

US EPA ARCHIVE DOCUMENT



Essential Fish Habitat Assessment

Olefins Plant Expansion Project Nueces County, Texas

Prepared for

Equistar Chemicals, LP

Prepared by

Whitenton Group, Inc.

March 2013



**Essential Fish Habitat Assessment
Olefins Plant Expansion Project
Nueces County, Texas**

Prepared for

Equistar Chemicals, LP
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WGI Project No. 1279

March 2013

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ACRONYMS

AOI	Area of Significant Impact
BA	Biological Assessment
BD	Butadiene
CO	Carbon Monoxide
EFH	Essential Fish Habitat
EFHA	Essential Fish Habitat Assessment
EPA	Environmental Protection Agency
ESL	Effects Screening Levels
Equistar	Equistar Chemicals, LP
FMC	Fishery Management Council
FMP	Fishery Management Plan
GHG	Greenhouse Gas
GLCMax	maximum predicted ground level concentration
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MGD	Million Gallons per Day
MSS	Maintenance, Startup, and Shutdown
NAAQS	National Ambient Air Quality Standards
NMFS	National Marine Fisheries Service
NNSR	Non-attainment New Source Review
NOAA	National Oceanic and Atmospheric Administration
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxide
PM	Particulate Matter
PSD	Prevention of Significant Deterioration
SIL	Significant Impact Level
SO ₂	Sulfur Dioxide
SWPPP	Storm Water Pollution Prevention Plan
TCEQ	Texas Commission on Environmental Quality
TPDES	Texas Pollutant Discharge Elimination System
US	United States
USC	USC Coil Technology
VOC	Volatile Organic Compound
WGI	Whitenton Group, Inc.
µg/m ³	microgram per cubic meter

1.0 INTRODUCTION

Equistar Chemicals, LP (Equistar) operates a petrochemical manufacturing facility located in the Corpus Christi Complex, Corpus Christi, Nueces County, Texas. The petrochemical manufacturing facility consists of two chemical production units, the butadiene unit and the olefins and aromatics unit. There is also a cogeneration facility at the site. The olefins and aromatics unit is commonly referred to as the Olefins Plant. Equistar proposes to expand the Olefins Plant production by increasing maximum furnace firing rates of 15 cracking furnaces and revising the tubing configuration of 7 of those furnaces within the existing Corpus Christi Complex.

The proposed Project Area is located approximately 2 miles south of the intersection of McKinzie Road and State Highway 407 and is situated between Violet Road and McKinzie Road in Nueces County, Texas (Figures 1-4 – Appendix A). Equistar's site is a major source for criteria pollutants and greenhouse gases (GHG). Emissions increases of volatile organic compounds (VOC), nitrogen oxides (NO_x), particulate matter (PM/PM₁₀/PM_{2.5}), and carbon monoxide (CO) will exceed their respective significance levels. Prevention of Significant Deterioration (PSD) permitting is required for a modification of an existing major source for each attainment pollutant and other regulated pollutants for which the modification will result in a significant net emissions increase. Since the project is a major modification for GHG, a Prevention of Significant Deterioration (PSD) GHG permit will also be required. The United States (US) Environmental Protection Agency (EPA) is responsible for issuing GHG PSD permits in Texas.

The 1996 Essential Fish Habitat (EFH) amendments to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) set forth a mandate for the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS), regional fishery management councils (FMC), and other federal agencies to identify and protect important marine and anadromous fish habitat. EFH is defined in the Magnuson-Stevens Act as "...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity¹." A generic Fishery Management Plan (FMP) amendment delineating EFH for species managed by the Gulf of Mexico FMC was approved in early 1999. The generic FMP subsequently was updated and revised in 2005 and became effective in January 2006².

In addition, EFH for highly migratory species managed by the NMFS was identified in two Secretarial FMPs. The consultation requirements in the Magnuson-Stevens Act direct federal agencies to consult with NMFS when any of their activities may have an adverse effect on EFH. The Magnuson-Stevens Act defines “adverse effect,” in part, as “any impact that reduces quality and/or quantity of EFH.” This definition also provides that “adverse effect” may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species’ fecundity), site-specific or habitat wide effects, including individual, cumulative, or synergistic consequences of actions¹.”

Whitenton Group, Inc. (WGI), Equistar’s environmental consultant for the project, has prepared this EFH Assessment (EFHA) to report the results of the critical review of the proposed Olefin Plant Expansion project’s potential for direct, indirect, and cumulative adverse effects on federally-managed EFH.

This EFHA is provided as a supplement to the Olefin Plant Expansion Biological Assessment (BA). More detailed information, research, and analysis can be found in the Olefin Expansion BA³.

2.0 PROJECT DESCRIPTION

2.1 PROJECT PURPOSE AND LOCATION

Equistar Chemicals, LP (Equistar) operates a petrochemical manufacturing facility located in the Corpus Christi Complex, Corpus Christi, Nueces County, Texas. The petrochemical manufacturing facility consists of two chemical production units, the butadiene unit and the olefins and aromatics unit. There is also a cogeneration facility at the site. The olefins and aromatics unit is commonly referred to as the Olefins Plant. Equistar proposes to expand the Olefins Plant production by increasing maximum furnace firing rates of 15 cracking furnaces and revising the tubing configuration of 7 of those furnaces within the existing Corpus Christi Complex.

The proposed Project Area is located approximately 2 miles south of the intersection of McKinzie Road and State Highway 407 and is situated between Violet Road and McKinzie Road in Nueces County, Texas (Figures 1-4 – Appendix A). Equistar’s site is a major source for criteria

pollutants and greenhouse gases (GHG). Emissions increases of volatile organic compounds (VOC), nitrogen oxides (NO_x), particulate matter (PM/PM₁₀/PM_{2.5}), and carbon monoxide (CO) will exceed their respective significance levels. Prevention of Significant Deterioration (PSD) permitting is required for a modification of an existing major source for each attainment pollutant and other regulated pollutants for which the modification will result in a significant net emissions increase. Since the project is a major modification for GHG, a Prevention of Significant Deterioration (PSD) GHG permit will also be required. The United States (US) Environmental Protection Agency (EPA) is responsible for issuing GHG PSD permits in Texas.

The proposed Project Area is located at 1501 McKinzie Road, approximately two (2) miles south of the intersection of McKinzie Road and State Highway 407 (Leopard Street) in the City of Corpus Christi, Nueces County, Texas (Figure 1 – Appendix A).

Project location information:

USGS Quad	Latitude/Longitude
Annaville	27.810841, -97.592336

2.2 CONSTRUCTION INFORMATION

Construction of the proposed expansion to the Equistar Olefins Unit will take place within approximately 27.4 acres of the existing Corpus Christi Complex. The purpose of the project is to expand the existing Equistar Olefins Unit by adding additional capacity to the existing fifteen (15) cracking furnaces and revising the tubing configuration of seven (7) of those cracking furnaces. Additionally, all fifteen furnaces will have new ultra-low NO_x burners added capable of burning higher hydrogen fuel gas for combustion heat. The capacity of two (2) existing steam superheaters will also be increased, and they will be retrofitted with ultra-low NO_x burners capable of burning higher hydrogen fuel. Two (2) fractionators and an acetylene converter will be added to the existing fractionation (distillation) section. The civil construction activities include site preparation and drainage, installation of concrete piles, concrete foundations and mats, concrete slab on grade, structural steel, stairs and ladders. The Project Area is shown in Figure 2 (Appendix A).

The projected construction start date is September 2014. The projected operation start date is November 2015. Construction activities will be limited to the identified areas with the existing fence line. The total time estimated to complete the project is approximately 56 weeks and includes the following list of general construction activities.

- Expand the capacity of all 15 existing cracking furnaces while installing ultra-low NOx burners capable of burning gaseous fuels with higher hydrogen content
- Revise the tubing configurations of 7 of the existing furnaces
- Expand the capacity of 2 existing steam superheaters
- Install two additional fractionators and an acetylene converter in the existing fractionation section
- Compressor Rebuild
- Pump and piping installation
- Installation of 3 new cooling tower cells to existing 15 cell cooling tower

Detailed construction and operation information is provided in Section 5.0 of the Olefins Plant Expansion Project BA³.

2.3 MARINE VESSEL TRAFFIC

The Corpus Christi Ship Channel (CCSC) is a 45-foot deep channel that extends from the Gulf of Mexico into the Port of Corpus Christi (approximately 34 miles). The CCSC is utilized by high commercial and recreational traffic including oil tankers, barges, private fishing boats and recreational vessels⁴. Operation of the proposed Olefins Plant Expansion Project would not result in an increase in vessel traffic within the Corpus Christi Ship Channel.

2.4 STORMWATER

Erosion and sedimentation controls will be utilized to protect water quality during the construction and operation of the proposed project, in accordance with Section 401 of the Clean Water Act and 30 Texas Administrative Code Chapter 279 and as prescribed in the Storm Water Pollution Prevention Plan (SWPPP) required for construction.

Construction of the proposed expansion of the Equistar Olefins Unit will not necessitate the construction of a new stormwater outfall structure. All storm water runoff from construction

(i.e non-contaminated) of the Equistar facility expansion project will exit from the outfall 003 and process wastewater outfall 001 (TPDES Permit No. WQ0002075000). Equistar currently is in the process of renewing this TPDES permit. Per the TPDES permit, discharge from the outfall is sampled and monitored.

Flushing of the units and contact stormwater will be contained, treated, and properly disposed of by the existing Corpus Christi Complex wastewater treatment facility.

Additionally, the Equistar facility currently has an Oil and Hazardous Materials Spill Prevention, Control, and Countermeasure Plan and Storm Water Pollution Prevention Plans (SWPPP) in place and the facility employees are trained to implement these plans. These plans will be utilized during construction, operations, and maintenance of the proposed expansion project.

2.5 WASTEWATER

The wastewater treatment unit at the Equistar Corpus Christi Complex treats process wastewater generated by the olefins and butadiene (BD) plants. The combined water streams are pumped via underground pipeline to the existing Outfall 001, which discharges into the Corpus Christi Ship Channel (Corpus Christi Inner Harbor) (Figure 2 – Appendix A).

It is estimated that there will be a 13% increase of discharged wastewater into Outfall 001 as a result of the proposed expansion project. The Corpus Christi Complex's discharge will increase from 772 gpm to 870 gpm. The increased effluent discharge will not exceed the permitted maximum flow rate of three million gallons per day (MGD) or the average flow rate of 2 MGD. According to Equistar's monitoring data, the historic average temperature of the effluent is approximately 90 degrees Fahrenheit (°F). The current daily maximum permit limit for temperature is 105 °F.

The Olefins Plant wastewater effluent discharge is expected to increase, but the source and the treatment of the wastewater will not change. Therefore, the additional effluent is not expected to be significantly different (i.e., temperature or pollutant concentrations) than wastewater currently generated by operations at the Olefins Plant.

3.0 BACKGROUND INFORMATION

3.1 GENERAL ENVIRONMENTAL INFORMATION

This section provides applicable environmental characteristics for the general region in which the project is located.

3.1.1 REGIONAL ENVIRONMENTAL INFORMATION

The proposed construction site is located in Nueces County, Texas within the Gulf Coast Prairies and Marshes ecoregion⁵ and the West Gulf Coastal Plain physiographic province of North America⁶. The area in which the project is located is typical for the Gulf Coast Prairies and Marshes ecoregion.

This region borders the Gulf Coast in the state of Texas. The Gulf Coast influence creates multiple dynamic ecosystems within this eco-region including bays, estuaries, salt marshes, and tidal flats. Inland ecosystems are typical of the South Texas Plains and are composed of mixed brush plant communities. These ecosystems are home to variety of nongame wildlife including several endangered species. This region is prime wintering grounds for migratory birds. The bays and estuaries are invaluable breeding grounds and fish hatcheries⁷.

The majority of river basins in Texas drain towards the Gulf of Mexico, however the limited amount of rainfall in west Texas reduces the amount of fresh water inflow experienced along the southern Gulf Coast of Texas. This ecoregion also experiences more drought than other coastal areas to the north. This region is ecologically diverse, specifically adjacent to the coastline. Freshwater wetlands, marshes, and swamps are typical in addition to inland prairies and scrub/shrub habitat⁸.

The Gulf Coast Prairies and Marshes ecoregion spans the Texas coastline. Because of the abundant water resources, the rich soils, and the proximity to the coast, this area is commonly converted to cropland, rangeland, and industrial development⁵. These land uses have reduced and fragmented the critical protected species habitat throughout the region.

3.1.2 WATER RESOURCES

Nueces County has abundant water resources, with its southern border on the Gulf of Mexico and extensive coastal lakes, marshes, estuaries and rivers. The Project Area is a part of the Nueces - Rio Grande Coastal Basin and includes other prominent water features such as the Nueces Bay, Corpus Christi Bay, and Laguna Madre⁹. The low, flat topography invites flooding of the surrounding areas in addition to freshwater and tidal influences, which creates a variety of aquatic ecosystems mentioned in Section 6.1.1 General Region Information of the Olefins Plant Expansion BA³. Surface waters surrounding the Project Area include the Tule Lake, Nueces River, Oso Creek, and Rincon Bayou⁹.

The watersheds or river basins that contribute water resources into the proposed project site and surrounding areas are the Nueces – Rio Grande Coastal Basin, Nueces River Basin, and San Antonio – Nueces Coastal Basin.

Based on the background review, the water resources in the areas surrounding the Project Area include freshwater/storm retention ponds, freshwater emergent wetland, riverine/riparian, and freshwater forested/scrub-shrub wetland. The Corpus Christi Ship Channel is approximately 5 miles northeast of the Project Area at its closest point.

4.0 AIR QUALITY ANALYSIS RESULTS

RPS, Equistar’s air quality permitting consultant for the project, performed dispersion modeling to predict emissions of constituents from the proposed Olefins Plant Expansion in accordance with air permitting requirements. Dispersion modeling uses mathematical formulations to characterize the atmospheric processes that disperse constituents emitted by a source. This section provides a summary of the results of the dispersion modeling. More details regarding air quality analysis results are provided in Section 8.0 of the Olefins Plant Expansion Project BA³.

Together with air dispersion modeling results, EPA Significant Impact Levels (SILs) were used as a tool to determine the potential for project emissions to adversely affect EFH. SILs are levels set by the EPA, below which, modeled source criteria pollutant impacts would be considered insignificant. TCEQ has also established a 30-minute average SO₂ standard and a corresponding

SIL for impacts of emissions from any one site. The GLCMax value is the maximum ground level concentration predicted by the model for each constituent and averaging period resulting from this project. If a GLCMax value is less than the SIL, the modeled source impacts are considered insignificant and are not considered to cause or contribute to a violation of a National Ambient Air Quality Standards (NAAQS) or PSD Increment for that criteria pollutant and averaging period. If a GLCMax is greater than the SIL, additional analysis is required to demonstrate that the project would not cause or contribute to a violation of the NAAQS or PSD Increment for that constituent and averaging period.

The project GLCMax values are less than the SILs for the following: 30-minute sulfur dioxide (SO₂), 1-Hour SO₂, 3-Hour SO₂, 24-Hour SO₂, and annual SO₂. Projected GLCMax values are above the SILs for criteria pollutants NO₂, CO, and PM; however, they will be below their respective SILs in the areas of EFH. Accordingly, the proposed project's predicted criteria pollutant emissions are considered insignificant with respect to EFH based on EPA's SIL analysis method with screening levels set to protect sensitive populations.

Projected GLCMax values are above the SILs for the following: nitrogen dioxide (NO₂), CO, and annual PM_{2.5}. The dispersion model conducted by RPS predicts concentrations at specific downwind receptor locations for each pollutant and averaging period. The coordinates of each receptor with modeled concentrations greater than the SIL for each pollutant were plotted to delineate the area of significant impact (AOI). Note: The significant AOIs do not infer that the maximum concentration predicted for each pollutant averaging period will reach each location for each emission. The furthest distance in any direction from the project emissions sources to concentrations above the SIL for these pollutants was determined to be 1.77 miles. This does not include designated EFH.

Table 1 shows the maximum predicted concentrations from the plant expansion project for each constituent and averaging period. Table 1-1 (Appendix B) is the NNSR/PSD Applicability Analysis Summary provided in the application that Equistar submitted to the Texas Commission on Environmental Quality (TCEQ) for a permit to authorize non-GHG emissions from the project.

The pollutants and averaging periods were above their SILs for nitrogen dioxide (NO₂), CO, and annual PM_{2.5}; however, all pollutants will reach ambient levels before reaching EFH. The

Project Area for the Olefins Plant Expansion is shown in Figure 2 (Appendix A) and includes the earth disturbance footprint.

In addition to the air quality analysis performed for criteria pollutants, RPS performed dispersion modeling and evaluated the potential for impacts from the other (non-criteria) pollutants that will be emitted by the proposed project. This effects evaluation was performed in accordance with TCEQ air permitting guidelines for the assessing non-criteria pollutants. The predicted concentrations were compared with TCEQ Effects Screening Levels (ESLs)¹⁰.

The specific results of the dispersion modeling and evaluation for other (non-criteria) pollutants that will be emitted by the proposed project are provided in Section 8.1.3 of the Olefins Plant Expansion Project BA³. With the conservatively-predicted concentrations of routine emissions and MSS emissions being below TCEQ guideline levels for evaluating non-criteria pollutant emissions, the predicted concentrations are acceptable in that they are not expected to cause or contribute to adverse human health or welfare effects. No measurable amounts of mercury or other heavy metals will be emitted by the Olefins Plant Expansion project.

5.0 EFFECTS OF THE PROPOSED ACTION ON EFH

This section presents the results of the analysis of potential adverse effects on federally-managed EFH as a result of the proposed Olefins Plant Expansion Project.

5.1 EFH

The Action Area includes a portion of the Corpus Christi Ship Channel, which is considered tidal. According to the EPA, designated EFH within the Gulf of Mexico FMC includes all tidally-influenced aquatic habitats. Therefore, the tidally-influenced Corpus Christi Ship Channel is designated EFH. The Project Area, existing Equistar wastewater outfall location, and EFH are demonstrated in Figure 2 (Appendix A). The Corpus Christi Ship Channel and its tidal tributaries have been identified as EFH by the Gulf FMC for all life stages of red drum (*Sciaenops ocellatus*), shrimp (7 species), coastal migratory pelagics, and reef fish (31 species)¹¹.

Furthermore, these tidally influenced areas have also been identified by NMFS to contain EFH for neonate/young of the year and juvenile scalloped hammerhead sharks (*Sphyrna lewini*) and

spinner sharks (*Carcharhinus brevipinna*); neonate/young of the year lemon sharks (*Negaprion brevirostris*); blacktip sharks (*Carcharhinus limbatus*), finetooth sharks (*Carcharhinus isodon*), bull sharks (*Carcharhinus leucas*) and bonnethead sharks (*Sphyrna tiburo*); and neonate/young of the year and adult Atlantic sharpnose sharks (*Rhizoprionodon terraenovae*)¹².

5.2 HABITAT AREAS OF PARTICULAR CONCERN

There are no EFH Habitat Areas of Particular Concern within the Action Area¹³.

5.3 POTENTIAL LAND-BASED EFFECTS ON EFH

No construction or maintenance activities will take place within EFH. Designated EFH will not be adversely affected by construction or maintenance activities associated with the proposed Olefins Plant Expansion project.

Non-contact stormwater will be discharged through an outfall structure into an unnamed ditch, which drains into Oso Creek. Oso Creek does not contain EFH. No adverse effects to EFH are anticipated as a result of non-contact stormwater from the proposed expansion project.

5.4 POTENTIAL EFFECTS ON EFH THROUGH DEPOSITION OF AIR POLLUTANTS

The pollutants and averaging periods were above their SILs for nitrogen dioxide (NO₂), CO, and annual PM_{2.5}; however, all pollutants will reach ambient levels before reaching EFH. No potential adverse effects to EFH are anticipated as a result of air emissions from the expansion project. The specific results of the dispersion modeling and evaluation for other (non-criteria) pollutants that will be emitted by the proposed project are provided in Section 8.1.3 of the Olefins Plant Expansion Project BA³.

5.5 POTENTIAL EFFECTS OF INCREASED WASTEWATER EFFLUENT WITHIN EFH

The wastewater treatment unit at the Equistar Corpus Christi Complex treats stormwater and process wastewater generated by the olefins and butadiene (BD) plants and pumps the treated wastewater via underground pipeline to the existing Outfall 001, which discharges into the Corpus Christi Ship Channel (Corpus Christi Inner Harbor).

The Olefins Plant wastewater effluent discharge is expected to increase by approximately 13%, but the source and the treatment of the wastewater will not change. Therefore, the additional effluent is not expected to be significantly different (i.e., temperature or pollutant concentrations) than wastewater currently generated by operations at the Olefins Plant.

The effluent reaches 4% dilution at the edge of the human health mixing zone at an approximately 400-foot radius from the point of discharge. This effluent percentage has been determined by the TCEQ to be protective of aquatic life and human health and in compliance with the Texas Surface Water Quality Standards¹⁴.

TCEQ determined that discharge from Outfall 001 may contain pollutants that have the potential to cause toxic conditions in the receiving stream. Per the permit conditions, whole effluent biomonitors is required.

For Outfall 001's 7-day chronic toxicity testing, there have been no lethal or sublethal test failures reported in twelve tests performed in the last five years for the mysid shrimp (*Mysidopsis bahia*) or inland silverside (*Menidia beryllina*). Results from the 24-hour acute toxicity test showed no demonstrations of significant mortality reported in eight tests performed in the last five years for the mysid shrimp or inland silverside. In addition, discharge monitoring did not indicate a violation of any numerical water quality-based effluent limitation for aquatic life protection or for human health.

The specific results of the water quality analysis for the proposed project are provided in Section 9.0 of the Olefins Plant Expansion Project BA³.

Based on the above information, no potential adverse effects to EFH are anticipated as a result of the proposed increase in wastewater effluent from the expansion project.

5.6 POTENTIAL EFFECTS OF INCREASED MARINE VESSEL TRAFFIC WITHIN EFH

Operation of the proposed expansion of the Olefins Plant would not result in an increase in marine vessel traffic within the Corpus Christi Ship Channel. No potential adverse effects to EFH are anticipated as a result of marine vessel traffic from the expansion project.

6.0 CONCLUSIONS

EFH was identified within Corpus Christi Ship Channel at the location of the existing Equistar wastewater outfall structure. As described in above in Section 5.0 and in greater detail in Section 8.0 and 9.0 of the Olefins Plant Expansion Project BA³, EFH would not be adversely affected by construction or maintenance activities, stormwater, wastewater, air emissions, or marine vessel traffic resulting from the proposed plant expansion.

7.0 REFERENCES

- ¹ National Oceanic and Atmospheric Administration Fisheries Feature. Magnuson-Stevens Fishery Conservation and Management Act Reauthorized. <http://www.nmfs.noaa.gov/msa2005/>
- ² Federal Register. 2006. Fisheries of the Caribbean, Gulf of Mexico, and South Atlantic; Gulf of Mexico Recreational Grouper Fishery Management Measures. <https://www.federalregister.gov/articles/2006/11/17/E6-19481/fisheries-of-the-caribbean-gulf-of-mexico-and-south-atlantic-gulf-of-mexico-recreational-grouper>
- ³ Whitenton Group, Inc. Biological Assessment – Olefins Plant Expansion Project. San Marcos, TX.
- ⁴ U.S. Corps of Army Engineers. Corpus Christi Ship Channel. Accessed 23 February 2013. <http://www.swd.usace.army.mil/Portals/42/docs/civilworks/Fact%20Sheets/Galveston/FY13%20CCSC,%20TX.pdf>
- ⁵ Texas Parks and Wildlife Department. Level IV Eco-regions of Texas. http://www.epa.gov/wed/pages/ecoregions/tx_eco.htm
- ⁶ US Geological Survey. Physiographic Regions of the Lower 48 United States. <http://tapestry.usgs.gov/physiogr/physio.html>
- ⁷ Texas Parks and Wildlife Department. South Texas Wildlife Management, Historical Perspective. http://www.tpwd.state.tx.us/landwater/land/habitats/southtx_plain/
- ⁸ Environmental Protection Agency. Ecoregions of Texas. ftp://ftp.epa.gov/wed/ecoregions/tx/TXeco_Jan08_v8_Cmprsd.pdf
- ⁹ National Hydrography Dataset (NHD). <http://services.nationalmap.gov/ArcGIS/rest/services>
- ¹⁰ Texas Commission on Environmental Quality. Download Effects Screening Levels (ESL) Lists Used in the Review of Air Permitting Data. <http://www.tceq.state.tx.us/implementation/tox/esl/list>
- ¹¹ National Oceanic and Atmospheric Administration. National Marine Fisheries Service Habitat Conservation. Gulf of Mexico. <http://www.habitat.noaa.gov/protection/efh/newInv/index.html>
- ¹² NMFS. 2009. Final Amendment 1 to the 2006 Consolidated Atlantic Highly Migratory Species

Fishery Management Plan, Essential Fish Habitat. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division, Silver Spring, MD. Public Document. pp. 395.

¹³ National Oceanic and Atmospheric Administration. Essential Fish Habitat Mapper Verion 3.0. Accessed November 2, 2012.

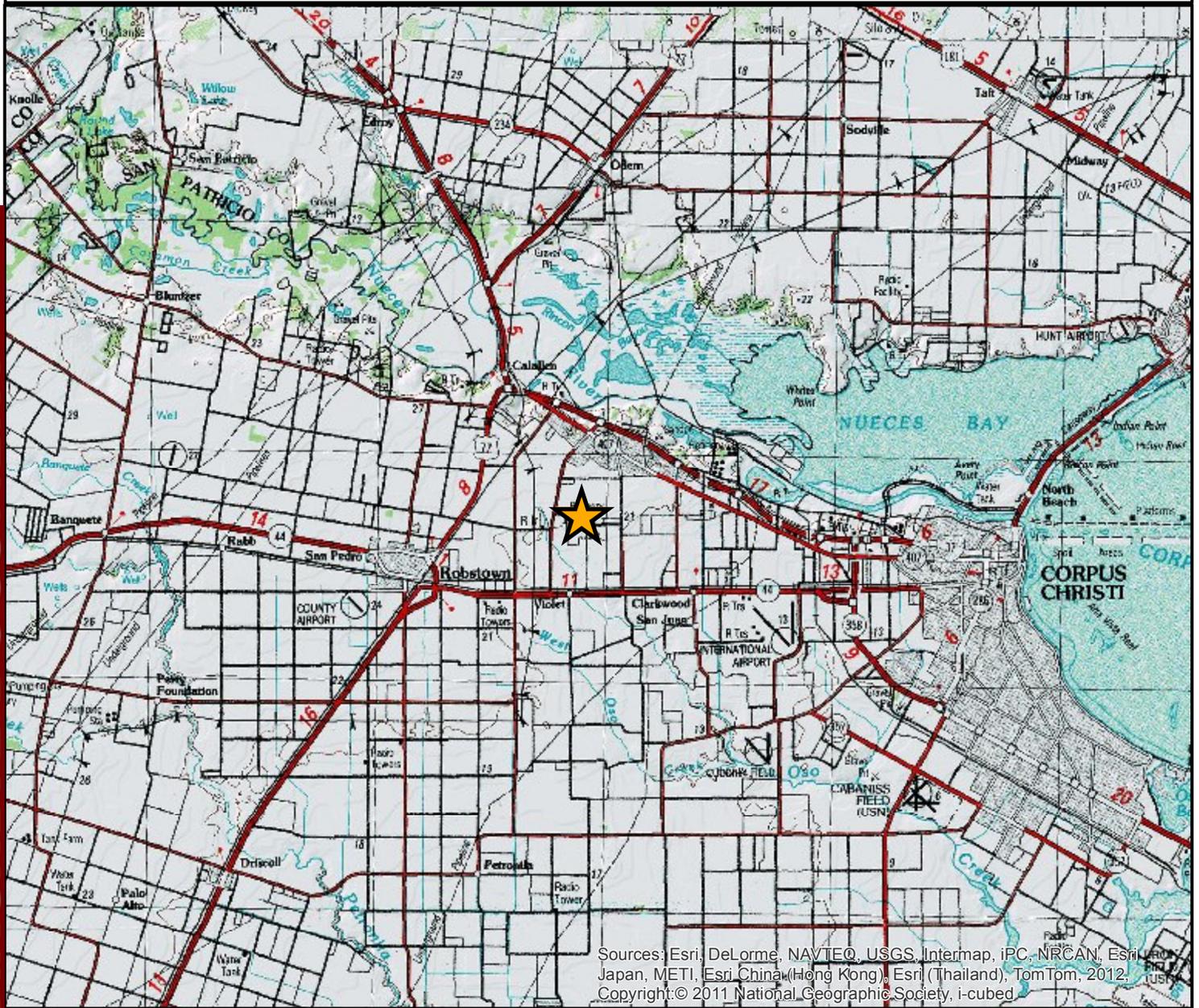
<http://www.habitat.noaa.gov/protection/efh/habitatmapper.html>

¹⁴ TCEQ, January 2003, *Procedures to Implement the Texas Surface Water Quality Standards*, RG-194, Water Quality Division, Austin, Texas, pp. 39-43.

APPENDIX A

FIGURES

Figure 1
Project Location
Olefins Plant Expansion Project
Nueces County, Texas



Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri, Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012, Copyright: © 2011 National Geographic Society, i-cubed

US EPA ARCHIVE DOCUMENT



Nueces County



Project Location



Background Resources:

ESRI USA Roads Basemap

Surveyor(s):

Scott Jecker CWB, PWS
 Bryan Whisenant

Project Number and Information:

1279

Equistar Chemicals, LP
 Corpus Christi Complex

Biological Assessment

GPS and Coordinate Type:

Trimble Geo XH 6000 Series
 UTM NAD 1983
 Zone 14 North

Map Created:

02/21/2013 by M. Pillion



3413 Hunter Road San Marcos Texas 78666

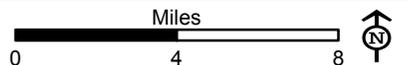
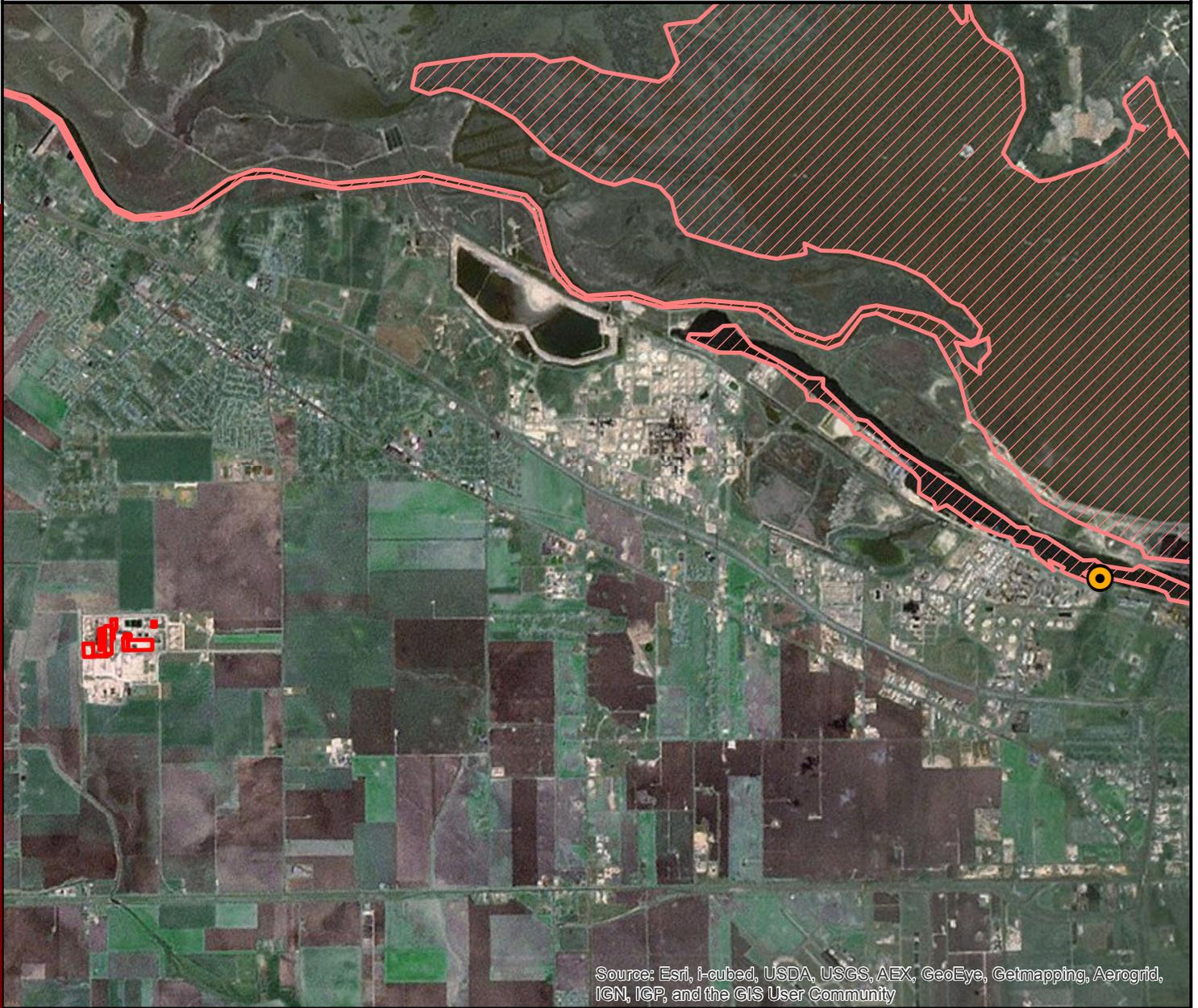


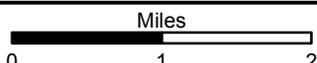
Figure 2
Equistar Olefins Plant Expansion Project
Essential Fish Habitat
Nueces County, Texas



Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

-  **Project Area (26.85 Acres)**
-  **Essential Fish Habitat**
-  **Existing Equistar Wastewater Outfall**

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Background Resources: ESRI Aerial Imagery	Surveyor(s): Scott Jecker CWB, PWS Bryan Whisenant	Project Number and Information: 1279 Equistar Olefins Plant Expansion	 3413 Hunter Road San Marcos Texas 78666  
GPS and Coordinate Type: Trimble Geo XH 6000 Series UTM NAD 1983 Zone 14 North	Map Created: 3/6/2013 by M. Pillion	Essential Fish Habitat Assessment	

APPENDIX B

TABLE 1-1

Table 1-1 Project Emissions Summary
 Equistar Chemicals LP - Olefins Plant Expansion
 Corpus Christi, Nueces County, Texas

Table 1(a) Sources - Proposed

EPN	FIN	Source Name	NOx		NOx (decoking)		CO		VOC		PM		PM10		PM2.5		SO2	
			lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
1A	B-1601A	U.S.C. FURNACE "A"	11.28	49.41	9.40	-	6.74	29.52	1.01	4.44	1.40	6.14	1.40	6.14	1.40	6.14	0.11	0.48
1B	B-1601B	U.S.C. FURNACE "B"	11.28	49.41	9.40	-	6.74	29.52	1.01	4.44	1.40	6.14	1.40	6.14	1.40	6.14	0.11	0.48
1C	B-1601C	U.S.C. FURNACE "C"	17.40	76.21	14.50	-	10.40	45.54	1.56	6.85	2.16	9.46	2.16	9.46	2.16	9.46	0.17	0.75
1D	B-1601D	U.S.C. FURNACE "D"	17.40	76.21	14.50	-	10.40	45.54	1.56	6.85	2.16	9.46	2.16	9.46	2.16	9.46	0.17	0.75
1E	B-1601E	U.S.C. FURNACE "E"	17.40	76.21	14.50	-	10.40	45.54	1.56	6.85	2.16	9.46	2.16	9.46	2.16	9.46	0.17	0.75
1F	B-1601F	U.S.C. FURNACE "F"	17.40	76.21	14.50	-	10.40	45.54	1.56	6.85	2.16	9.46	2.16	9.46	2.16	9.46	0.17	0.75
1G	B-1601G	U.S.C. FURNACE "G"	17.40	76.21	14.50	-	10.40	45.54	1.56	6.85	2.16	9.46	2.16	9.46	2.16	9.46	0.17	0.75
1H	B-1601H	U.S.C. FURNACE "H"	17.40	76.21	14.50	-	10.40	45.54	1.56	6.85	2.16	9.46	2.16	9.46	2.16	9.46	0.17	0.75
1J	B-1601J	U.S.C. FURNACE "J"	17.40	76.21	14.50	-	10.40	45.54	1.56	6.85	2.16	9.46	2.16	9.46	2.16	9.46	0.17	0.75
1K	B-1601K	U.S.C. FURNACE "K"	11.28	49.41	9.40	-	6.74	29.52	1.01	4.44	1.40	6.14	1.40	6.14	1.40	6.14	0.11	0.48
1L	B-1601L	U.S.C. FURNACE "L"	11.28	49.41	9.40	-	6.74	29.52	1.01	4.44	1.40	6.14	1.40	6.14	1.40	6.14	0.11	0.48
1M	B-1601M	U.S.C. FURNACE "M"	17.40	76.21	14.50	-	10.40	45.54	1.56	6.85	2.16	9.46	2.16	9.46	2.16	9.46	0.17	0.75
1N	B-1601N	U.S.C. FURNACE "N"	17.40	76.21	14.50	-	10.40	45.54	1.56	6.85	2.16	9.46	2.16	9.46	2.16	9.46	0.17	0.75
3A	B-1602A	V.M.R. FURNACE "A"	7.60	33.30	6.34	-	4.54	19.89	0.68	2.99	0.94	4.13	0.94	4.13	0.94	4.13	0.07	0.33
3B	B-1602B	V.M.R. FURNACE "B"	7.60	33.30	6.34	-	4.54	19.89	0.68	2.99	0.94	4.13	0.94	4.13	0.94	4.13	0.07	0.33
5A	B-1604A	STEAM S. HEATER "A"	8.74	38.26	-	-	5.22	22.86	0.79	3.44	1.08	4.75	1.08	4.75	1.08	4.75	0.09	0.38
5B	B-1604B	STEAM S. HEATER "B"	8.74	38.26	-	-	5.22	22.86	0.79	3.44	1.08	4.75	1.08	4.75	1.08	4.75	0.09	0.38
9A	L-1663C	SOUTH DECOCKING CYCLONE	0.00	0.00	-	-	1932.94	135.80	0.05	0.02	11.63	1.37	3.58	0.43	3.58	0.43	0.00	0.00
9B	L-1663D	NORTH DECOCKING CYCLONE	0.00	0.00	-	-	1999.16	133.80	0.04	0.02	12.47	1.35	3.84	0.42	3.84	0.42	0.00	0.00
12B	L-2010B	Olefins COOLING TOWER B-Cells	0.00	0.00	-	-	0.00	0.00	1.26	5.52	0.38	1.42	0.38	1.42	0.11	0.42	0.00	0.00
FUG	FUG	Fugitive Emissions	0.00	0.00	-	-	0.00	0.00	6.22	27.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Table 1(a) Total:			234.40	1026.65	180.77	0.00	4072.16	883.01	28.63	125.05	53.58	131.62	36.90	129.76	36.63	128.76	2.30	10.07

Table 1(a) Sources - Current Permit

EPN	FIN	Source Name	NOx		NOx (decoking)		CO		VOC		PM		PM10		PM2.5		SO2	
			lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
1A	B-1601A	U.S.C. FURNACE "A"	27.10	118.71	0.00	0.00	11.98	52.48	0.78	3.44	1.08	4.75	1.08	4.75	1.08	4.75	0.09	0.39
1B	B-1601B	U.S.C. FURNACE "B"	27.10	118.71	0.00	0.00	11.98	52.48	0.78	3.44	1.08	4.75	1.08	4.75	1.08	4.75	0.09	0.39
1C	B-1601C	U.S.C. FURNACE "C"	27.10	118.71	0.00	0.00	11.98	52.48	0.78	3.44	1.08	4.75	1.08	4.75	1.08	4.75	0.09	0.39
1D	B-1601D	U.S.C. FURNACE "D"	27.10	118.71	0.00	0.00	11.98	52.48	0.78	3.44	1.08	4.75	1.08	4.75	1.08	4.75	0.09	0.39
1E	B-1601E	U.S.C. FURNACE "E"	27.10	118.71	0.00	0.00	11.98	52.48	0.78	3.44	1.08	4.75	1.08	4.75	1.08	4.75	0.09	0.39
1F	B-1601F	U.S.C. FURNACE "F"	27.10	118.71	0.00	0.00	11.98	52.48	0.78	3.44	1.08	4.75	1.08	4.75	1.08	4.75	0.09	0.39
1G	B-1601G	U.S.C. FURNACE "G"	27.10	118.71	0.00	0.00	11.98	52.48	0.78	3.44	1.08	4.75	1.08	4.75	1.08	4.75	0.09	0.39
1H	B-1601H	U.S.C. FURNACE "H"	27.10	118.71	0.00	0.00	11.98	52.48	0.78	3.44	1.08	4.75	1.08	4.75	1.08	4.75	0.09	0.39
1J	B-1601J	U.S.C. FURNACE "J"	27.10	118.71	0.00	0.00	11.98	52.48	0.78	3.44	1.08	4.75	1.08	4.75	1.08	4.75	0.09	0.39
1K	B-1601K	U.S.C. FURNACE "K"	27.10	118.71	0.00	0.00	11.98	52.48	0.78	3.44	1.08	4.75	1.08	4.75	1.08	4.75	0.09	0.39
1L	B-1601L	U.S.C. FURNACE "L"	27.10	118.71	0.00	0.00	11.98	52.48	0.78	3.44	1.08	4.75	1.08	4.75	1.08	4.75	0.09	0.39
1M	B-1601M	U.S.C. FURNACE "M"	27.30	119.58	20.88	13.15	20.36	89.19	1.33	5.84	1.84	8.07	1.84	8.07	1.84	8.07	0.15	0.67
1N	B-1601N	U.S.C. FURNACE "N"	27.30	119.58	20.88	7.52	20.36	89.19	1.33	5.84	1.84	8.07	1.84	8.07	1.84	8.07	0.15	0.67
3A	B-1602A	V.M.R. FURNACE "A"	8.67	37.98	0.00	0.00	7.28	31.90	0.48	2.09	0.66	2.89	0.66	2.89	0.66	2.89	0.05	0.24
3B	B-1602B	V.M.R. FURNACE "B"	8.67	37.98	0.00	0.00	7.28	31.90	0.48	2.09	0.66	2.89	0.66	2.89	0.66	2.89	0.05	0.24
5A	B-1604A	STEAM S. HEATER "A"	6.25	27.36	0.00	0.00	5.25	22.98	0.34	1.50	0.47	2.08	0.47	2.08	0.47	2.08	0.04	0.17
5B	B-1604B	STEAM S. HEATER "B"	6.25	27.36	0.00	0.00	5.25	22.98	0.34	1.50	0.47	2.08	0.47	2.08	0.47	2.08	0.04	0.17
9A	L-1663C	SOUTH DECOCKING CYCLONE	0.00	0.00	0.00	0.00	1674.80	80.06	0.03	0.02	9.91	0.80	3.05	0.25	3.05	0.25	0.00	0.00
9B	L-1663D	NORTH DECOCKING CYCLONE	0.00	0.00	0.00	0.00	906.86	66.37	0.03	0.02	6.82	0.66	2.10	0.21	2.10	0.21	0.00	0.00
12B	L-2010B	Olefins COOLING TOWER B-Cells	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FUG	FUG	Fugitive Emissions	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Existing MAERT Total:			382.54	1675.65	41.76	20.67	2779.22	1011.85	12.95	56.74	34.55	79.78	22.97	78.78	22.97	78.78	1.47	6.45

Proposed Changes in Allowable Emissions

	NOx		NOx (decoking)		CO		VOC		PM		PM10		PM2.5		SO2	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Existing MAERT Total:																
	(148.14)	(649.00)	139.01	(20.67)	1292.93	(128.83)	15.68	68.32	19.02	51.84	13.93	50.98	13.66	49.98	0.83	3.62

Note: The emissions are listed with two digits past the decimal point consistent with TCEQ practice. Underlying data may not be accurate to the resulting apparent number of significant digits.