APWL Proposed Change Document: Delisting

Sulfur Dioxide – Beaumont, TX

Prepared by

Toxicology Division

Office of the Executive Director

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Table of Contents

List of Tables

List of Figures

APWL Proposed Change Documentation - Delisting

Table 1. Area Under Consideration

APWL	1002
County	Jefferson
City	Beaumont
TCEQ Region	Region 10 – Beaumont
Pollutant(s)	Sulfur Dioxide (SO_2)
Exceedance Type (Health/Odor)	Health
Exceedance Duration	30-Minute State Regulatory Standard
Year Added to APWL	2003

Background

The Texas Commission on Environmental Quality (TCEQ) established the Air Pollutant Watch List (APWL) to address areas of the state where air toxics were persistently monitored at levels of potential concern. The TCEQ uses the APWL to reduce levels of air toxics by focusing its resources on areas in the state with the greatest need. In 2003, the TCEQ added an area of Beaumont to the APWL (designated APWL 1002) to address air concentrations of sulfur dioxide measured above the 30-minute state regulatory standard during a mobile monitoring project. Sulfur dioxide is a colorless gas with a pungent, irritating odor that is commonly emitted from coal- and oil-fired combustion and various chemical processes. Exposure to sufficiently elevated concentrations for extended periods of time may result in respiratory symptoms such as irritation, burning sensations, or difficulty breathing.

The United States Environmental Protection Agency (EPA) is responsible for setting national ambient air quality standards (NAAQS) for criteria air pollutants, including sulfur dioxide. Primary standards are set at levels that are protective of human health, and secondary standards are set at levels protective of welfare effects, such as damage to vegetation. The first primary sulfur dioxide NAAQS (both a 24-hour standard of 140 ppb and an annual standard of 30 ppb) was established in 1971 and retained until 2010. In 2010, the EPA revoked both of these primary standards and replaced them with a 1-hour standard of 75 ppb. Compliance with this standard is achieved when the three-year average of the annual 99th percentile of monitored concentrations is below 75 ppb. The Beaumont area has been designated unclassifiable/attainment for the 1971 24-hour and annual primary NAAQS. The Governor has recommended that the Beaumont area be designated attainment with the 2010 primary NAAQS, although final designations are pending EPA approval.

In addition to federal standards, Texas adopted rules in 1992 to limit ground-level sulfur dioxide concentrations to protect public health and welfare. State standards regulating sulfur dioxide are found in 30 Texas Administrative Code (TAC) § 112.3, Net Ground Level Concentrations. These standards specify that no person in Jefferson or Orange County may cause, suffer, allow, or

permit emissions of sulfur dioxide from a source or sources operated on a property or multiple sources operated on contiguous properties to exceed a net ground level concentration of 320 parts per billion by volume (ppb_v) averaged over any 30-minute period (TAC § 112.3(c)). The rules in 30 TAC §112.3 are part of the State Implementation Plan (SIP) strategy designed to help the state meet the NAAQS for sulfur dioxide.

Sulfur dioxide levels at the former Carroll St. Park monitoring site in Beaumont, Texas, exceeded the TCEQ regulatory standard of 320 ppb_v on 3 days in 1998, 3 days in 1999, 1 day in 2001, and 2 days in 2002. In addition, sulfur dioxide levels were reported above the TCEQ regulatory standard during a mobile monitoring trip in 2003, as well as additional mobile monitoring trips through 2007. See Appendices B and C for a discussion of the stationary and mobile monitoring data, respectively, that resulted in establishment and retention of this area on the APWL.

APWL Information

Boundary Designation

The Beaumont APWL 1002 area is defined as the geographical area north of a Neches River tributary near Highway 380, southwest of the Neches River, northeast of Highway 380, and southeast of College Street (Figure 1).

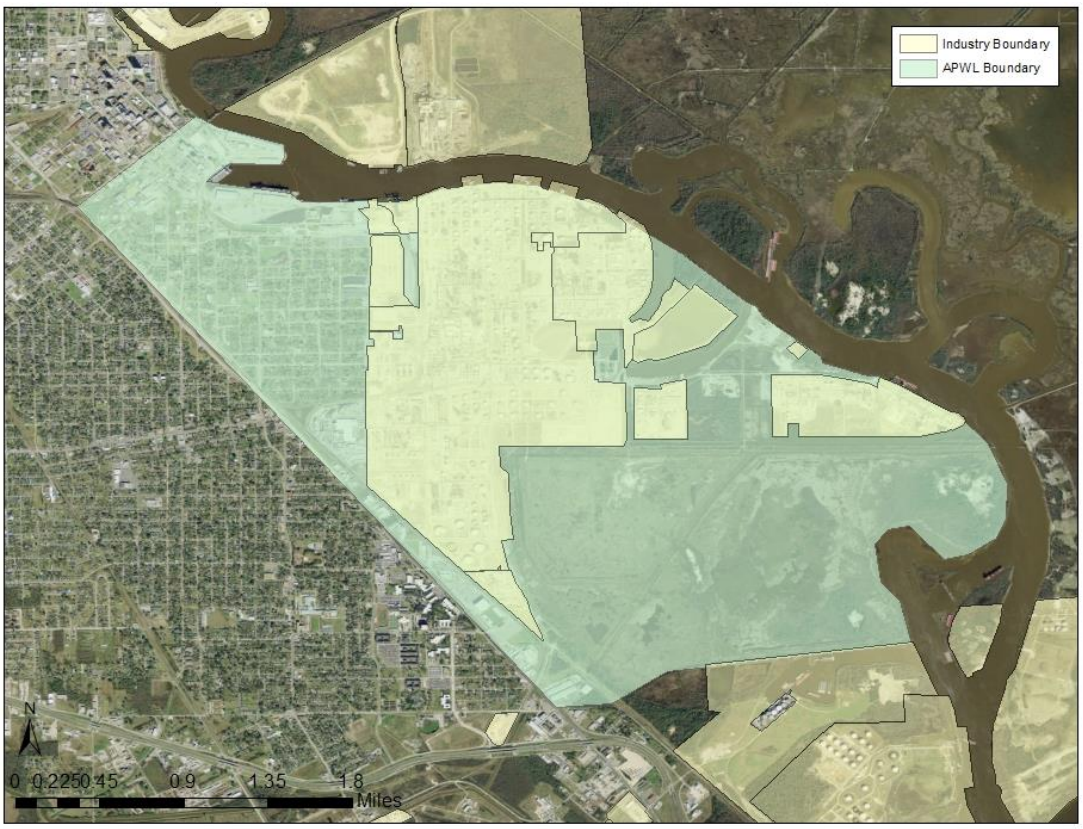

Figure 1. Boundary designation of the Beaumont APWL 1002 area.

Designated Land Use and Proximity to Residential Areas and High-Traffic Roadways

The majority of the area included in the Beaumont APWL 1002 is industrial; however, there are some residential areas located within the APWL boundary (Figure 2). The APWL 1002 boundary is located southeast of downtown Beaumont, and the residential neighborhoods are located in the west and northeast portions.

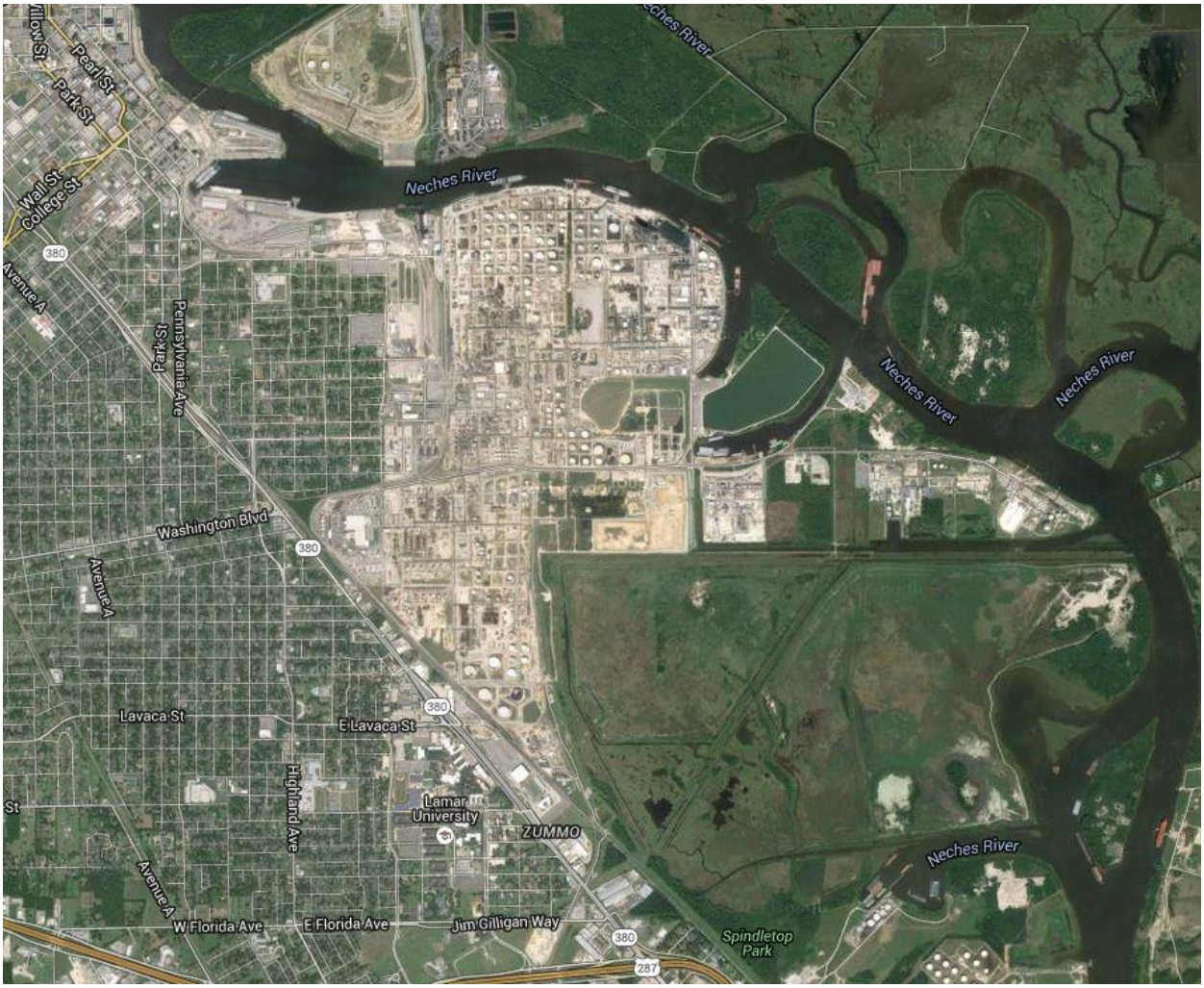

Figure 2. Satellite imagery showing the location of residential and industrial areas in the Beaumont APWL 1002 area.

Companies Located in the Beaumont APWL Area

There are eight industrial complexes located within the APWL 1002 boundary (Table 2), including a petroleum refinery (ExxonMobil), four chemical plants (ExxonMobil, Chemtrade, Arkema, and Martin), a bulk storage and handling facility (Kinder Morgan), a grain transfer facility (LD Commodities, formerly Louis Dreyfus Corporation), and a concrete pipe coating facility (Shawcor). The area also includes PD Glycol, which operated the now-demolished ethylene glycol units formerly owned by Equistar Chemicals. Figure 3 shows the relative

locations of the industrial complexes within the APWL boundary. Only four companies report sulfur dioxide emissions: ExxonMobil Oil Corporation (Refinery and Chemical Plant), Chemtrade Refinery Services, Inc. and Arkema Inc. ExxonMobil Refinery and Arkema have, by far, the greatest emissions of sulfur dioxide (Table 3).

Table 2. Facilities located in the Beaumont APWL 1002 Area

Company Name	**Regulated Entity No. (RN)**
Kinder Morgan Petcoke, LP	RN103080883
Shawcor Pipe Protection	RN105328629
ExxonMobil Oil Corporation Refinery	RN102450756
ExxonMobil Oil Corporation Chemical Plant	RN100542844
Chemtrade Refinery Services, Inc.	RN100218932
Arkema Inc.	RN100216373
Martin Operating Partnership LP	RN101609436
LD Commodities Beaumont Export Elevator	RN100214683
Equistar Chemicals, LP (PD Glycol)	RN100825413

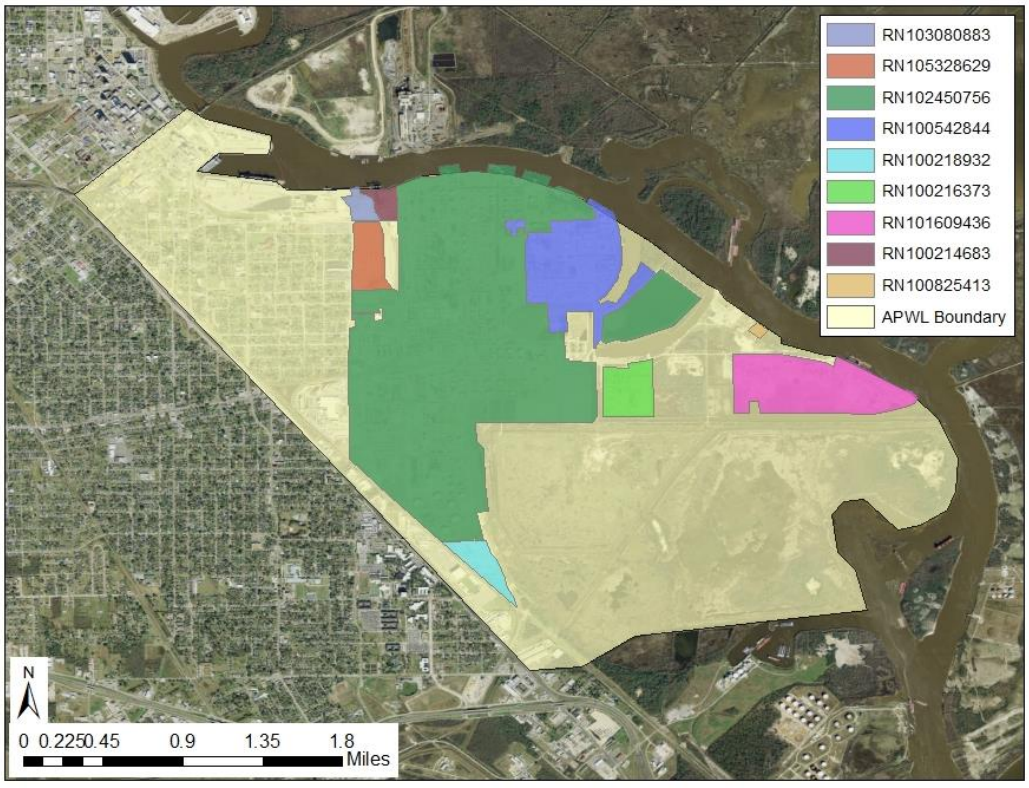

Figure 3. Industrial complexes located within the Beaumont APWL 1002 boundary.

Evaluation

Ambient Air Monitoring Data

Stationary Monitoring

From 2011 to 2015, the TCEQ operated two stationary monitors in Beaumont that measured sulfur dioxide concentrations: the Beaumont Mary monitor (AQS number 482451050), located at 414 Mary Street, and the Beaumont Downtown monitor (AQS number 482450009), located at 1086 Vermont Avenue (Figure 4). The Beaumont Mary monitor was activated on October 13, 2010 following the relocation from the Carroll Street Park monitoring site (AQS number 482450020), which was previously operated from November 18, 1997, to July 30, 2008, at Grant and Grove Streets. The Beaumont Mary monitor was deactivated on September 22, 2015.

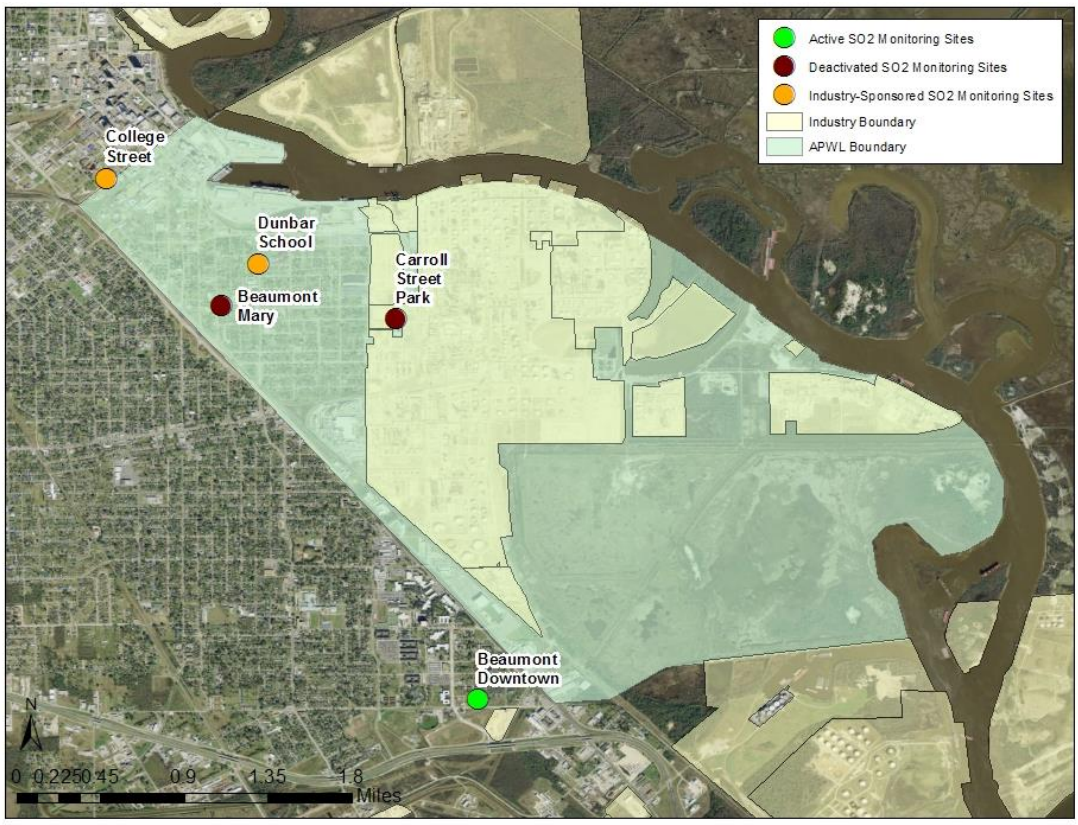

Figure 4. Locations of the active and deactivated sulfur dioxide monitors in the Beaumont APWL 1002 area.

Beaumont also has two community monitors: the Dunbar School community monitor, located at the intersection of Jackson Street and Irving Avenue, and the College Street community monitor, located at the intersection of College Street and Jefferson Street (Figure 4). The Dunbar School monitor was relocated two blocks south, from the intersection of Cuniff Street and Irving Avenue to its current location in January 2010. The two community monitors are supported by a financial agreement between Arkema, ExxonMobil, and Chemtrade (requirement contained in Stipulation No. 18 of Agreed Order Docket No. 2004-0846-SIP) and an independent

operator/contractor who conducts and validates the monitoring data. Unlike the TCEQ monitors described previously in this section, the TCEQ does not prescribe data quality standards for the two community monitors. On February 7, 2011, the TCEQ determined that ExxonMobil Oil had fulfilled the sulfur dioxide monitoring requirements for termination of Stipulation No. 18 of Agreed Order Docket No. 2004-0846-SIP. Therefore, while the monitors remain active, sulfur dioxide data are no longer required to be reported to the TCEQ.

The TCEQ collects sulfur dioxide data from its stationary monitors on a 5-minute basis. Every six consecutive 5-minute concentrations are averaged to determine if a 30-minute average concentration exceeds the state standard of 320 ppb_v. The community monitors collect data on a 1-minute basis, and every 30 consecutive 1-minute concentrations are averaged to determine if a 30-minute concentration exceeds the state standard. The data collection and averaging methods may be considered conservative, as they use a 30-minute average concentration rather than a 30-minute net concentration (i.e., no upwind and downwind monitors are used to determine a net concentration; the methods compare the ambient downwind concentration to the net concentration standard).

Appendix B contains a discussion of the historical exceedances of the state regulatory standard measured at stationary monitoring sites that contributed to establishment of APWL 1002 and retention on the APWL list to date. However, the more recent stationary site data reviewed by the Toxicology Division (TD) demonstrates that there have been no exceedances of the state regulatory standard at either the Beaumont Mary or the Beaumont Downtown monitoring sites from 2012 through 2015. Additionally, although sulfur dioxide monitoring is no longer required at the two community monitors, the responsible industries continue to financially support and collect air monitoring data from these monitors. The data from these monitors for 2011 to 2015 were provided to the TCEQ upon request and demonstrate that there have been no exceedances of the state regulatory standard at either the Dunbar School community monitor or the College Street community monitor from 2011 through 2015.

Mobile Monitoring

The TCEQ conducted mobile monitoring trips in the Beaumont area during the spring or summer of each year from 2003 through 2008. Appendix C contains a discussion of the historical mobile monitoring data that contributed to the establishment and retention of the Beaumont APWL 1002 area. The most recent mobile monitoring trip collected sulfur dioxide data in 2008, and all reported 30-minute sulfur dioxide concentrations were below the state regulatory standard of 320 ppbv.

Actions to Reduce Sulfur Dioxide Emissions

When the Beaumont area was initially placed on the APWL, the ExxonMobil Refinery was by far the largest emitter of sulfur dioxide. Since then, ExxonMobil has reported various strategies and efforts designed to reduce sulfur dioxide emissions. ExxonMobil agreed to conduct ambient sulfur dioxide monitoring (TCEQ Agreed Order 1997-0827-AIR-E). The company installed the monitors in November 1998 and conducted monitoring through February 2011. The Agreed Order terminated after the TCEQ determined that ExxonMobil had fulfilled the requirements. ExxonMobil also agreed (TCEQ Agreed Order 2004-0846-SIP) to install a wet gas scrubber to control sulfur dioxide emissions from its fluid catalytic cracking unit (FCCU, EPN 06ST_003).

In 2005, ExxonMobil entered into a consent decree with the EPA (Case 1:05-cv-05809) regarding alleged Federal Clean Air Act violations at all of its North American refineries, including the Beaumont refinery. This agreement included multiple provisions regarding sulfur dioxide emissions, including:

- Installation of certain air pollution control equipment and enhancement of some of its air pollution management practices;
- Monitoring of sulfur dioxide emissions;
- Reductions in sulfur dioxide emissions from both normal operating conditions and periods of maintenance, startup, shutdown, and malfunction;
- Installation of additional flares and enhancement of existing flare gas recovery;
- Limiting sulfur dioxide emissions from refinery heaters and boilers and other fuel combustion devices by restricting hydrogen sulfide in refinery fuel;
- Implementation of Preventative Maintenance and Operations Plan at all times, including periods of startup, shutdown, and maintenance; and
- Routing or re-routing of all sulfur pit emissions so that they are eliminated, controlled, or included and monitored.

Some provisions of ExxonMobil's consent decree have been incorporated into the company's air permit. The company has also addressed flaring and sulfur dioxide emissions in several amendments to its air permit. In 2004, the company provided information on emissions from the flares over the previous three years to establish the temporary emission rates for the permit's flares, and committed to perform a Flare Study. The purpose of the Flare Study was to identify maintenance, startup, and shutdown (MSS) events that cause emissions from the flares and to properly quantify them. The Flare Study required the identification of activities (resulting from routine operations and from MSS) that generate waste gases, identification of each waste gas stream being sent to each flare, frequency of the waste gas flaring events, and approximate composition and the quantity of the waste gases directed to the flare. The TCEQ's review of the Flare Study indicated that ExxonMobil performed a comprehensive study and identified all normal and MSS activities and the waste streams going to the flares.

ExxonMobil also indicated that it has implemented additional projects to reduce sulfur dioxide emissions, including equipment to scrub sour off-gas streams and divert them to the sulfur recovery plants, and installing compressors to divert flare gas and remove sulfur-laden liquids. ExxonMobil reported that it replaced seven existing steam generation boilers at the refinery with three new gas turbine cogeneration units, increasing plant efficiency and electrical reliability and resulting in a decrease in sulfur oxides of 30 tons per year. ExxonMobil reported that additional programs were implemented to reduce sulfur dioxide from routine operations and emission events, such as an energy conservation program, a risk-based equipment inspection program, and upgrading instrumentation and control systems to improve reliability of compressors and decrease flaring and sulfur dioxide emissions.

Supplemental Data

Point Source Emissions Inventory (EI) Data

Owners or operators of certain stationary sources are required by 30 TAC §101.10, Emissions Inventory Requirements, to submit an annual emissions inventory to the TCEQ. A company is required to report all of its actual air emissions each year, including all authorized and unauthorized emissions. Unauthorized emissions may include those emissions released as a result of emissions events or unauthorized MSS activities. Companies located in APWL areas are subject to this requirement. Reviewing the EI information can be useful to identify the companies that report the contaminant of concern. For more information, please refer to the point source EI webpage.

Table 3 lists the facilities located in the Beaumont APWL 1002 area that reported sulfur dioxide emissions to the point source EI. The remaining facilities either do not specifically report sulfur dioxide or are not required to report to the point source EI. Only five facilities located in the Beaumont APWL 1002 area reported sulfur dioxide emissions in 2014; ExxonMobil Refinery and Arkema had the highest emissions.

Table 3. 2014 EI data from the facilities located within the Beaumont APWL 1002 area.

Owner/ Operator	RN	2014 EI (tpy)	% Texas Emissions
ExxonMobil Oil Corporation Refinery	102450756	291.91	0.07%
ExxonMobil Oil Corporation Chemical Plant	100542844	4.85	0.001%
Chemtrade Refinery Services, Inc.	100218932	23.56	0.005%
Arkema Inc.	100216373	507.71	0.12%
Equistar Chemicals, LP (PD Glycol)	100825413	0	0

*Data are reported in tons per year (tpy)

According to the reported EI data, four facilities in the Beaumont APWL 1002 area have reported sulfur dioxide emissions over 1 tpy in the last ten years, with Arkema and ExxonMobil Refinery contributing the most emissions (Table 4). Historically, the Chemtrade Refinery facility also contributed to the high sulfur dioxide emissions; however, significant decreases have been reported since 2008. Additionally, while Arkema and the ExxonMobil Chemical Plant have remained fairly constant, the ExxonMobil Refinery also had significant reductions since 2005.

Table 4. EI data for four facilities with reported sulfur dioxide emissions from 2005 - 2014.

Site	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
ExxonMobil Refinery	2274.2	1047.7	1242.4	1726.7	797.4	883.0	689.7	1553.8	454.4	291.9
ExxonMobil Chemical Plant	7.97	8.72	6.28	4.69	3.18	4.42	6.08	6.32	5.81	4.85
Chemtrade Refinery	719.1	737.5	833.0	415.8	526.0	166.5	76.3	23.6	25.9	23.6
Arkema Inc.	453.0	302.2	417.2	355.9	324.8	328.5	243.0	455.9	441.6	507.7

*Data are reported in tons per year (tpy)

Air Permits

Two of the facilities located in the Beaumont APWL 1002 area had permitting actions in 2015 that resulted in changes in sulfur dioxide emissions.

ExxonMobil Oil Corporation Refinery – RN102450756

- Permit 127613 – ExxonMobil received authorization for the installation of a 260-horsepower diesel engine. The engine was powered by low sulfur diesel fuel.
- Permit 49138 amendment – This amendment authorized actual emission rate increases in sulfur dioxide emissions related to the installation of a SCANfiner unit, which provides additional sulfur removal from one of the intermediate streams (naphtha) which is then blended into gasoline. The goal of this project is to reduce the sulfur content in gasoline products to meet new federal standards for sulfur content in gasoline (Tier 3), which will take effect in 2017. Near the end of the permit technical review, the increases in actual emissions were reviewed and approved by the APWL Coordinator.

Martin Operating Partnership, LP – RN101609436

- Permit 100415 amendment – This amendment authorized modifications to their molten sulfur storage, prilling (granulating), and shipping terminal in Beaumont (Jefferson County), Texas. The project included replacing a blower with a sulfur granulator, the removal of demolished sources, and the re-evaluation of sulfur dioxide emissions from the molten sulfur storage tank. Overall, the project resulted in a decrease in allowable sulfur dioxide emissions at the site by 4.26 tpy. This decrease included the removal of sulfur dioxide emissions from molten sulfur storage tanks, as the applicant provided sufficient justification that sulfur dioxide emissions are not expected to off-gas from molten sulfur in the tanks.

The 2015 permitting actions for Arkema, Chemtrade Refinery, Kinder Morgan, LD Commodities Beaumont Export Elevator, and ExxonMobil Chemical Plant did not result in changes in sulfur dioxide emissions. The last permitting action for Shawcor Pipe Protection was issued in 2013. Equistar Chemicals, LP sent a letter in 2012 stating that the plant was being decommissioned, so all of the remaining permits were voided.

Compliance History

30 TAC Chapter 60 requires the TCEQ to calculate a rating of the compliance history of every owner and/or operator of a facility that is regulated under the following state environmental laws: the water quality laws of Texas Water Code Chapter 26, laws for the installation and operation of injection wells, the Texas Solid Waste Disposal Act (Texas Health & Safety Code (THSC) Chapter 361), the Texas Clean Air Act (THSC Chapter 382), and the Texas Radiation Control Act (THSC Chapter 401). For the purposes of the compliance history report, owners and operators are referred to as "customers," and the facility is referred to as the "regulated entity."

Table 5 summarizes the compliance history reports for the facilities located in the Beaumont APWL 1002 area. The compliance history entails both positive and negative factors related to the customer's environmental performance at a site over the past five years. The customer's history is used to calculate a numerical rating. A rating of zero indicates perfect compliance, and a customer's rating increases with each failure to comply. If no information is available on which to base a rating, the customer is assigned a rating of zero and the classification is designated as "unclassified." More information about compliance histories and ratings is available on the compliance history webpage.

Table 5. Summary of compliance history for the facilities in the Beaumont APWL 1002.

Owner/ Operator	RN	Site	Site Rating	Classification	Date Rated	Date Posted
Kinder Morgan Petcoke, LP	103080883	Port of Beaumont Terminal	4.08	Satisfactory	09/01/2008	11/15/2015
Shawcor Pipe Protection LLC	105328629	Shawcor Beaumont Concrete Pipe Coating Facility	0	Unclassified	09/01/2009	01/27/2016
ExxonMobil Oil Corporation	102450756	ExxonMobil Beaumont Refinery	12.21	Satisfactory	09/01/2008	11/15/2015
ExxonMobil Oil Corporation	100542844	ExxonMobil Oil Beaumont Chemical Plant	1.59	Satisfactory	09/01/2008	11/15/2015
Arkema Inc.	100216373	Arkema Beaumont Plant	17.69	Satisfactory	09/01/2008	11/15/2015
Martin Operating Partnership LP	101609436	Martin Operating Neches Terminal	5.42	Satisfactory	09/01/2008	11/15/2015
Chemtrade Refinery Service Inc.	100218932	Chemtrade Refinery Services	0	High	09/01/2011	11/15/2015
LD Commodities Beaumont Export Elevator	100214683	Port of Beaumont Grain Elevator	0	Unclassified	09/01/2008	11/15/2015
Equistar Chemicals LP	100825413	PD Glycol Beaumont Plant	0	High	09/01/2012	11/15/2015

Complaint History

The TCEQ places a high priority on collecting and responding to citizen complaints concerning environmental issues, including visible pollution in air or water, odors, or problems with individuals or companies licensed by the TCEQ. Information on submitting and checking the status of submitted complaints can be found on the environmental complaints webpage.

Table 6 lists the number of complaints received between January 1, 2010, and December 31, 2015, for each of the facilities located within the Beaumont APWL 1002. Complaints are typically not related to a particular chemical and therefore may not be related to sulfur dioxide. However, all complaints are provided for completeness. All three of the complaints against the ExxonMobil Beaumont Refinery mentioned concerns regarding odors.

Table 6. Complaint history for the facilities located in the Beaumont APWL 1002, 2010-2015.

Owner/ Operator	RN	Site	# Complaints 2010 - 2015
Kinder Morgan Petcoke, LP	103080883	Port of Beaumont Terminal	0
Shawcor Pipe Protection LLC	105328629	Shawcor Beaumont Concrete Pipe Coating Facility	1
ExxonMobil Oil Corporation	102450756	ExxonMobil Beaumont Refinery	3
ExxonMobil Oil Corporation	100542844	ExxonMobil Oil Beaumont Chemical Plant	0
Arkema Inc.	100216373	Arkema Beaumont Plant	0
Martin Operating Partnership LP	101609436	Martin Operating Neches Terminal	0
Chemtrade Refinery Service Inc.	100218932	Chemtrade Refinery Services	0
LD Commodities Beaumont Export Elevator	100214683	Port of Beaumont Grain Elevator	0
Equistar Chemicals LP	100825413	PD Glycol Beaumont Plant	0

APWL Proposed Change Recommendation

Several factors support the delisting of sulfur dioxide and the Beaumont area:

- APWL 1002 was established and retained due to historical exceedances of the sulfur dioxide regulatory standard. However, no exceedances of the TCEQ sulfur dioxide regulatory standard were measured at the Beaumont Mary monitoring site from 2010 through 2015, or at the Beaumont Downtown monitoring site from 2012 through 2015.
- No exceedances of the TCEQ sulfur dioxide regulatory standard were measured at the two industry-sponsored community monitors from 2011 through 2015.
- The most recent mobile monitoring trip conducted in 2008 found no exceedances of the sulfur dioxide regulatory standard.

- ExxonMobil has made significant changes to its operating procedures to reduce sulfur dioxide emissions.
- Reported sulfur dioxide emissions in the Beaumont APWL 1002 have decreased substantially since its listing on the APWL.

Based on the available monitoring data and other information (e.g., reductions by ExxonMobil, emissions inventory data), the TD recommends the delisting of sulfur dioxide and the Beaumont area from the APWL.

Appendix A: Public Comment Period

The TCEQ will accept comments on the proposed delisting of Beaumont from the APWL, which is currently listed for the air toxic sulfur dioxide. Interested persons may send comments to APWL@tceq.texas.gov or to the APWL coordinator at the following mailing address:

Jessica Myers, Ph.D.
Air Pollutant Watch List Coordinator
Texas Commission on Environmental Quality
MC 168
P.O. Box 13087
Austin, TX 78711

The comment period begins on August 1, 2016, and the TCEQ will accept comments through September 2, 2016. Any questions regarding the proposed delisting or the APWL process may be forwarded to Dr. Myers by email at APWL@tceq.texas.gov or by telephone at (512) 239-1795 or (877) 992-8370.

Appendix B: Historical Stationary Monitoring Data

Historical exceedances of the state regulatory standard measured at the former Carroll Street Park monitoring site (3 days in 1998, 3 days in 1999, 1 day in 2001, and 2 days in 2002) led to the inclusion of the Beaumont area to the APWL in 2003. Since its inclusion, exceedances have been measured at both the Carroll Street Park monitoring site (1 day in 2006 and 1 day in 2007) and the Beaumont Downtown monitoring site (2 days in 2003, 1 day in 2004, 2 days in 2009, and 1 day in 2011). Table 7 summarizes the historical exceedances for the available TCEQ monitors in the Beaumont region, including the number of exceedances, the number of days with exceedances, and the highest 30-minute average that exceeded the state regulatory standard of 320 ppb_v.

Table 7. Historical exceedances of the 30-minute sulfur dioxide TCEQ regulatory standard in the Beaumont APWL 1002 area.

	Carroll Street Park Monitor (11/19/1997 - 7/30/2008)			Beaumont Mary Monitor (10/13/2010 – 09/22/2015)			Beaumont Downtown Monitor (01/01/1980 – present)		
Year	**# Exceedances (≥ 320 ppb_v)**	**# Days with an Exceedance**	**Highest Conc. (ppb_v)**	**# Exceedances (≥ 320 ppb_v)**	**# Days with an Exceedance**	**Highest Conc. (ppb_v)**	**# Exceedances (≥ 320 ppb_v)**	**# Days with an Exceedance**	**Highest Conc. (ppb_v)**
1998	12	3	505.3	--			3	1	398.2
1999	16	3	597.3	--			No exceedances		
2000	No exceedances			--			No exceedances		
2001	4	1	388.1	--			No exceedances		
2002	13	2	484.4	--			No exceedances		
2003	No exceedances			--			27	2	661.6
2004	No exceedances			--			21	1	511.8
2005	No exceedances			--			No exceedances		
2006	9	1	524.4	--			No exceedances		
2007	3	1	382.8	--			No exceedances		
2008	No exceedances*			--			No exceedances		
2009	--			--			16	2	469.1
2010	--			No exceedances*			No exceedances		
2011	--			No exceedances			16	1	529.5
2012	--			No exceedances			No exceedances		
2013	--			No exceedances			No exceedances		
2014	--			No exceedances			No exceedances		
2015	--			No exceedances*			No exceedances		

-- Monitor not active, * Incomplete sampling year

Appendix C: Historical Mobile Monitoring Data

The historical TCEQ mobile monitoring trip data that contributed to establishment and retention of the Beaumont APWL 1002 are discussed below.

2003 – The TCEQ conducted an ambient air monitoring project in the Beaumont region from July 26 to August 1, 2003. This monitoring effort included more than 100 monitoring locations in Beaumont, Port Arthur, Port Neches, Silsbee, and Orange, Texas. The monitoring locations were mainly along public roads in industrial areas and in a few residential areas. Sampling conditions were conducive for representative sampling downwind of numerous industrial complexes in Beaumont, including Peak Sulfur Incorporated (PSI, Chemtrade), ExxonMobil Oil Company, BOC Gases, Equistar PD Glycol, Goodyear Tire and Rubber Company, and BASF. Four monitoring locations were selected near Peak Sulfur Incorporated after staff experienced strong sulfur odors while conducting an outdoor patrol. All of the reported sulfur dioxide concentrations near ExxonMobil, BOC Gases, and Equistar PD Glycol were below the state regulatory standard of 320 ppb_v. All of the reported sulfur dioxide concentrations near PSI, except for the highest reported 30-minute sample, were below the state regulatory standard. This highest reported 30-minute average sulfur dioxide concentration was 16,600 ppb_v, which included a peak concentration of 22,900 ppb_v. This reported high concentration exceeded the upper limit instrument calibration, as well as the instrument's range, so actual ambient concentrations may have been higher. In addition, an upwind monitoring location detected no sulfur dioxide contribution. As a result, a Region 10 Investigator was notified and his investigation confirmed nuisance odors. PSI was issued a Notice of Enforcement.

The health effects review by the TD noted that TCEQ staff reported strong sulfur like odors near PSI. During the period of the highest reported 30-minute average sulfur dioxide concentration, monitoring staff reported experiencing severe adverse health effects (burning sensation in the lungs). In addition, one staff member sought medical attention hours later because of lingering pain associated with earlier exposure and effects. These health effects are consistent with some of the adverse health effects found in scientific literature, which include eye, upper respiratory, and thoracic pain.

2004 – The TCEQ conducted an ambient air monitoring project in the Beaumont region from March 27 to April 2, 2004. Sampling took place on public roads and residential areas near industrial facilities in seven cities: Beaumont, Port Arthur, Port Neches, Winnie, Nederland, Evadale, and Orange, Texas. In Beaumont, the monitoring staff sampled downwind of ExxonMobil and PSI, both individually and as combined sources. Sampling was also conducted downwind of BASF in response to moderate and occasionally strong odors. All reported sulfur dioxide concentrations were below the state regulatory standard of 320 ppb_v.

2005 – The TCEQ conducted an ambient air monitoring project in the Beaumont region from July 24 to July 29, 2005. Ambient air data were collected either downwind or upwind of approximately 28 industrial facilities in six cities, including Beaumont, Port Arthur, Port Neches, Evadale, Orange, and Winnie, Texas. In Beaumont, the maximum 30-minute net concentration of sulfur dioxide was 442 ppb_v, with an associated peak concentration of 1,210 ppb_v. This sample was measured downwind of PSI and exceeded the state standard of 320 ppb_v. The health effects review by the TD stated that this concentration of sulfur dioxide was consistent with TCEQ staff

reports of strong paper-mill type and elemental sulfur odors; however, adverse health effects would not be expected as a result of exposure to these concentrations.

2006 – The TCEQ conducted an ambient air monitoring project in the Beaumont region from July 8 to July 14, 2006. Ambient air data were collected either downwind or upwind of 23 industrial facilities located in four cities in the Beaumont region, including Beaumont, Evadale, Port Arthur, and Port Neches, TX. In Beaumont, the maximum 30-minute net concentration of sulfur dioxide was 968 ppb_v, with an associated peak concentration of 3,000 ppb_v. This sample was measured downwind of Chemtrade Refinery (formally PSI) and exceeded the state standard of 320 ppb_v. The health effects review by the TD stated that this concentration of sulfur dioxide is consistent with TCEQ staff reports of strong paper-mill type and elemental sulfur odors; however, adverse health effects would not be expected as a result of exposure to these concentrations.

2007 – The TCEQ conducted an ambient air monitoring project in the Beaumont region from May 5 to May 10, 2007. Ambient air data were collected either downwind or upwind of approximately 28 industrial facilities located in six cities in the Beaumont region, including Beaumont, Evadale, Port Arthur, Silsbee, Nederland, and Port Neches, Texas. In Beaumont, the maximum 30-minute net concentration of sulfur dioxide was 819 ppb_v, with an associated peak concentration of 2,080 ppb_v. This sample was measured downwind of Chemtrade Refinery and exceeded the state standard of 320 ppb_v. The health effects review by the TD stated that this concentration of sulfur dioxide is consistent with TCEQ staff reports of strong paper-mill type and elemental sulfur odors; however, concentrations would not have been expected to have caused direct short-term health effects to the general public. The TD noted that the area in which the concentrations were measured was industrial land and exposure to the general public would be unlikely. Also, health effects were not reported by the mobile monitoring staff during the course of the monitoring project.

2008 – The TCEQ conducted an ambient air monitoring project in the Beaumont region from July 25 to August 1, 2008. Ambient air data were collected either downwind or upwind of approximately 33 industrial facilities located in five cities in the Beaumont region, including Beaumont, Evadale, Port Arthur, Port Neches, and Orange, Texas. All reported sulfur dioxide concentrations were below the state regulatory standard of 320 ppb_v.