPR.		
LOCATION	DRAWING NO.	ISSUE	
87	75-51-D04	P2	

DRAWING NO.
75-51-D04

FOR EAST OFFSITE SECTIONAL
PLOT KEY PLAN SEE DWG. 75-51-D7



SECTION 2

PROCESS DESCRIPTION

2.1 Process Description

The Olefins unit receives hydrocarbon feedstock where it is fed into pyrolysis furnaces. The pyrolysis furnaces, which are fired on natural gas and/or process gas, heat the feedstock to a high temperature where it cracks into alkenes or olefins.

The process effluent from the furnaces is quenched and scrubbed with water. Pyrolysis gasoline is removed as a product during water scrubbing. The quenched gases are compressed, dried, and cooled prior to beginning a series of purification/distillation steps. A hydrogen rich stream from the final chilling step is further purified in a pressure swing absorber to produce hydrogen product.

The purification section consists of a demethanizer, deethanizer, acetylene recovery unit (ARU), depropanizer, methyl acetylene propadiene conversion unit (MAPD), debutanizer, C3 splitter, and C2 splitter. This equipment separates the process gas stream into acetylene, ethylene, propylene, mixed C4s, and pyrolysis gasoline (pygas) products. Ethane and propane recovered during distillation and separation are recycled as feedstock into the pyrolysis furnaces.

The Olefins Flare System is designed to collect hydrocarbon vapors and liquids that are released from the Olefins Unit and route them for safe, efficient disposal by oxidizing them in the Main Flare Stack (QE8050B).

Figure 2-1
Olefins Unit Process Flow Diagram (CONFIDENTIAL)

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. Detailed emission calculations are included in Appendix C of this application.

3.1 Main Flare

The Olefins Unit main flare (EPNs: QE8050B, QE8050MAINT) is used to control routine, MSS and emergency upset emissions associated with Olefins Unit operations. VOC emissions from the main flare are estimated based on a VOC DRE of 99% for straight chained organic compounds consisting of three carbon compounds or less, and 98% for other compounds. NO_x and CO emissions are calculated based on the heat input of the material being combusted and emission factors from Texas Commission on Environmental Quality's (TCEQs) *Air Permit Technical Guidance for Chemical Sources: Flares and Oxidizers, October 2000*. Emissions of SO₂ and VOC from the pilot gas is calculated based on AP-42 section 1.4 emission factors for natural gas combustion. SO₂ emission estimates also include emissions from loading dimethyl sulfate (DMS), which are estimated based on the number of times that tanks are loaded or unloaded and the volume of vapors that are displaced to the flare. The maximum heat input used to determine hourly and annual emission limits for the flare is determined based on the volumetric flow of waste gas and pilot gas and the lower heating value (LHV) of the gas being combusted.

SECTION 4

BEST AVAILABLE CONTROL TECHNOLOGY

As stated in Section §116.111(a)(2)(C), new or modified facilities 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. Each facility is evaluated on a case-by-case basis. Engineering principles and agency experience, concerning the practicality and reasonableness of an emission reduction option, are used in this determination.

As described in their guidance document entitled Evaluating Best Available Control Technology (BACT) in Air Permit Applications (April 2001), the TCEQ BACT evaluation is conducted using a “tiered” analysis approach. The evaluation begins at the first tier and continues sequentially through subsequent tiers only if necessary, as determined by the evaluation process described in the TCEQ document. In each tier, BACT is evaluated on a case-by-case basis.

In the first tier, controls accepted as BACT in a recent permit review for the same process in the same industry are approved as BACT in a current review if no new technical developments have been made that would justify additional controls as economically or technically reasonable. According to the TCEQ, the second tier takes into account controls that have been accepted as BACT in recent permits for similar facilities in a different process or industry. The third tier of the TCEQ BACT approach consists of a detailed technical and economic analysis of all control options available for the process under review.

The proposed amendment will authorize a modification to the existing main flare and will roll in multiple PBRs and a Standard Permit. The following summarizes the BACT analysis for the proposed change.

4.1 Main Flare

Tier 1 BACT for flares is to meet the requirements of 40 CFR §60.18 regarding flare tip velocity and minimum net heating value of gas combusted. A DRE of 99% will be achieved with up to 3 carbon compounds and a 98% DRE will be achieved with up to four or greater carbon compounds when the requirement of 40 CFR §60.18 are met.

The existing plant flare is designed to be smokeless and meets all applicable requirements of 40 CFR §60.18 and §63.11 during all maintenance startup and shutdown operating scenarios. The flare is equipped with a pilot flame monitoring system to ensure that the flame is lit at all times and that gas is directed at the flare. The flare is also equipped with a monitoring system to measure and record the flow and composition of the waste gas directed to the flare.

Table 4-1 Main Flare BACT Requirements

Year	Source Type	Pollutant	Minimum Acceptable Control	Control Efficiency or Details
10/1/2018	Control: flare	VOC	Meets requirement of 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.	The flare meets the 99% compounds up to three carbons and 98% otherwise. There is no flaring of halogenated compounds. Flow monitor and composition analyzers are in place.
		NOx	Provide proposal and justification. Flow monitor will be required. Composition or BTU analyzer may be required.	Emissions are estimated based on firing rate and AP-42 factors. Flow monitor and composition analyzers are in place.
		CO	Provide proposal and justification. Flow monitor will be required. Composition or BTU analyzer may be required.	Emissions are estimated based on firing rate and AP-42 factors. Flow monitor and composition analyzers are in place.
		SO ₂	Provide proposal and justification. Flow monitor will be required. Composition or BTU analyzer may be required.	Emissions are estimated based on firing rate, AP-42 factors, and engineering calculations. Flow monitor and composition analyzers are in place.

4.2 Boilers

Tier 1 BACT analysis for VOC for Boilers requires good Combustion Practices.

Table 4-2 Boilers BACT Requirements

Year	Source Type	Pollutant	Minimum Acceptable Control	Control Efficiency or Details
10/1/2018	Boiler: liquid and gas fuel, > 40 MMBtu/hr	VOC	Good Combustion Practices	Emissions are estimated based on firing rate and the AP-42 factor. Good combustion techniques are followed.

4.3 Fugitives

Equistar uncontrolled VOC emissions are > 25 tpy; therefore Tier 1 BACT analysis for fugitives requires to follow the 28 VHP program.

Table 4-3 Fugitive Requirements

Year	Source Type	Pollutant	Minimum Acceptable Control	Control Efficiency or Details
10/1/2018	Fugitives: piping and equipment leak	VOC	Provide details about applicable option: 1. Uncontrolled VOC emissions < 10 tpy - no control required 2. 10 tpy < uncontrolled VOC emissions < 25 tpy - 28M LDAR program. 75% credit. 3. Uncontrolled VOC emissions > 25 tpy - 28VHP LDAR program. 97% credit for valves, 85% for pumps and compressors. 4. VOC vapor pressure < 0.002 psia - no inspection required, no fugitive emissions expected.	28 VHP LDAR program is followed.

SECTION 5

REGULATORY APPLICABILITY

Pursuant to TCEQ 30 TAC §116.111, Equistar 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 Equistar and is included in Appendix A.
- §116.111(a)(2)(A) through (L) – These items are addressed individually below.
- §116.111(b) – Equistar 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 311(a) – Permit Renewal Application: This application is not a renewal application.

30 TAC 311(a)(1) – Dockside vessel Emissions: The unit complies with all rules and regulations of the commission.

30 TAC 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 311(a)(3) – New Source Performance Standards (NSPS): Equistar will comply with all the requirements of any applicable NSPS as listed under Title 40 Code of Federal Regulations (CFR) Part 60. The Title V permit will provide relevant NSPS applicability for the Olefins Unit. Please refer to the Title V permit for any NSPS applicability requirements.

30 TAC 311(a)(4) – National Emissions Standards for Hazardous Air Pollutants (NESHAP): Equistar will comply with all the requirements of any applicable emission standard for hazardous air pollutants as listed under Title 40 CFR Part 61. The Title V permit will provide relevant NESHAP applicability for the Olefins Unit. Please refer to the Title V permit for any NESHAP applicability requirements.

30 TAC 311(a)(5) – Maximum Achievable Control Technology Organic NESHAPs (MACT): Equistar will comply with all the requirements of any applicable MACT standard as listed under 40 CFR Part 63. The Title V permit will provide relevant MACT Organic NESHAPs applicability for the Olefins Unit. Please refer to the Title V permit for any MACT applicability requirements.

30 TAC 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 311(b) – Compliance with Federal or State Air Quality Control Requirements

30 TAC 311(b)(1) – Additional Information: Equistar will provide additional information about the emissions from the facility and their impact on their surrounding area at the request of the TCEQ.

30 TAC 311(c) – Compliance History: Equistar is an existing site greater than 5-years old. Equistar requests that TCEQ compile the history of the site.

5.2 General Application Requirements - §116.111

The emissions associated with the proposed Olefins 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: Equistar will comply with all applicable requirements under this chapter.

30 TAC 112 - Sulfur Compounds: Equistar 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:

Equistar will comply with all the applicable control, monitoring, inspection, testing, and recordkeeping requirement listed in this subchapter.

Subchapter C Division 1 – Loading and Unloading of VOC:

Equistar will comply with all the applicable control, monitoring, and inspection requirement listed in this subchapter.

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

Equistar will use TCEQ's 28VHP Leak Detection and Repair (LDAR) Program to comply with the requirements of Regulation V Subchapter D Division 3 for 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: Equistar 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 Equistar 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)

Equistar 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)

Equistar 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)

Equistar 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

Non-attainment review has been completed and is not triggered. See Non-attainment New Source Review in Section 1.3 for details.

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

The 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 contemporaneous significant net emissions increase in the emissions of any regulated pollutant. Emission increases represented in this application do not meet the definition of a major modification as shown in Section 1.3.

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

Air dispersion modeling will be performed upon agency request. Equistar will meet with the Modeling Section to establish appropriate modeling protocols before performing any modeling that will be submitted to the TCEQ.

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

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

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

Equistar, if necessary, will obtain allowances in order to be in compliance with the regulations under this chapter.

30 TAC 117 - Nitrogen Compounds Equistar 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 generalized a localized air pollution episodes. An Emissions Reduction Plan is maintained as required by §118.5.

30 TAC 122 - Federal Operating Permits The La Porte Facility operates under Federal Operating Permit No. O2223. The Title V Permit will be revised to reference the changes in applicable requirements resulting from the amendment to the NSR permit and additional equipment if necessary.

APPENDIX A ADMINISTRATIVE CONSIDERATIONS AND APPLICATION FORMS

Permit Fee Calculation

The permit 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 NSR Workbook estimated capital cost and fee verification form provided in Appendix 1. The permit amendment fee of \$900 is provided in this application.

Compliance History

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

Administratively Application Forms

The following table is included in this appendix:

- NSR Workbook General Information Table (previously form PI-1)

The completed TCEQ NSR workbook general application forms is submitted electronically through email to the Air Permits Initial Review Team.

I. Applicant Information

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.

I agree

A. Company Information

Company or Legal Name: Equistar Chemicals, LP

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:

<https://www.sos.state.tx.us>

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:	Stephen G
Last Name:	Goff
Title:	Complex Manager
Mailing Address:	P.O. Drawer D
Address Line 2:	
City:	Deer Park
State:	TX
ZIP Code:	77536-1900
Telephone Number:	713-336-5475
Fax Number:	713-209-1440
Email Address:	Stephen.Goff@lyondellbasell.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.):	Ms.
First Name:	Maria
Last Name:	Anker
Title:	Environmental Engineer
Company or Legal Name:	Equistar Chemicals LP.
Mailing Address:	P.O. Drawer D
Address Line 2:	
City:	Deer Park
State:	TX
ZIP Code:	77536-1900
Telephone Number:	713-336-5258
Fax Number:	713-209-1440
Email Address:	Maria.Anker@lyondellbasell.com

D. Assigned Numbers

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.

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

Date: ___12/11/2019___
 Permit #: ___18978___
 Company: ___Equistar Chemicals LP___

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.	CN600124705
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.	RN100210319

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>	Amendment	18978, PSDTX752M5 and N162
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	

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

Date: ___12/11/2019___
 Permit #: ___18978___
 Company: ___Equistar Chemicals LP___

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	

B. MSS Activities

How are/will MSS activities for sources associated with this project be authorized?	This permit
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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?	No
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:	PBR 126212, PBR 151971, PBR 153800, PBR 154294, PBR 155981, SP 118577
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

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":	O2223

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:	1515 Miller Cut-Off Road

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

Date: ___12/11/2019___
 Permit #: ___18978___
 Company: ___Equistar Chemicals LP___

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.	La Porte
ZIP Code: Include the ZIP Code of the physical facility site, not the ZIP Code of the applicant's mailing address.	77571-9810
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.	29:42:36
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.	-95:04:17
Is this a project for a lead smelter, concrete crushing facility, and/or a hazardous waste management facility?	No

B. General Information	
Site Name:	Equistar Chemicals La Porte Complex
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.	Equistar Chemicals, LP, QE1 Unit
Are there any schools located within 3,000 feet of the site boundary?	No

C. Portable Facility	
Permanent or portable facility?	Permanent

D. Industry Type	
Principal Company Product/Business:	Organic Chemical Manufacturing
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:	Larry Taylor
District:	11
State Representative:	Mary Ann Perez
District:	144

V. Project Information

A. Description

Provide a brief description of the project that is requested. (Limited to 500 characters).	Equistar is requesting to increase the assist gas usage to the main flare and update the main flare represented DRE from 99.5% to 98% in accordance with TCEQ guidance.
--	---

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:	December 1, 2020
Projected Start of Operation:	May 1, 2021

C. Enforcement Projects

Is this application in response to, or related to, an agency investigation, notice of violation, or enforcement action?	Yes
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D. Operating Schedule

Will sources in this project be authorized to operate 8760 hours per year?	Yes
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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?	Yes
<i>If yes, is each confidential page marked "CONFIDENTIAL" in large red letters?</i>	Yes

THSC §382.041 requires us not to disclose any information related to manufacturing processes that is marked Confidential. Mark any information related to secret or proprietary processes or methods of manufacture Confidential if you do not want this information in the public file. All confidential information should be separated from the application and submitted as a separate file. Additional information regarding confidential information can be found at:

<https://www.tceq.texas.gov/permitting/air/confidential.html>

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
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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?

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
--	-----

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

Date: ___12/11/2019___
 Permit #: ___18978___
 Company: ___Equistar Chemicals LP___

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?	N/A
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?	Yes
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.	
I. Is a list of MSS activities attached?	Yes
Are the MSS activities listed and discussed separately, each complete with the authorization mechanism or emission rates, frequency, duration, and supporting information if authorized by this permit?	Yes
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

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

Date: ___12/11/2019___
Permit #: ___18978___
Company: ___Equistar Chemicals LP___

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:	Stephen G. Goff
Signature:	
<i>Original signature is required.</i>	
Date:	

APPENDIX B

TCEQ NNSR TABLES

TCEQ NNSR Tables

The following forms and tables are included in this appendix in the following order:

- Current Project:
 - TCEQ Table 1F
 - TCEQ Table 2Fs
- Retrospective Analysis (Project No. 60942)
 - TCEQ Table 3Fs



TABLE 1F

Permit No.: 18978	Application Submittal Date: December 2019							
Company: Equistar Chemicals LP								
RN: 100210319	Facility Location: 1515 Miller Cut Off Rd							
City: La Porte	County: Harris							
Permit Unit I.D.:	Permit Name:							
Permit Activity: New Source <input type="checkbox"/> Modification <input checked="" type="checkbox"/>								
Project or Process Description: Main Flare Amendment								
Complete for all Pollutants with a Project Emission Increase.	POLLUTANTS							
	Ozone		CO	PM₁₀	PM_{2.5}	NOx	SO₂	Other¹
VOC	NO_x							
Nonattainment?	No	No	No	No	No	No	No	No
PSD?	No	No	No	No	No	No	No	No
Existing site PTE (tpy)?	>50	>50	>100	<100	<100	>100	<100	-
Proposed project emission increases (tpy from 2F) ²	-	4.96	9.05	-	-	4.96	-	-
Is the existing site a major source?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA
If not, is the project a major source by itself?	NA	NA	NA	No	No	NA	No	NA
If site is major, is project increase significant?	No	No	No	No	No	No	No	NA
If netting required, estimated start of construction?	NA							
Five years prior to start of construction	NA				contemporaneous			
Estimated start of operation	NA				period			
Net contemporaneous change, including proposed project, from Table 3F. (tpy)	NA	NA	NA	NA	NA	NA	NA	NA
Major NSR Applicable?	No	No	No	No	No	No	No	No
Signature _____ Title _____ Date _____								

1 Other PSD pollutants. [Pb, H2S, TRS, H2SO4, Fluoride excluding HF, etc.]

2 Sum of proposed emissions minus baseline emissions, increases only.

The representations made above and on the accompanying tables are true and correct to the best of my knowledge.

**TABLE 2F
PROJECT EMISSION INCREASE**

Pollutant¹:	CO	Permit No.:	18978
Baseline Period:	NA		

	Affected or Modified Facilities ²			Permit No.	Actual Emissions ³ (tons/yr)	Baseline Emissions ⁴ (tons/yr)	Proposed Emissions ⁵ (tons/yr)	Projected Actual Emissions (tons/yr)	Difference (B-A) ⁶ (tons/yr)	Correction ⁷ (tons/yr)	Project Increase ⁸ (tons/yr)
	FIN	EPN	Facility Name								
1	QE8050B	QE8050B	Elevated Flare	18978	-	-	9.05	-	9.05	-	9.05
	Page Subtotal⁹:										9.05
	Project Total:										9.05

Notes:

- 1 Individual Table 2F's should be used to summarize the project emission increase for each criteria pollutant
- 2 Emission Point Number as designated in NSR Permit or Emissions Inventory.
- 3 All records and calculations for these values must be available upon request.
- 4 Correct actual emissions for currently applicable rule or permit requirements, and periods of non-compliance. These corrections, as well as any MSS previously demonstrated under 30 TAC 101, should be explained in the Table 2F supplement.
- 5 If projected actual emission is used it must be noted in the next column and the basis for the projection identified in the Table 2F supplement
- 6 Proposed Emissions (column B) minus Baseline Emissions (column A).
- 7 Correction made to emission increase for what portion could have been accommodated during the baseline period.
- 8 Obtained by subtracting the correction from the difference.
- 9 Sum all values for this page.

**TABLE 2F
PROJECT EMISSION INCREASE**

Pollutant¹:	NO _x	Permit No.:	18978
Baseline Period:	NA		

	Affected or Modified Facilities ²			Permit No.	Actual Emissions ³ (tons/yr)	Baseline Emissions ⁴ (tons/yr)	Proposed Emissions ⁵ (tons/yr)	Projected Actual Emissions (tons/yr)	Difference (B-A) ⁶ (tons/yr)	Correction ⁷ (tons/yr)	Project Increase ⁸ (tons/yr)
	FIN	EPN	Facility Name								
1	QE8050B	QE8050B	Elevated Flare	18978	-	-	4.96	-	4.96	-	4.96
	Page Subtotal⁹:										4.96
	Project Total:										4.96

Notes:

- 1 Individual Table 2F's should be used to summarize the project emission increase for each criteria pollutant
- 2 Emission Point Number as designated in NSR Permit or Emissions Inventory.
- 3 All records and calculations for these values must be available upon request.
- 4 Correct actual emissions for currently applicable rule or permit requirements, and periods of non-compliance. These corrections, as well as any MSS previously demonstrated under 30 TAC 101, should be explained in the Table 2F supplement.
- 5 If projected actual emission is used it must be noted in the next column and the basis for the projection identified in the Table 2F supplement
- 6 Proposed Emissions (column B) minus Baseline Emissions (column A).
- 7 Correction made to emission increase for what portion could have been accommodated during the baseline period.
- 8 Obtained by subtracting the correction from the difference.
- 9 Sum all values for this page.

**Table 3F
Project Contemporaneous Changes ¹**

Company:	Equistar Chemicals LP		
Permit Application No.:	18978	Criteria Pollutant:	NOx

Project Date ²	Facility at Which Emission Change Occurred ³		Federal NSR Classification	Permit No.	Project No.	Project Name or Activity	Baseline Period	A	B	Difference (tons/yr) (A-B) ⁶	Creditable Decrease or Increase ⁷	
	FIN	EPN						Proposed Emissions ⁴ (tons/yr)	Baseline Emissions ⁵ (tons/yr)			
1	June 1994	CG001	CG001	New	22043/ PSDTX818	20681	Cogeneration Unit	NA	214.90	-	214.90	214.90
2	June 1994	CG002	CG002	New	22043/ PSDTX818	20681	Cogeneration Unit	NA	214.90	-	214.90	214.90
3	July 1994	CG001	CG001	Shutdown	22043/ PSDTX818	20680	Cogeneration Unit	NA	-	214.90	-214.90	-214.90
4	July 1994	CG002	CG002	Shutdown	22043/ PSDTX818	20680	Cogeneration Unit	NA	-	214.90	-214.90	-214.90
5	October 1994	Various	Various	Modified	18978/ PSDTX752M2	19742	QE-1 Ethylene Unit	NA	-	-	-	-
6	March 1995	L3FLARE	L3FLARE	New	25711	33759	ABII LDPE-F Line Prod Increase	NA	0.02	-	0.02	0.02
7	December 1996	Q1INC	Q1INC	New	19109	39126	Q-1 Amendment	NA	29.28	-	29.28	29.28
8	June 1997	L3FLARE	L3FLARE	New	4477	58601	Permit Amendment - MRU Install.	NA	0.16	-	0.16	0.16
9	December 1997	L3FLARE	L3FLARE	New	4477	47330	Amendment - EVAC Test Runs	NA	0.02	-	0.02	0.02
10	February 1998	QE6801U	QE6801U	New	37619	56841	QE-1 Ethylene Unit-Add Natural Gasoline Feedstoc	NA	0.80	-	0.80	0.80
11	February 1998	UTBLRD	UTBLRD	Shutdown	GF	GF	Boiler Shutdown	1996-1997	0.00	14.37	-14.37	-14.37
12	February 1998	UTBLRE	UTBLRE	Shutdown	GF	GF	Boiler Shutdown	1996-1997	0.00	18.71	-18.71	-18.71
13	February 1998	UTBLRF	UTBLRF	Shutdown	GF	GF	Boiler Shutdown	1996-1997	0	14.49	-14.49	-14.49
14	September 1998	QE8050B	QE8050B	Modified	39143	60942	Flare Tip Replacement	1996-1997	25.13	5.21	19.92	19.92
PAGE SUBTOTAL ⁸											2.63	
Summary of Contemporaneous Changes											2.63	

Notes:

- 1 Individual Table 3F's should be used to summarize the project emission increase and net emission increase for each criteria pollutant.
- 2 The start of operation date for the modified or new facilities. Attach Table 4F for each project reduction claimed.
- 3 Emission Point No. as designated in NSR Permit or Emissions Inventory.
- 4 All records and calculations for these values must be available upon request.
- 5 All records and calculations for these values must be available upon request.
- 6 Proposed (column A) - Baseline (column B).
- 7 If portion of the decrease not creditable, enter creditable amount.
- 8 Sum all values for this page.

**Table 3F
Project Contemporaneous Changes¹**

Company :	Equistar Chemicals LP		
Permit Application No.:	18978	Criteria Pollutant:	VOC

Project Date ²	Facility at Which Emission Change Occurred ³		Federal NSR Classification	Permit No.	Project No.	Project Name or Activity	Baseline Period	A		B		
	FIN	EPN						Proposed Emissions ⁴ (tons/yr)	Baseline Emissions ⁵ (tons/yr)	Difference (tons/yr) (A-B) ⁶	Creditable Decrease or Increase ⁷	
1	October 1993	L2FUG	L2FUG	New	23545	24064	AB II LDPE Unit - Test Run	NA	<0.01	-	<0.01	<0.01
2	December 1993	LDPE 1	E100D	Shutdown	GF	GF	Shutdown AB I LDPE	1991-1992	-	0.76	-0.76	-0.76
3	December 1993	LDPE 1	E109C	Shutdown	GF	GF	Shutdown AB I LDPE	1991-1992	-	0.15	-0.15	-0.15
4	December 1993	LDPE 1	E101BNVTS	Shutdown	GF	GF	Shutdown AB I LDPE	1991-1992	-	32.76	-32.76	-32.76
5	December 1993	LDPE 1	F104	Shutdown	GF	GF	Shutdown AB I LDPE	1991-1992	-	108.02	-108.02	-108.02
6	December 1993	LDPE 1	F113	Shutdown	GF	GF	Shutdown AB I LDPE	1991-1992	-	6.45	-6.45	-6.45
7	April 1994	V-783	E-806	Modified	Std. Exm	Std. Exm	Tk Change Of Service	1992-1993	0.71	0.52	0.19	0.19
8	April 1994	V-784	E-805	Modified	Std. Exm	Std. Exm	Tk Change Of Service	1992-1993	0.71	0.52	0.19	0.19
9	April 1994	V-1181	E-703	Modified	Std. Exm	Std. Exm	Tk Change Of Service	1992-1993	0.71	0.52	0.19	0.19
10	June 1994	CG001	CG001	New	22043/ PSDTX818	20681	Cogeneration Unit	NA	18.80	-	18.80	18.80
11	June 1994	CG002	CG002	New	22043/ PSDTX818	20681	Cogeneration Unit	NA	18.80	-	18.80	18.80
12	July 1994	CG001	CG001	Shutdown	22043/ PSDTX818	20680	Cogeneration Unit	NA	-	18.80	-18.80	-18.80
13	July 1994	CG002	CG002	Shutdown	22043/ PSDTX818	20680	Cogeneration Unit	NA	-	18.80	-18.80	-18.80
14	October 1994	Various	Various	Modified	18978/ PSDTX752M2	19742	QE-1 Ethylene Unit	NA	-	-	-	-
15	November 1994	38-3-5A	38-3-5A	New	Std. Exm	Std. Exm	Syngas Alt Feeds	NA	1.43	-	1.43	1.43
16	November 1994	38-3-5B	38-3-5B	New	Std. Exm	Std. Exm	Syngas Alt Feeds	NA	1.43	-	1.43	1.43
17	December 1994	L2FUG	L2FUG	Modified	Std. Exm	Std. Exm	Flange Monitoring	1992-1993	198.01	214.63	-16.62	-16.62
18	December 1994	L2LVLOAD	L2LVLOAD	New	Std. Exm	Std. Exm	Liquid Vynathene	NA	7.77	-	7.77	7.77
19	December 1994	L2KLOAD	L2KLOAD	Modified	Std. Exm	Std. Exm	Liquid Vynathene	1992-1993	0.87	1.11	-0.24	-0.24
20	December 1994	LDPE2	L2V560E/F	Modified	Std. Exm	Std. Exm	Liquid Vynathene	1992-1993	97.63	124.59	-26.96	-26.96
21	December 1994	L2FUG	L2FUG	Modified	Std. Exm	Std. Exm	Liquid Vynathene	1992-1993	198.01	197.59	0.42	0.42
22	December 1994	L3FLARE	L3FLARE	New	Std. Exm	Std. Exm	Liquid Vynathene	NA	0.24	-	0.24	0.24
23	January 1995	QEFUG	QEFUG	Modified	Std. Exm	Std. Exm	Antifoulant Tanks	1993-1994	116.23	116.00	0.22	0.22
24	January 1995	QE	QE	New	Std. Exm	Std. Exm	Antifoulant Tanks	1993-1994	0.01	-	0.01	0.01
25	January 1995	QE	QE	New	Std. Exm	Std. Exm	Antifoulant Tanks	1993-1994	0.01	-	0.01	0.01
26	February 1995	UTBLRG	UTBLRG	Modified	T-17354	31465	G Boiler	1993-1994	1.80	1.21	0.59	0.59
27	March 1995	SGMCP	49	Shutdown	2080A	34611	Void Permit - Silica Gel MFG/Catalyst Prep.	1993-1994	-	10.50	-10.50	-10.50
28	March 1995	SGMCP	45	Shutdown	2080A	34611	Void Permit - Silica Gel MFG/Catalyst Prep.	1993-1994	-	34.60	-34.60	-34.60
29	March 1995	ERUFUG	ERUFUG	Modified	5836	27330	Ethylene Recovery Unit	1993-1994	80.03	60.18	19.85	19.85
30	March 1995	Various	Various	Modified	25711	33759	ABII LDPE-F Line Prod Increase	1993-1994	8.41	-	8.41	8.41
31	April 1996	L3SILOS	L3SILOS	Modified	4477	38718	Permit Amendment	1994-1995	167.20	88.18	79.02	79.02
32	April 1996	L3FUGITIVES	L3FUGITIVES	Modified	4477	38718	Permit Amendment	1994-1995	85.17	84.90	0.27	0.27
33	August 1996	SG700-1-1	SG700-1-1	Modified	4773A	39495	Permit Amendment - Syngas/Methanol Unit. Feedstock Conv.	1994-1995	0.68	0.46	0.22	0.22
34	August 1996	SGDOCKLOAD	SGDOCKLOA	Modified	4773A	39495	Permit Amendment - Syngas/Methanol Unit. Feedstock Conv.	1994-1995	72.60	47.20	25.40	25.40
35	August 1996	SG112-1-1	SG112-1-1	Modified	4773A	39495	Permit Amendment - Syngas/Methanol Unit. Feedstock Conv.	1994-1995	0.69	0.80	-0.11	-0.11
36	August 1996	SG112-11-1	SG112-11-1	Modified	4773A	39495	Permit Amendment - Syngas/Methanol Unit. Feedstock Conv.	1994-1995	0.69	0.80	-0.11	-0.11
PAGE SUBTOTAL ⁸											-91.43	

**Table 3F
Project Contemporaneous Changes¹**

Company :	Equistar Chemicals LP		
Permit Application No.:	18978	Criteria Pollutant:	VOC

Project Date ²	Facility at Which Emission Change Occurred ³		Federal NSR Classification	Permit No.	Project No.	Project Name or Activity	Baseline Period	A		B		
	FIN	EPN						Proposed Emissions ⁴ (tons/yr)	Baseline Emissions ⁵ (tons/yr)	Difference (tons/yr) (A-B) ⁶	Creditable Decrease or Increase ⁷	
37	August 1996	SG120-1-1	SG120-1-1	Modified	4773A	39495	Permit Amendment - Syngas/Methanol Unit. Feedstock Conv.	1994-1995	1.06	1.30	-0.24	-0.24
38	August 1996	SG120-2-1	SG120-2-1	Modified	4773A	39495	Permit Amendment - Syngas/Methanol Unit. Feedstock Conv.	1994-1995	1.06	1.30	-0.24	-0.24
39	December 1996	Q1PROCESS	Various	Modified	19109	39126	Permit Amendment	1994-1995	62.22	42.55	19.67	19.67
40	January 1997	AASCV5238	AASCV5238	Modified	5040	47394	Permit Amendment	1994-1995	0.10	0.08	0.01	0.01
41	January 1997	AASCV5250	AASCV5250	Modified	5040	47394	Permit Amendment	1994-1995	0.06	0.04	0.02	0.02
42	January 1997	AASCV5251	AASCV5251	Modified	5040	47394	Permit Amendment	1994-1995	0.06	0.03	0.03	0.03
43	January 1997	AASCV5252	AASCV5252	Modified	5040	47394	Permit Amendment	1994-1995	0.03	0.01	0.02	0.02
44	January 1997	AASCV5118	AASCV5118	Modified	5040	47394	Permit Amendment	1994-1995	0.11	0.09	0.02	0.02
45	January 1997	AASCV5129	AASCV5129	Modified	5040	47394	Permit Amendment	1994-1995	0.11	0.08	0.03	0.03
46	January 1997	AABSTK	AABSTK	Modified	5040	47394	Permit Amendment	1994-1995	13.63	4.74	8.89	8.89
47	January 1997	AART	AART	Modified	5040	47394	Permit Amendment	1994-1995	<0.01	<0.01	-	-
48	January 1997	AAV5209	AAV5209	Modified	5040	47394	Permit Amendment	1994-1995	0.61	0.39	0.22	0.22
49	January 1997	AAV5210	AAV5210	Modified	5040	47394	Permit Amendment	1994-1995	0.61	0.40	0.21	0.21
50	January 1997	AAFUG	AAFUG	Modified	5040	47394	Permit Amendment	1994-1995	13.86	13.10	0.76	0.76
51	June 1997	MRUFUG	MRUFUG	New	5836	55433	Permit Amendment - MRU Install.	NA	1.15	-	1.15	1.15
52	June 1997	MRUV3784	MRUV3784	New	5836	55433	Permit Amendment - MRU Install.	NA	0.01	-	0.01	0.01
53	June 1997	L3FLARE	L3FLARE	New	4477	58601	Permit Amendment - MRU Install.	NA	1.18	-	1.18	1.18
54	December 1997	L3FUGITIVES	L3FUGITIVES	Modified	4477	47330	Amendment - EVAC Test Runs	1994-1995	85.45	85.17	0.29	0.29
55	December 1997	L3V4205	L3V4205	Modified	4477	47330	Amendment - EVAC Test Runs	1994-1995	0.02	5.21	-5.19	-5.19
56	December 1997	L3SILOX	L3SILOX	New	4477	47330	Amendment - EVAC Test Runs	1994-1995	8.01	-	8.01	8.01
57	December 1997	L3V4367	L3V4367	Modified	4477	47330	Amendment - EVAC Test Runs	1994-1995	0.64	0.52	0.12	0.12
58	February 1998	QEFUG	QEFUG	New	37619	56841	QE-1 Ethylene Unit-Add Natural Gasoline Feedstoc	NA	0.05	-	0.05	0.05
59	February 1998	QE6410F	QE6410F	New	37619	56841	QE-1 Ethylene Unit-Add Natural Gasoline Feedstoc	NA	0.02	-	0.02	0.02
60	February 1998	QE6801U	QE6801U	New	37619	56841	QE-1 Ethylene Unit-Add Natural Gasoline Feedstoc	NA	0.58	-	0.58	0.58
61	February 1998	UTBLRD	UTBLRD	Shutdown	GF	GF	Boiler Shutdown	1996-1997	-	0.32	-0.32	-0.32
62	February 1998	UTBLRE	UTBLRE	Shutdown	GF	GF	Boiler Shutdown	1996-1997	-	0.41	-0.41	-0.41
63	February 1998	UTBLRF	UTBLRF	Shutdown	GF	GF	Boiler Shutdown	1996-1997	-	0.32	-0.32	-0.32
64	June 1998	PF-RX-F	PF-RX-F	New	38605	59437	Add New Catalyst - Linear PF Testing	NA	0.12	-	0.12	0.12
65	September 1998	QE8050B	QE8050B	Modified	39143	60942	Flare Tip Replacement	1996-1997	28.79	5.46	23.33	23.33
66	October 1998	QEFUG	QEFUG	New	39192	61119	QE-1 Ethylene Unit	NA	0.22	-	0.22	0.22
67	October 1998	QE6410F	QE6410F	New	39192	61119	QE-1 Ethylene Unit	NA	1.77	-	1.77	1.77
68	October 1998	QE6801U	QE6801U	New	39192	61119	QE-1 Ethylene Unit	NA	0.59	-	0.59	0.59
PAGE SUBTOTAL ⁸											60.61	
Summary of Contemporaneous Changes											-30.82	

Notes:

- Individual Table 3F's should be used to summarize the project emission increase and net emission increase for each criteria pollutant.
- The start of operation date for the modified or new facilities. Attach Table 4F for each project reduction claimed.
- Emission Point No. as designated in NSR Permit or Emissions Inventory.
- All records and calculations for these values must be available upon request.
- All records and calculations for these values must be available upon request.
- Proposed (column A) - Baseline (column B).
- If portion of the decrease not creditable, enter creditable amount.
- Sum all values for this page.

APPENDIX C

EMISSION CALCULATIONS (CONFIDENTIAL)

Emission Calculations

Included in this appendix is calculations for all facilities changing as part of the requested permit amendment.

Short-Term Emission Calculation with Expander

EQUISTAR CHEMICALS
LAPORTE COMPLEX
OLEFINS UNIT PERMIT AMENDMENT APPLICATION # 18978
ELEVATED FLARE EMISSIONS CALCULATIONS (EPN: QE8050B)

CONFIDENTIAL

Annual Emission Calculation with Expander

EQUISTAR CHEMICALS
LAPORTE COMPLEX
OLEFINS UNIT PERMIT AMENDMENT APPLICATION # 18978
ELEVATED FLARE EMISSIONS CALCULATIONS (EPN: QE8050B-MAINT)

CONFIDENTIAL

**EQUISTAR CHEMICALS
LAPORTE COMPLEX
OLEFINS UNIT PERMIT AMENDMENT APPLICATION # 18978
ELEVATED FLARE EMISSIONS CALCULATIONS (EPN: QE8050B-MAINT)**

CONFIDENTIAL

Per Special Condition 8 the following activities are authorized:

**Update provided on March 6, 2020 based on Notice of
Deficiency 2 sent by TCEQ**

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

Date: ___12/11/2019___
Permit #: ___18978___
Company: ___Equistar Chemicals LP___

I. Applicant Information

<p>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>	<p>I agree</p>
--	----------------

A. Company Information

Company or Legal Name:	Equistar Chemicals, LP
------------------------	------------------------

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:

<https://www.sos.state.tx.us>

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:	Stephen G
Last Name:	Goff
Title:	Complex Manager
Mailing Address:	P.O. Drawer D
Address Line 2:	
City:	Deer Park
State:	TX
ZIP Code:	77536-1900
Telephone Number:	713-336-5475
Fax Number:	713-209-1440
Email Address:	Stephen.Goff@lyondellbasell.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.):	Ms.
First Name:	Maria
Last Name:	Anker
Title:	Environmental Engineer
Company or Legal Name:	Equistar Chemicals LP.
Mailing Address:	P.O. Drawer D
Address Line 2:	
City:	Deer Park
State:	TX
ZIP Code:	77536-1900
Telephone Number:	713-336-5258
Fax Number:	713-209-1440
Email Address:	Maria.Anker@lyondellbasell.com

D. Assigned Numbers

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

Date: 12/11/2019
 Permit #: 18978
 Company: Equistar Chemicals LP

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.

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.	CN600124705
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.	RN100210319

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
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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>	Amendment	18978, PSDTX752M5 and N162
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	

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

Date: 12/11/2019
 Permit #: 18978
 Company: Equistar Chemicals LP

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>	Major Modification	N162
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	
B. MSS Activities		
How are/will MSS activities for sources associated with this project be authorized?	This permit	
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?	No	
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:	PBR 126212, PBR 153800, PBR 154294, SP 118577	
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		
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	

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

Date: ___12/11/2019___
 Permit #: ___18978___
 Company: ___Equistar Chemicals LP___

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":	O2223
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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:	1515 Miller Cut-Off 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.	La Porte
ZIP Code: Include the ZIP Code of the physical facility site, not the ZIP Code of the applicant's mailing address.	77571-9810
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.	29:42:36
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.	-95:04:17
Is this a project for a lead smelter, concrete crushing facility, and/or a hazardous waste management facility?	No
B. General Information	
Site Name:	Equistar Chemicals La Porte Complex
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.	Equistar Chemicals, LP, QE1 Unit

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

Date: ___12/11/2019___
 Permit #: ___18978___
 Company: ___Equistar Chemicals LP___

Are there any schools located within 3,000 feet of the site boundary?	No
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C. Portable Facility	
Permanent or portable facility?	Permanent

D. Industry Type	
Principal Company Product/Business:	Organic Chemical Manufacturing
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:	Larry Taylor
District:	11
State Representative:	Mary Ann Perez
District:	144

V. Project Information

A. Description	
Provide a brief description of the project that is requested. (Limited to 500 characters).	Equistar is requesting to increase the assist gas usage to the main flare and update the NOx and CO emission factors based on the TCEQ 2010 flare study in accordance with TCEQ guidance. Equistar is also updating the main flare SO2 calculations from loading dimethyl sulfide and updating streams speciation vented to the flare.

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:	December 1, 2020
Projected Start of Operation:	May 1, 2021

C. Enforcement Projects	
Is this application in response to, or related to, an agency investigation, notice of violation, or enforcement action?	Yes
If yes, did you attach copies of any correspondence from the agency and provide the RN associated with the investigation, notice of violation, or enforcement action?	Yes

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)	
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A. Confidential Application Materials	
Is confidential information submitted with this application?	Yes
If yes, is each confidential page marked "CONFIDENTIAL" in large red letters?	Yes

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

Date: ___12/11/2019___
 Permit #: ___18978___
 Company: ___Equistar Chemicals LP___

THSC §382.041 requires us not to disclose any information related to manufacturing processes that is marked Confidential. Mark any information related to secret or proprietary processes or methods of manufacture Confidential if you do not want this information in the public file. All confidential information should be separated from the application and submitted as a separate file. Additional information regarding confidential information can be found at:

<https://www.tceq.texas.gov/permitting/air/confidential.html>

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?	N/A
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?	Yes
H. Is a material balance (Table 2, Form 10155) attached?	Yes

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

Date: ___12/11/2019___
 Permit #: ___18978___
 Company: ___Equistar Chemicals LP___

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.

I. Is a list of MSS activities attached?	Yes
Are the MSS activities listed and discussed separately, each complete with the authorization mechanism or emission rates, frequency, duration, and supporting information if authorized by this permit?	Yes
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:	Stephen G. Goff
Signature:	
<i>Original signature is required.</i>	
Date:	



Attachment B

***Federal Applicability Review
TCEQ Table Fs***

Equistar Chemicals
 Laporte Complex
 Olefins Unit Permit Amendment Application # 18978
 Federal NSR Applicability Analysis Summary
 Table 1-4

EPN	Facility Description	Federal NSR Classification	Permit No.	VOC			NOx			CO			SO2		
				Baseline tpy	Proposed tpy	Project Increase tpy	Baseline tpy	Proposed tpy	Project Increase tpy	Baseline tpy	Proposed tpy	Project Increase tpy	Baseline tpy	Proposed tpy	Project Increase tpy
QE8050B	Elevated Flare	Modified	18978	7.08	11.88	4.80	9.25	30.09	20.84	34.67	87.63	52.96	0.25	4.25	4.00
QE8050MAINT	Elevated Flare Maintenance	Modified	18978	-	0.15	0.15				-	0.30	0.30	-	0.06	0.06
Project Increase (tpy)						4.95			20.84			53.26			4.06
Major Source Threshold (tpy)						50			100.00			100			100
Existing Major Source (Yes/No)						Yes			Yes			Yes			Yes
Project Major Source By itself (Yes/No)						No			No			No			No
Netting Threshold (tons)						5			5			100			40
Netting Required (Yes/No)						No			Yes			No			No
Contemporaneous Period Change (tons)						NA			121.53			NA			NA
Significant Modification Threshold (tons)						25			25			100			40
Federal Review Required (Yes/No)						No			Yes			No			No



TABLE 1F

Permit No.: 18978	Application Submittal Date: 12/10/2019							
Company: Equistar Chemicals LP								
RN: 100210319	Facility Location: 1515 Miller Cut Off Rd							
City: La Porte	County: Harris							
Permit Unit I.D.:	Permit Name:							
Permit Activity: New Source <input type="checkbox"/> Modification <input checked="" type="checkbox"/>								
Project or Process Description: Main Flare Amendment								
Complete for all Pollutants with a Project Emission Increase.	POLLUTANTS							
	Ozone		CO	PM ₁₀	PM _{2.5}	NOx	SO ₂	Other ¹
VOC	NO _x							
Nonattainment?	No	No	No	No	No	No	No	No
PSD?	No	No	No	No	No	No	No	No
Existing site PTE (tpy)?	>50	>50	>100	<100	<100	>100	<100	-
Proposed project emission increases (tpy from 2F) ²	4.95	20.84	53.26	-	-	20.84	4.06	-
Is the existing site a major source?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA
If not, is the project a major source by itself?	No	No	No	No	No	No	No	NA
If site is major, is project increase significant?	No	Yes	No	No	No	No	No	NA
If netting required, estimated start of construction?	12/1/2020							
Five years prior to start of construction	12/1/2015				contemporaneous			
Estimated start of operation	5/1/2021				period			
Net contemporaneous change, including proposed project, from Table 3F. (tpy)	NA	121.53	NA	NA	NA	NA	NA	NA
Major NSR Applicable?	No	Yes	No	No	No	No	No	No
Signature _____ Title _____ Date _____								

1 Other PSD pollutants. [Pb, H2S, TRS, H2SO4, Fluoride excluding HF, etc.]

2 Sum of proposed emissions minus baseline emissions, increases only.

The representations made above and on the accompanying tables are true and correct to the best of my knowledge.

**TABLE 2F
PROJECT EMISSION INCREASE**

Pollutant¹: NOx				Permit No.: 18978							
Baseline Period: 2014-2015											
				A				B			
	Affected or Modified Facilities ²			Permit No.	Actual Emissions ³ (tons/yr)	Baseline Emissions ⁴ (tons/yr)	Proposed Emissions ⁵ (tons/yr)	Projected Actual Emissions (tons/yr)	Difference (B-A) ⁶ (tons/yr)	Correction ⁷ (tons/yr)	Project Increase ⁸ (tons/yr)
	FIN	EPN	Facility Name								
1	QE8050B	QE8050B	Elevated Flare	18978	9.25	9.25	30.09	-	20.84	-	20.84
										Page Subtotal⁹:	20.84
										Project Total:	20.84

Notes:

- 1 Individual Table 2F's should be used to summarize the project emission increase for each criteria pollutant
- 2 Emission Point Number as designated in NSR Permit or Emissions Inventory.
- 3 All records and calculations for these values must be available upon request.
- 4 Correct actual emissions for currently applicable rule or permit requirements, and periods of non-compliance. These corrections, as well as any MSS previously demonstrated under 30 TAC 101, should be explained in the Table 2F supplement.
- 5 If projected actual emission is used it must be noted in the next column and the basis for the projection identified in the Table 2F supplement
- 6 Proposed Emissions (column B) minus Baseline Emissions (column A).
- 7 Correction made to emission increase for what portion could have been accommodated during the baseline period.
- 8 Obtained by subtracting the correction from the difference.
- 9 Sum all values for this page.

**TABLE 2F
PROJECT EMISSION INCREASE**

Pollutant¹: CO				Permit No.: 18978								
Baseline Period: 2010-2011												
				A				B				
	Affected or Modified Facilities ²			Permit No.	Actual Emissions ³ (tons/yr)	Baseline Emissions ⁴ (tons/yr)	Proposed Emissions ⁵ (tons/yr)	Projected Actual Emissions (tons/yr)	Difference (B-A) ⁶ (tons/yr)	Correction ⁷ (tons/yr)	Project Increase ⁸ (tons/yr)	
	FIN	EPN	Facility Name									
1	QE8050B	QE8050B	Elevated Flare	18978	34.67	34.67	87.63	-	52.96	-	52.96	
2	QE8050MAINT	QE8050MAINT	Elevated Flare Maintenance	18978	-	-	0.30	-	0.30	-	0.30	
											Page Subtotal⁹:	53.26
											Project Total:	53.26

Notes:

- 1 Individual Table 2F's should be used to summarize the project emission increase for each criteria pollutant
- 2 Emission Point Number as designated in NSR Permit or Emissions Inventory.
- 3 All records and calculations for these values must be available upon request.
- 4 Correct actual emissions for currently applicable rule or permit requirements, and periods of non-compliance. These corrections, as well as any MSS previously demonstrated under 30 TAC 101, should be explained in the Table 2F supplement.
- 5 If projected actual emission is used it must be noted in the next column and the basis for the projection identified in the Table 2F supplement
- 6 Proposed Emissions (column B) minus Baseline Emissions (column A).
- 7 Correction made to emission increase for what portion could have been accommodated during the baseline period.
- 8 Obtained by subtracting the correction from the difference.
- 9 Sum all values for this page.

**Table 3F
Project Contemporaneous Changes¹**

Company :	Equistar Chemicals LP		
Permit Application No.:	18978	Criteria Pollutant:	NOx

Project Date ²	Facility at Which Emission Change Occured ³		Federal NSR Classification	Permit No.	Project No.	Project Name or Activity	Baseline Period	A		Difference (tons/yr) (A-B) ⁶	Creditable Decrease or Increase ⁷	
	FIN	EPN						Proposed Emissions ⁴ (tons/yr)	Baseline Emissions ⁵ (tons/yr)			
1	December 2015	L3FLARE ⁹	L3FLARE ⁹	Modified	4477	231222	AB3 Permit Renewal/Amendment	2011-2012	1.96	0.96	1.00	-
2	December 2015	L3FLARE-MSS	L3FLARE-MSS	New	4477	231222	AB3 Permit Renewal/Amendment	NA	0.06	-	0.06	0.06
3	February 2016	LBFLARE ⁹	LBFLARE ⁹	New	114809	201146	LB-1 Project	NA	8.03	-	-	-
4	February 2016	LBFLARE ⁹	LBFLARE ⁹	New	114809	201146	LB-1 Project	NA	0.37	-	0.37	0.37
5	May 2017	LBFLARE ⁹	LBFLARE ⁹	Modified	114809	252146	Permit Amendment (2 flares -> 1; flare water seal)	NA	8.03	8.03	-	-
6	May 2017	LBFLARE ⁹	LBFLARE ⁹	Shutdown	114809	252146	Permit Amendment (2 flares -> 1; flare water seal)	NA	-	0.37	-0.37	-0.37
7	September 2017	Q1INC	Q1INC	Modified	PBR 138607 - NSR 19109	271610	Q1 Debottleneck	2013-2014	20.24	1.18	19.06	19.06
8	September 2017	QE8050B ⁹	QE8050B ⁹	Modified	PBR 148085 - NSR 18978	273069	Recycle Lube Oil PBR	2014-2015	23.20	9.25	13.95	-
9	February 2018	VAFLARE ⁹	VAFLARE ⁹	Modified	SP 150300 - NSR 4751	280929	VA Flare Replacement and Relocation	2010-2011	8.65	8.01	0.64	-
10	March 2018	VAWWENG	VAWWENG	New	PBR 150783 - NSR 4751	282599	Installation of new diesel engine	NA	-	-	-	-
11	March 2018	WWPENG	WWPENG	New	PBR 150783 - NSR 4751	282599	VAM WW Engine	NA	4.07	-	4.07	4.07
12	May 2018	HSFLARE	HSFLARE	Shutdown	19109	279513	Flare decommissioned	2015-2016	-	3.33	-3.33	-3.33
13	May 2018	QEH2FLARE ⁹	QEH2FLARE ⁹	Modified	18978 and PSDTX752M5	270498	Olefins Permit Renewal-Amendment	2016-2017	20.92	4.34	16.58	-
14	June 2018	QE1AIRCOMP	QE1AIRCOMP	New	PBR 151971 - NSR 18978	285878	Installation of new diesel engine	NA	0.62	-	0.62	0.62
15	August 2018	UTBLRG	UTBLRG	New	SP 153017 - NSR 5226	288914	Utilities burners	NA	-	-	-	-
16	August 2018	UTBLRH	UTBLRH	New	SP 153017 - NSR 5226	288914	Utilities burners	NA	-	-	-	-
17	August 2018	L3RTO	L3RTO	Modified	PBR 152926 - NSR 4477	288557	AB3 high rates	2011-2012	1.19	0.78	0.41	0.41
18	August 2018	VAFLARE ⁹	VAFLARE ⁹	Modified	PBR 153099 - NSR 4751	289191	V580 IFR -> flare	2010-2011	8.66	8.01	0.65	-
19	October 2018	HSFLARE	HSFLARE	Shutdown	83822	292276	Flare decommissioned	2014-2015	-	0.54	-0.54	-0.54
20	October 2018	AAFLARE ⁹	AAFLARE ⁹	Modified	NSR 5040	302168	Acetic Acid Renewal-Amendment.	2010-2011	3.27	2.92	0.35	-
21	October 2018	VAFLARE ⁹	VAFLARE ⁹	Modified	PBR 154109 - NSR 4751	292258	B* RGC seal upgrade	2010-2011	8.79	8.01	0.78	-
22	October 2018	L3FLARE ⁹	L3FLARE ⁹	Modified	SP 153696 - NSR 4477	291135	Route secondary distance pieces to flare	2016-2017	1.96	1.31	0.65	-
23	November 2018	LBFLARE ⁹	LBFLARE ⁹	Modified	PBR 153695 - NSR 114809	291130	Q1 rrx vent	NA	8.30	8.03	0.27	-
24	January 2019	QE8050B ⁹	QE8050B ⁹	Modified	PBR 154294	292793	New CO2 analyzer that will purge to the flare (ethane)	2014-2015	23.20	9.25	13.95	-
25	January 2019	LBCCRGEN	LBCCRGEN	New	PBR 106.511	PBR 106.511	New LB1 engine	NA	1.72	-	1.72	1.72
PAGE SUBTOTAL ⁸											22.08	

**Table 3F
Project Contemporaneous Changes¹**

Company :	Equistar Chemicals LP
Permit Application No.:	18978
Criteria Pollutant:	NOx

Project Date ²	Facility at Which Emission Change Occured ³		Federal NSR Classification	Permit No.	Project No.	Project Name or Activity	Baseline Period	A		B		
	FIN	EPN						Proposed Emissions ⁴ (tons/yr)	Baseline Emissions ⁵ (tons/yr)	Difference (tons/yr) (A-B) ⁶	Creditable Decrease or Increase ⁷	
26	January 2019	LBFWGEN	LBFWGEN	New	PBR 106.511	PBR 106.511	New LB1 engine	NA	2.45	-	2.45	2.45
27	February 2019	WWPENG	WWPENG	Shutdown	PBR 150783 - NSR 4751	260203	VAM WW Engine	NA	-	4.07	-4.07	-4.07
28	March 2019	LBFLARE ⁹	LBFLARE ⁹	Modified	114809	275583	Permit Amendment (various updates) - Routine Emissions	NA	8.68	8.30	0.38	-
29	March 2019	LBFLARE ⁹	LBFLARE ⁹	Modified	114809	275583	Permit Amendment (various updates) - MSS Emissions	NA	1.31	-	1.31	-
30	March 2019	L3THERMOX	L3THERMOX	New	SP 156014 - NSR 4477	298556	AB3 purge to temporary oxidizer	NA	1.07	-	1.07	1.07
31	May 2019	LBFLARE ⁹	LBFLARE ⁹	Modified	NSR 114809	302294	Amendment - routine emissions	NA	17.21	-	17.21	17.21
32	May 2019	LBFLARE ⁹	LBFLARE ⁹	Modified	NSR 114809	302294	Amendment - MSS emissions	NA	7.43	-	7.43	7.43
33	June 2019	LBSUBGEN	LBSUBGEN	New	PBR 106.511	PBR 106.511	New LB1 engine	NA	3.77	-	3.77	3.77
34	August 2019	L3FLARE ⁹	L3FLARE ⁹	Modified	NSR 4477	292426	Amendment to include AB3 purge	2016-2017	2.48	1.31	1.17	-
35	September 2019	UTBLRHN	UTBLRHN	New	SP 158266 - NSR 5226	306337	Package boilers	NA	11.86	-	11.86	11.86
36	September 2019	UTBLRHS	UTBLRHS	New	SP 158266 - NSR 5226	306337	Package boilers	NA	11.86	-	11.86	11.86
37	September 2019	QE1AIRCOMP	QE1AIRCOMP	Shutdown	PBR 151971 - NSR 18978	270498	Olefins Permit Renewal-Amendment	NA	-	0.62	-0.62	-0.62
38	October 2019	VAMFLARE ⁹	VAMFLARE ⁹	Modified	SP 150300 - NSR 4751	308410	VA Flare Replacement and Relocation - New VAM Flare EPN	2010-2011	8.65	8.01	0.64	-
39	November 2019	QE2FLARE ⁹	QE2FLARE ⁹	Modified	SP 159015 - NSR 18978	308600	Convert to an unassited flare	2016-2017	19.72	4.34	15.38	15.38
40	December 2019	QE8050B ⁹	QE8050B ⁹	Modified	NSR 18978 and PSDTX752M5	309847	Olefins Permit Amendment	2014-2015	30.09	9.25	20.84	20.84
41	January 2020	VAFLARE ⁹	VAFLARE ⁹	Modified	NSR 4751	260199	Renewal/Amendment	2013-2014	9.77	6.32	3.45	3.45
42	January 2020	WWPENG	WWPENG	New	NSR 4751	260199	Renewal/Amendment	NA	0.92	-	0.92	0.92
43	January 2020	L3FLARE ⁹	L3FLARE ⁹	Modified	SP 159535	310324	L3FLARE NHVcz	2011-2012	7.34	0.96	6.38	6.38
44	January 2020	VAMFLARE ⁹	VAMFLARE ⁹	Modified	PBR 159788	311019	VAFLARE NHVcz	2010-2011	8.95	8.01	0.94	0.94
45	January 2020	AAFLARE ⁹	AAFLARE ⁹	Modified	PBR 159787	311016	AAFLARE NHVcz	2010-2011	3.50	2.92	0.58	0.58
PAGE SUBTOTAL ⁸											99.46	
Summary of Contemporaneous Changes											121.53	

Notes:

- 1 Individual Table 3F's should be used to summarize the project emission increase and net emission increase for each criteria pollutant.
- 2 The start of operation date for the modified or new facilities. Attach Table 4F for each project reduction claimed.
- 3 Emission Point No. as designated in NSR Permit or Emissions Inventory.
- 4 All records and calculations for these values must be available upon request.
- 5 All records and calculations for these values must be available upon request.
- 6 Proposed (column A) - Baseline (column B).
- 7 If portion of the decrease not creditable, enter creditable amount.
- 8 Sum all values for this page.
- 9 End-Points netting approach was applied to these sources.



**TABLE 4F
DESCRIPTION OF CREDITABLE REDUCTIONS**

Company Name: Equistar Chemicals LP	
Contaminant: NOx	
Date Action Occurred: 5/5/2017	
SIC Code for this Source: 2869	
Permit No.: 114809	
For Creditable Reductions, verify each statement by checking all boxes:	
The reductions occurred within the contemporaneous period.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions occurred at the same major stationary source.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions have not been relied upon in issuing a previous federal permit.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions have not been used as an offset in a previous nonattainment permit, and are not reserved in a permit condition for use as an offset.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
As of the date of this application, the reductions are not required by any rule pursuant to the Texas SIP (30 TAC 111, 115, and 117).*	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions are federally enforceable.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions are of the same qualitative significance.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Records for all facilities are available to demonstrate the baseline emissions.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO

* - required only for nonattainment applicability analysis.

Please give a complete description of project. Provide all EPNs affected by this project.

Affected EPN: LBEFLARE. This flare was not built. Permit was amended to combine 2 flares into 1 flare.



**TABLE 4F
DESCRIPTION OF CREDITABLE REDUCTIONS**

Company Name: Equistar Chemicals LP	
Contaminant: NOx	
Date Action Occurred: 5/14/2018	
SIC Code for this Source: 2869	
Permit No.: 19109	
For Creditable Reductions, verify each statement by checking all boxes:	
The reductions occurred within the contemporaneous period.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions occurred at the same major stationary source.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions have not been relied upon in issuing a previous federal permit.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions have not been used as an offset in a previous nonattainment permit, and are not reserved in a permit condition for use as an offset.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
As of the date of this application, the reductions are not required by any rule pursuant to the Texas SIP (30 TAC 111, 115, and 117).*	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions are federally enforceable.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions are of the same qualitative significance.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Records for all facilities are available to demonstrate the baseline emissions.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO

* - required only for nonattainment applicability analysis.

Please give a complete description of project. Provide all EPNs affected by this project.

Affected EPN: HSFLARE. This flare was decommissioned in May 2018. Permit was amended to remove the EPN.



**TABLE 4F
DESCRIPTION OF CREDITABLE REDUCTIONS**

Company Name: Equistar Chemicals LP	
Contaminant: NOx	
Date Action Occurred: 10/1/2018	
SIC Code for this Source: 2869	
Permit No.: 83822	
For Creditable Reductions, verify each statement by checking all boxes:	
The reductions occurred within the contemporaneous period.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions occurred at the same major stationary source.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions have not been relied upon in issuing a previous federal permit.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions have not been used as an offset in a previous nonattainment permit, and are not reserved in a permit condition for use as an offset.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
As of the date of this application, the reductions are not required by any rule pursuant to the Texas SIP (30 TAC 111, 115, and 117).*	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions are federally enforceable.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions are of the same qualitative significance.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Records for all facilities are available to demonstrate the baseline emissions.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO

* - required only for nonattainment applicability analysis.

Please give a complete description of project. Provide all EPNs affected by this project.

Affected EPN: HSFLARE. This flare was decommissioned in May 2018. MSS Permit was amended to remove the EPN.



**TABLE 4F
DESCRIPTION OF CREDITABLE REDUCTIONS**

Company Name: Equistar Chemicals LP	
Contaminant: NOx	
Date Action Occurred: 2/1/2019	
SIC Code for this Source: 2869	
Permit No.: PBR 150783 - NSR 4751	
For Creditable Reductions, verify each statement by checking all boxes:	
The reductions occurred within the contemporaneous period.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions occurred at the same major stationary source.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions have not been relied upon in issuing a previous federal permit.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions have not been used as an offset in a previous nonattainment permit, and are not reserved in a permit condition for use as an offset.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
As of the date of this application, the reductions are not required by any rule pursuant to the Texas SIP (30 TAC 111, 115, and 117).*	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions are federally enforceable.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions are of the same qualitative significance.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Records for all facilities are available to demonstrate the baseline emissions.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO

* - required only for nonattainment applicability analysis.

Please give a complete description of project. Provide all EPNs affected by this project.

Affected EPN: WWPENG. This engine was permanently removed from the site.



**TABLE 4F
DESCRIPTION OF CREDITABLE REDUCTIONS**

Company Name: Equistar Chemicals LP	
Contaminant: NOx	
Date Action Occurred: 9/30/2019	
SIC Code for this Source: 2869	
Permit No.: PBR 151971 - NSR 18978	
For Creditable Reductions, verify each statement by checking all boxes:	
The reductions occurred within the contemporaneous period.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions occurred at the same major stationary source.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions have not been relied upon in issuing a previous federal permit.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions have not been used as an offset in a previous nonattainment permit, and are not reserved in a permit condition for use as an offset.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
As of the date of this application, the reductions are not required by any rule pursuant to the Texas SIP (30 TAC 111, 115, and 117).*	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions are federally enforceable.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The reductions are of the same qualitative significance.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Records for all facilities are available to demonstrate the baseline emissions.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO

* - required only for nonattainment applicability analysis.

Please give a complete description of project. Provide all EPNs affected by this project.

Affected EPN: QE1AIRCOMP. This engine was permanently removed from the site.



Attachment C

***Updated EMEW
Updated Air Quality Analysis***

(Note: Excel file is included in a separate attachment)

Air Quality Analysis

Supporting Permit Amendment 18978

EQUISTAR

Equistar Chemicals, LP
La Porte Complex
La Porte, Harris County, Texas

March 2020



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Table of Contents

Section 1 Summary	1-1
1.1 Introduction	1-1
Section 2 Maps and Plot Plan	2-1
Section 3 Supplemental Information	3-1
3.1 Discussion of Worst-Case Determination	3-1
3.2 MERA Review.....	3-1
3.2.1 MERA Step 2 Processing	3-1
3.2.2 MERA Step 3 Processing with Unit Impact Multipliers	3-1
3.2.3 Flare Calculations.....	3-2
3.2.4 Dispersion Option (Urban vs. Rural).....	3-2

List of Tables

Table 3-1 De Minimis Analysis	3-3
Table 3-2 MERA Step 2 – De Minimis Check.....	3-4
Table 3-3 MERA Step 3 - Hourly	3-5
Table 3-4 MERA Step 3 - Annual.....	3-6
Table 3-5 Flare Calculations.....	3-7
Table 3-6 Land Use Classification	3-8

List of Figures

Figure 2-1 Area Map	2-2
Figure 2-2 Plot Plan	2-3

Appendices

Appendix A EMEW Link

Appendix B Modeling Files Link

Section 1 Summary

1.1 Introduction

This Air Quality Analysis (AQA) has been completed to demonstrate to the Texas Commission on Environmental Quality (TCEQ) Air Dispersion Modeling Team (ADMT) that the proposed project emissions will comply with all applicable air quality standards. The AQA was performed in support of the Amendment for permit 18978 at the La Porte Complex owned by Equistar Chemicals, LP. LyondellBasell owns LyondellBasell Acetyls and Equistar Chemicals LP. There are two separate entities which have common ownership. This AQA is an update to the original AQA submitted to TCEQ on February 6, 2020.

The content of the AQA is primarily included in TCEQ's Electronic Modeling Evaluation Workbook (EMEW). However, the following items could not be included in the EMEW and will be provided in this document:

- Plot Plan
- Area Map
- MERA Information (Step 2 and Step 3 Processing)
- Flare Calculations
- Land Use Classification

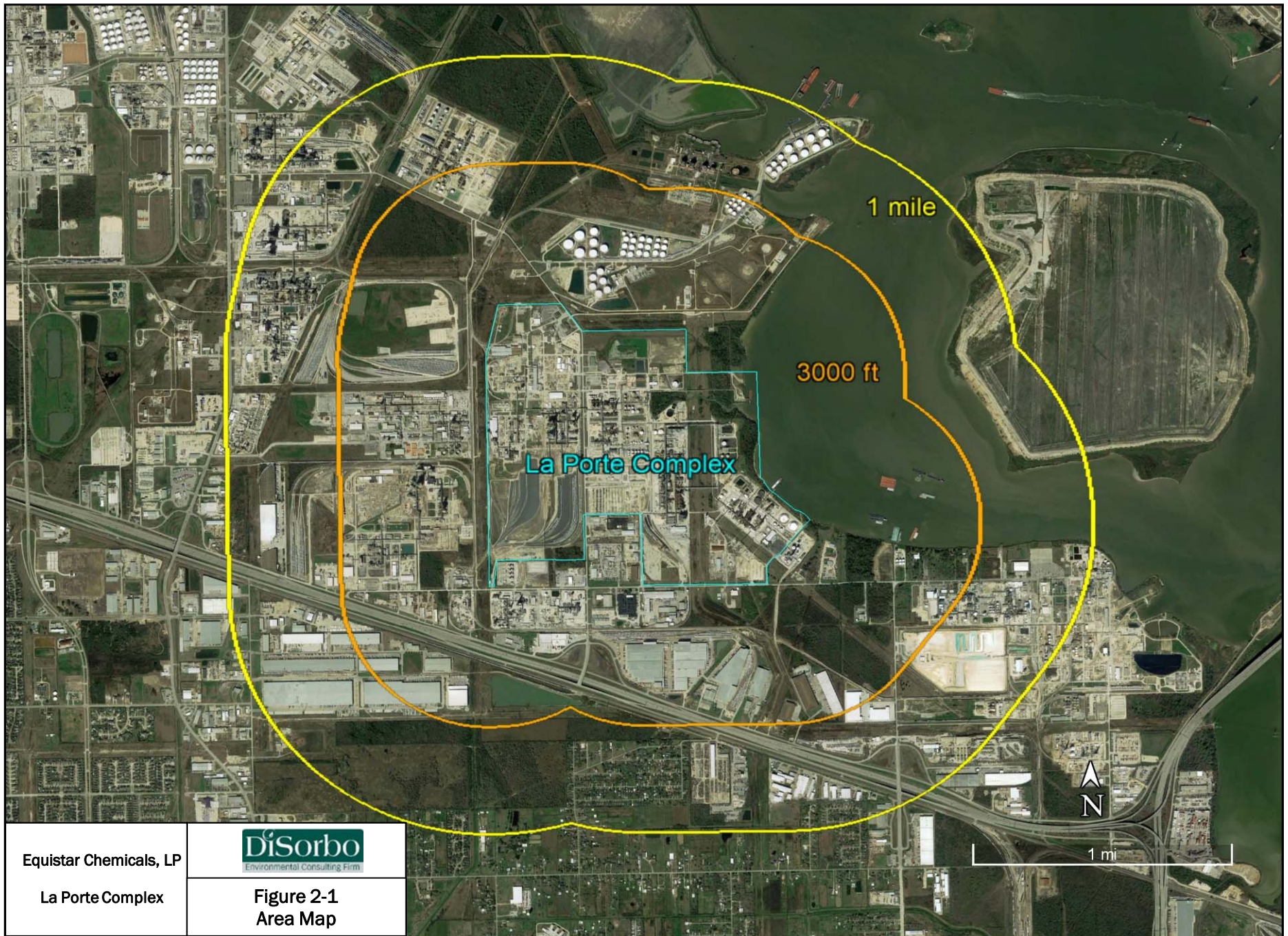
The modeling methodologies used in this analysis are justified as discussed in the appropriate section of this AQA and are consistent with current TCEQ and U.S. EPA guidelines. All modeling results of the AQA comply with applicable standards under the Health Effects Review program.

Section 2 Maps and Plot Plan

The La Porte Complex is located approximately 3 miles to the east of Deer Park, Texas.

Figure 2-1 is the Area Map illustrating the location of the facility using aerial photography obtained from the Google Earth. The figure shows the Equistar Chemicals, LP property boundary, and a 3,000-foot radius from the site. There are no schools located within the 3,000-foot radius of the site. The Universal Transverse Mercator (UTM) coordinates are based on the North American Datum (NAD) of 1928, Zone 15.

A plot plan depicting the locations of the sources is provided in Figure 2-2.

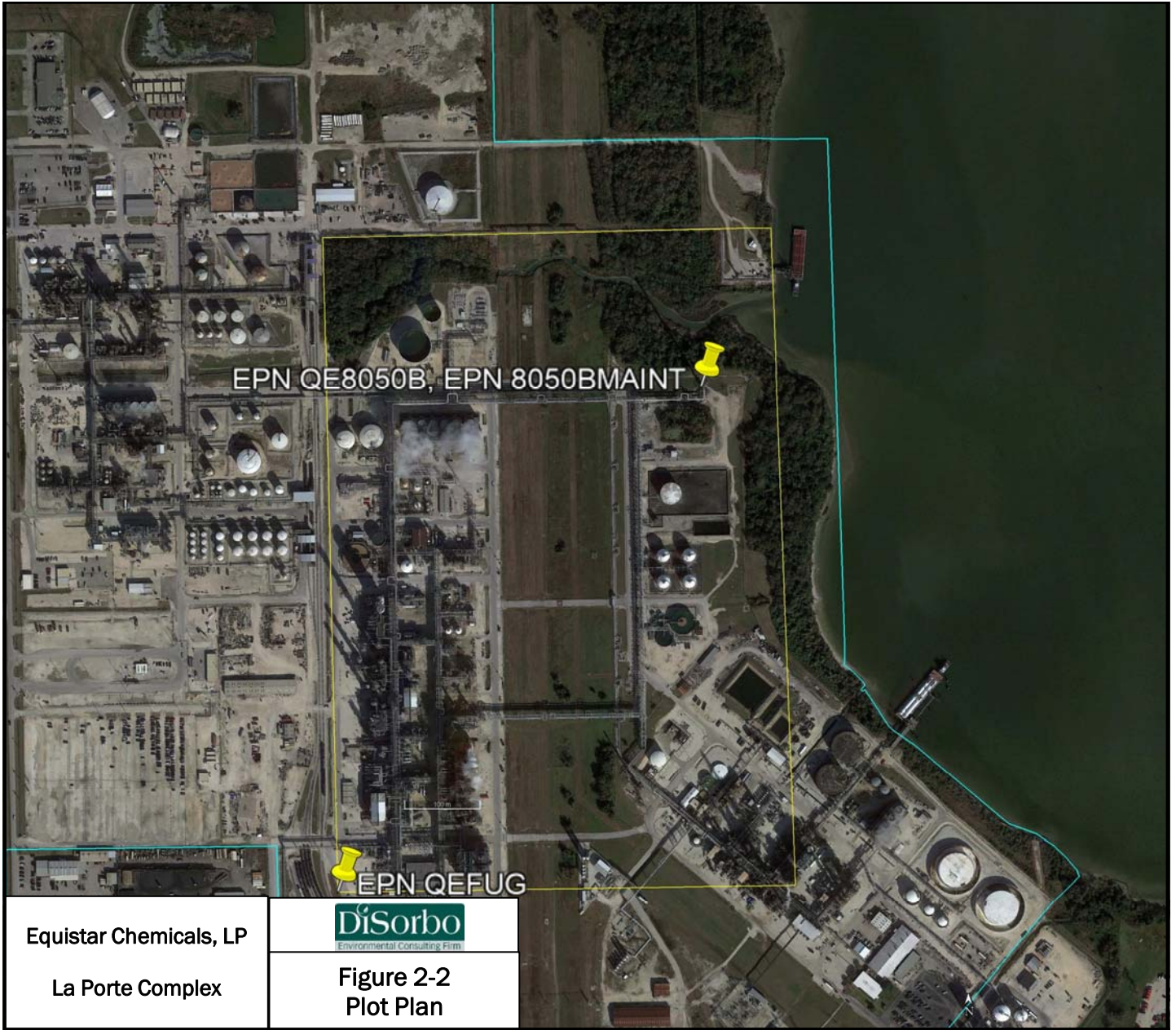


Equistar Chemicals, LP

La Porte Complex



Figure 2-1
Area Map



Section 3

Supplemental Information

The data provided in this section supplements the contents of the EMEW.

3.1 Discussion of Worst-Case Determination

As part of the current permit application, Equistar Chemicals, LP proposes to renew/amend the elevated flare (EPN QE8050B). Two scenarios were evaluated for EPN QE8050B: flare with expander (Model ID QE8050B_E) and flare without expander (Model ID QE8050B_woE). The scenario with the highest impact (Model ID QE8050B_woE) was used in the calculation of the maximum ground-level concentration (GLC_{max}).

Additionally, for the 1-hr SO₂ NAAQS and SO₂ State Property Line analyses, the elevated flare (EPN QE8050B) and elevated flare maintenance (8050BMAINT) emissions will not occur simultaneously. The source with the highest impact was used in the calculation of the GLC_{max}.

3.2 MERA Review

The Health Effects Review process is not completely documented within the EMEW. Emissions increases from all pollutants listed in the 'Speciated Emissions' tab in the EMEW have proposed increases in emissions as part of the permit amendment.

3.2.1 MERA Step 2 Processing

Total emission rate increases for all pollutants were compared to emission rate threshold values in accordance with Step 2 of the MERA process. The following pollutants "screen out" of the MERA evaluation at Step 2: toluene, n-pentane, n-heptane, Other VOC, acetylene, isobutene, n-butane, lubricating oils, isobutane, isoprene, styrene, Natural Gas, Methanol, and dimethylformamide. No further evaluation is needed for propane and propylene as these gases are classified as simple asphyxiates. Table 3-2 illustrates this comparison.

3.2.2 MERA Step 3 Processing with Unit Impact Multipliers

Generic unit impact multipliers were created with SCREEN3 using a 1 lb/hr emission rate for each source. In order to estimate the resulting concentrations in Step 3 of the Modeling and Effects Review (MERA) guidance, these generic factors were multiplied with the corresponding emission rate

for each source. The maximum concentrations for each scenario were compared to 10% of the ESL. Table 3-3 and Table 3-4 show the Unit Impact Multipliers (UIMs), emission rates, and total concentrations for the 1-hour and annual averaging times, respectively. The overall results from MERA Step 3 were included in the EMEW.

3.2.3 Flare Calculations

The elevated flare (Model IDs 8050BMAINT, QE8050B_E, QE8050B_woE) was modeled using the POINT source type and the TCEQ's default parameters¹. The effective diameter of the flare was calculated according to TCEQ guidance² for each modeled scenario and presented in Table 3-5.

3.2.4 Dispersion Option (Urban vs. Rural)

The urban option was selected for the La Porte Complex. The urban option is appropriate since the La Porte Complex is located within the Greater Houston metropolitan area. To further justify the urban selection, a land-use analysis was conducted. Based on an evaluation of land-use within 10 km, approximately 61.90% of the surrounding land is classified as urban. Since the area is predominately urban, the urban option is the representative of the surrounding urban land use. The surrounding land use types and percentages are provided in Table 3-6.

¹ *Air Quality Modeling Guidelines, APDG 6232v4, Revised 11/19.*

² *Ibid.*

**Table 3-1
De Minimis Analysis**

Equistar Chemicals, L.P.
Lyondell La Porte
Permit 18978
QE-1 Permit Renewal

Constituent	Averaging Period	Significant Impact Level (SIL)/Standard ^[1]	1-hour Unit Impact ($\mu\text{g}/\text{m}^3$ per lb/hr)			Adjustment Factor	1-hour Unit Impact ($\mu\text{g}/\text{m}^3$ per lb/hr)			Project GLCmax ^[2]	Less than SIL?	
			EPN >>>>	1-hour Unit Impact ($\mu\text{g}/\text{m}^3$ per lb/hr)	1-hour Unit Impact ($\mu\text{g}/\text{m}^3$ per lb/hr)		1-hour Unit Impact ($\mu\text{g}/\text{m}^3$ per lb/hr)	QE8050B	QE8050B			8050BMAINT
			MODEL ID >>>>	QE8050B	QE8050B		8050BMAINT	QE8050B_E	QE8050B_woE			8050BMAINT
			lb/hr	lb/hr	lb/hr		$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$		
Carbon Monoxide (CO)	1-hour	2000		95.21	95.21	20.40	1.0	3.96	4.14	2.03	6.2	yes
Carbon Monoxide (CO)	8-hour	500		95.21	95.21	20.40	0.7	2.77	2.90	1.42	4.3	yes
Nitrogen Dioxide (NO ₂)	1-hour	7.5		8.47	8.47	4.16	1.0	0.35	0.37	0.41	0.8	yes
Nitrogen Dioxide (NO ₂)	Annual	1		1.58	1.58	--	0.08	0.01	0.01	--	0.01	yes
Sulfur Dioxide (SO ₂)	30 min	14.3		72.62	72.62	91.48	1.0	3.02	3.15	9.12	9.12	yes
Sulfur Dioxide (SO ₂) ^[3]	1-Hour	7.8		72.62	72.62	0.01	1.0	3.02	3.15	0.001	3.15	yes
Sulfur Dioxide (SO ₂) ^[4]	3-Hour	25		72.62	72.62	91.48	0.9	2.72	2.84	8.21	11.05	yes

[1] Air Quality Modeling Guidelines, APDG 6232v4, Revised 11/19, Table B-1 page 37 and Table B-3 page 38.

[2] The "Project GLCmax" was calculated by multiplying the "Unit Impacts" by the emissions rates shown for each source. For 1-hr SO₂ and 30-min SO₂ State Property Line, the highest impact from the following scenarios was used to calculate the "Project GLCmax" as these scenarios will not occur simultaneously: flare with expander (Model ID QE8050B_E), flare without expander (Model ID QE8050B_woE), flare maintenance (EPN 8050BMAINT). For CO and NO₂, the higher impact between the flare with expander (Model ID QE8050B_E) and the flare without expander (Model ID QE8050B_woE) was evaluated as operating simultaneously with the flare maintenance (EPN 8050BMAINT).

[3] The 1-hr SO₂ emissions for EPN QE8050MAINT were calculated using EPA's intermittent source guidance based on one hour of operation per year. Ex. 91.48 lb/hr * 1 hour / 8760 hours per year = 0.01 lb/hr.

[4] The 24-hr and annual SO₂ averaging times were not evaluated as Harris County has been designated for the 1-hr SO₂ NAAQS (effective April 2018); therefore, the 24-hr and annual standards were revoked as of April 2019.

Table 3-2

NERA Step 2 - De Minimis Check

Equistar Chemicals, L.P.

Lyondell La Porte

Permit 18978

QE-1 Permit Renewal

Constituent Name	CAS No.	1-hour ESL	Annual ESL	Is the Annual ESL < 10% ST ESL?	Hourly Emission Increases in lb/hr			Total Emissions ^[1]	Are Emissions De Minimis?
				EPN >>>>	QE8050B	8050BMAINT	QEFUG		
				MODEL ID >>>	QE8050B	8050BMAINT	QEFUG		
		$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$						
ethylene	74-85-1	1400	34	yes	0.673	0.001	0.003	0.676	no
dimethyl sulfide	75-18-3	7.6	25	no	0.046	0.002	---	0.047	no
propane	74-98-6	Simple Asphyxiant	Simple Asphyxiant	no	0.320	0.088	0.004	0.412	Simple Asphyxiant
propylene	115-07-1	Simple Asphyxiant	Simple Asphyxiant	no	3.053	0.063	0.002	3.118	Simple Asphyxiant
1-butene	106-98-9	19000	1600	yes	---	---	0.002	0.002	no
benzene	71-43-2	170	4.5	yes	0.014	0.0003	---	0.014	no
toluene	108-88-3	4500	1200	no	0.002	0.0003	---	0.002	yes
xylene	1330-20-7	2200	180	yes	0.000	0.0001	---	0.0003	no
ethylbenzene	100-41-4	26000	570	yes	0.0002	0.00003	---	0.0003	no
n-pentane	109-66-0	59000	7100	no	---	0.011	---	0.011	yes
n-hexane	110-54-3	5600	200	yes	---	0.004	---	0.004	no
n-heptane	142-82-5	10000	2700	no	---	0.001	---	0.001	yes
Other VOC	74-86-2	2	0.2	no	0.001	0.0003	---	0.001	yes
acetylene	74-86-2	26600	2660	no	---	---	---	---	yes
1,3-Butadiene	106-99-0	510	9.9	yes	1.260	---	0.007	1.267	no
2-Butene	107-01-7	10000	480	yes	0.198	0.004	---	0.203	no
isobutene	115-11-7	180000	32000	no	---	---	0.004	0.004	yes
n-butane	106-97-8	66000	7100	no	---	---	0.001	0.001	yes
lubricating oils, petroleum, hydrotreated, spent	64742-58-1	1000	100	no	---	---	0.025	0.025	yes
isobutane	75-28-5	23000	7100	no	0.298	0.007	0.002	0.306	yes
isoprene	78-79-5	130	120	no	0.000	---	---	0.0001	yes
styrene	100-42-5	110	140	no	0.001	---	---	0.001	yes
Natural Gas	68425-31-0	3500	350	no	0.001	---	---	0.001	yes
Methanol	67-56-1	3900	2100	no	0.012	---	---	0.012	yes
dimethylformamide	68-12-2	300	30	no	0.001	---	---	0.001	yes

[1] For EPNs QE8050B and QE8050MAINT, Butanes and butenes emissions were evaluated as 60% from isobutane and 40% from 2-Butene.

Table 3-3

MERA Step 3 - 10% of ESL Check (1-hour)

Equistar Chemicals, L.P.

Lyondell La Porte

Permit 18978

QE-1 Permit Renewal

Constituent Name	CAS No.	1-hour Unit Impact ($\mu\text{g}/\text{m}^3$ per lb/hr) >>>>			0.0434	0.0997	51.0	Fugitive Factor	Project GLCmax ^{[1][2]} [3]	% of ESL	Is GLCmax < 10% of ESL?
		1-hour ESL	Annual ESL	Description >>>>	Flare	Flare (Maintenance)	Fugitives				
				EPN >>>>	QE8050B	8050BMAINT	QEFUG				
				MODEL ID >>>>	QE8050B_woE	8050BMAINT	QEFUG				
$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$		lb/hr	lb/hr	lb/hr	$\mu\text{g}/\text{m}^3$					
ethylene	74-85-1	1400	34		6.73E-01	5.41E-04	3.00E-03	0.600	1.21E-01	<0.01%	yes
dimethyl sulfide	75-18-3	7.6	25		4.58E-02	1.53E-03	--	0.600	2.14E-03	0.03%	yes
1-butene	106-98-9	19000	1600		--	--	2.00E-03	0.600	6.12E-02	<0.01%	yes
benzene	71-43-2	170	4.5		1.35E-02	2.86E-04	--	0.600	6.16E-04	<0.01%	yes
xylene	1330-20-7	2200	180		2.38E-04	9.52E-05	--	0.600	1.98E-05	<0.01%	yes
ethylbenzene	100-41-4	26000	570		2.28E-04	2.78E-05	--	0.600	1.27E-05	<0.01%	yes
n-hexane	110-54-3	5600	200		--	3.66E-03	--	0.600	3.65E-04	<0.01%	yes
1,3-Butadiene	106-99-0	510	9.9		1.26E+00	--	7.00E-03	0.600	2.69E-01	0.05%	yes
2-Butene	107-01-7	10000	480		1.98E-01	4.46E-03	--	0.600	9.07E-03	<0.01%	yes

[1] The "Project GLCmax" for all constituents was calculated by multiplying the "Unit Impacts" by the emissions rates shown for each source and summing those products together.

[2] For EPNs QE8050B and QE8050MAINT, Butanes and butenes emissions were evaluated as 60% from isobutane and 40% from 2-Butene.

[3] The worst-case unit impact from flare with expander (Model ID QE8050B_E) or flare without expander (Model ID QE8050B_woE) was used to calculate the impact for the flare (EPN QE8050B).

Table 3-4
NERA Step 3 - 10% of ESL Check (Annual)

Equistar Chemicals, L.P.
 Lyondell La Porte
 Permit 18978
 QE-1 Permit Renewal

		1-hour Unit Impact ($\mu\text{g}/\text{m}^3$ per lb/hr)			0.0434	0.0997	51.0					
		Annual Unit Impact ($\mu\text{g}/\text{m}^3$ per tpy) ^[1]			0.0099	0.0228	11.7					
Constituent Name	CAS No.	1-hour ESL	Annual ESL	Description >>>>	Flare	Flare (Maintenance)	Fugitives	Fugitive Factor	Annual Factor	Project GLCmax ^{[2][3]}	% of ESL	Is GLCmax < 10% of ESL?
				EPN >>>>	QE8050B	8050BMAINT	QEFUG			^[4]		
				MODEL ID >>>>	QE8050B_woE	8050BMAINT	QEFUG			$\mu\text{g}/\text{m}^3$		
					tpy	tpy	tpy					
ethylene	74-85-1	1400	34		2.48E-01	3.58E-04	3.00E-03	0.600	0.080	1.88E-03	<0.01%	yes
dimethyl sulfide	75-18-3	7.6	25		1.41E-03	8.67E-05	--	0.600	0.080	1.28E-06	<0.01%	yes
1-butene	106-98-9	19000	1600		--	--	8.00E-03	0.600	0.080	4.47E-03	<0.01%	yes
benzene	71-43-2	170	4.5		5.17E-03	9.45E-05	--	0.600	0.080	4.27E-06	<0.01%	yes
xylene	1330-20-7	2200	180		2.12E-04	3.15E-05	--	0.600	0.080	2.25E-07	<0.01%	yes
ethylbenzene	100-41-4	26000	570		2.59E-04	9.20E-06	--	0.600	0.080	2.22E-07	<0.01%	yes
n-hexane	110-54-3	5600	200		--	1.21E-03	--	0.600	0.080	2.21E-06	<0.01%	yes
1,3-Butadiene	106-99-0	510	9.9		1.11E-01	--	3.10E-02	0.600	0.080	1.74E-02	0.18%	yes
2-Butene	107-01-7	10000	480		2.37E-02	2.32E-03	0.00200	0.600	0.080	1.14E-03	<0.01%	yes

[1] The annual Unit Impact Multiplier (UIM) was calculated by multiplying the 1-hour UIM by 2000 lbs per ton and dividing by 8760 hours per year.

[2] The "Project GLCmax" for all constituents was calculated by multiplying the "Unit Impacts" by the emissions rates shown for each source and summing those products together.

[3] For EPNs QE8050B and QE8050MAINT, Butanes and butenes emissions were evaluated as 60% from isobutane and 40% from 2-Butene.

[4] The worst-case unit impact from flare with expander (Model ID QE8050B_E) or flare without expander (Model ID QE8050B_woE) was used to calculate the impact for the flare (EPN QE8050B).

Table 3-5
Flare Calculations

Equistar Chemicals, L.P.
 Lyondell La Porte
 Permit 18978
 QE-1 Permit Renewal

EPN	Model ID	Modeling Scenario	Heat Release (MMBtu/hr)	Molecular Weight	Gross Heat Release	Net Heat Release	Effective Diameter
					<i>cal/s</i>	<i>cal/s</i>	<i>m</i>
QE8050B	QE8050B_E	routine with expander	1252.83	7.70	87698100	76017187.13	8.72
QE8050B	QE8050B_woE	routine without expander	1145.43	7.70	80180100	69500544.09	8.34
8050BMAINT	8050BMAINT	maintenance	238.00	45.00	16660000	11295583.48	3.36

Table 3-6
Land Use Classification

Equistar Chemicals, L.P.
 Lyondell La Porte
 Permit 18978
 QE-1 Permit Renewal

Land Use Type ^[1]	Rural/Urban	Percent
Open Water	Rural	18.53%
Developed, Open Space	Urban	15.07%
Developed, Low Intensity	Urban	15.60%
Developed, Medium Intensity	Urban	17.50%
Developed, High Intensity	Urban	12.09%
Barren Land (Rock/Sand/Clay)	Urban	1.64%
Deciduous Forest	Rural	2.20%
Evergreen Forest	Rural	0.97%
Mixed Forest	Rural	1.01%
Shrub/Scrub	Rural	1.22%
Grassland/Herbaceous	Rural	3.88%
Pasture/Hay	Rural	3.83%
Cultivated Crops	Rural	0.04%
Woody Wetlands	Rural	2.95%
Emergent Herbaceous Wetlands	Rural	3.45%
	Total Urban:	61.90%
	Total Rural:	38.08%

[1] Land use types and percentages were obtained were the land use tool, NaviKnow (<http://landuse.naviknow.com/>).