

**Permit Amendment  
Source Analysis & Technical Review**

|                  |                                           |                           |                        |
|------------------|-------------------------------------------|---------------------------|------------------------|
| Company          | <b>Freeport LNG Development, L.P.</b>     | Permit Numbers            | <b>104840 and N170</b> |
| City             | <b>Freeport</b>                           | Project Number            | <b>264968</b>          |
| County           | <b>Brazoria</b>                           | Account Number            | <b>N/A</b>             |
| Project Type     | <b>Amend</b>                              | Regulated Entity Number   | <b>RN106481500</b>     |
| Project Reviewer | <b>Michael Cheek, P.E.</b>                | Customer Reference Number | <b>CN601720345</b>     |
| Site Name        | <b>Freeport LNG Pretreatment Facility</b> |                           |                        |

**Project Overview**

Freeport LNG Development, L.P. (Freeport LNG) proposes to add a fourth train to their Pretreatment facility to increase delivery of pre-treated natural gas to the separately located Freeport Liquefaction facility (authorized under NSR Permit No. 100114). This project requests updates to representations of emissions from the currently authorized three trains as well as authorization for emissions associated with the fourth train. MSS emissions are authorized in the MAERT. The project is evaluated retrospectively with respect to the standards in place at the time of initial authorization of the LNG Pretreatment Facility in 2014.

**Emission Summary**

| <b>Pollutant</b>               | <b>Current Allowable Emission Rates (tpy)</b> | <b>Proposed Allowable Emission Rates (tpy)</b> | <b>Change in Allowable Emission Rates (tpy)</b> |
|--------------------------------|-----------------------------------------------|------------------------------------------------|-------------------------------------------------|
| NO <sub>x</sub>                | 51.85                                         | 45.87                                          | -5.98                                           |
| CO                             | 68.31                                         | 66.20                                          | -2.11                                           |
| VOC                            | 18.01                                         | 22.86                                          | 4.86                                            |
| PM                             | 87.08*                                        | 80.27                                          | -6.81                                           |
| PM <sub>10</sub>               | 87.08                                         | 80.27                                          | -6.81                                           |
| PM <sub>2.5</sub>              | 87.08                                         | 80.27                                          | -6.81                                           |
| SO <sub>2</sub>                | 24.65                                         | 25.07                                          | 0.42                                            |
| H <sub>2</sub> SO <sub>4</sub> | 1.88                                          | 1.73                                           | -0.15                                           |
| H <sub>2</sub> S               | 1.86                                          | 0.96                                           | -0.90                                           |
| NH <sub>3</sub>                | 74.62                                         | 62.75                                          | -11.87                                          |

\*Note: PM was not speciated in the previous permit, but is now speciated per permit guidance.

| <b>Pollutant</b>               | <b>Project Increase tpy (1)</b> | <b>Major Mod Trigger tpy</b> | <b>NA Netting Trigger tpy (2)</b> | <b>PSD Triggered Y/N</b> | <b>NA Triggered Y/N</b> |
|--------------------------------|---------------------------------|------------------------------|-----------------------------------|--------------------------|-------------------------|
| NO <sub>x</sub>                | 45.87                           | 40                           | 40                                | N                        | Y <sup>(3)</sup>        |
| CO                             | 66.20                           | 100                          |                                   | N                        |                         |
| VOC                            | 22.86                           | 40                           | 40                                | N                        | N                       |
| PM                             | 80.27                           | 100                          |                                   | N                        |                         |
| PM <sub>10</sub>               | 80.27                           | 100                          |                                   | N                        |                         |
| PM <sub>2.5</sub>              | 80.27                           | 100                          |                                   | N                        |                         |
| SO <sub>2</sub>                | 25.07                           | 100                          |                                   | N                        |                         |
| H <sub>2</sub> SO <sub>4</sub> | 1.73                            | 100                          |                                   | N                        |                         |
| H <sub>2</sub> S               | 0.96                            | 100                          |                                   | N                        |                         |

1. Baseline actual emissions are assumed to equal the Potential to Emit since the project is currently under construction.
2. Retrospective Nonattainment (NA) applicability is based on the Severe Nonattainment designation in the Houston-Galveston-Brazoria (HGB) area at the time the original project was authorized in 2014.
3. Although the emissions are increased retrospectively, the original project triggered NA review in 2014.

**Public Notice Information - 30 TAC Chapter 39 Rules**

| Rule Citation | Requirement                                                                                                                                                                                               |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 39.403        | Is Public Notice Required? <span style="float: right;">No</span>                                                                                                                                          |
|               | If no, give reason: The increase in emissions does not exceed public notice de minimis levels of 5 tpy for NO <sub>x</sub> , VOC, and Particulate Matter, 50 tpy for CO, and 10 tpy for SO <sub>2</sub> . |

**Construction Permit & Amendment Requirements - 30 TAC Chapter 116 Rules**

| Rule Citation       | Requirement                                                                                                                                                                                                                                                                                          |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 116.111(a)(2)(G)    | Is the facility expected to perform as represented in the application? <span style="float: right;">Yes</span>                                                                                                                                                                                        |
| 116.111(a)(2)(A)(i) | Are emissions from this facility expected to comply with all TCEQ air quality Rules & Regulations, and the intent of the Texas Clean Air Act? <span style="float: right;">Yes</span>                                                                                                                 |
| 116.111(a)(2)(B)    | Emissions will be measured using the following method: <b>Fuel flow, emergency engine operating hours, sulfur content of diesel fuel, exhaust stack sample ports, CEMS for combustion turbine</b>                                                                                                    |
|                     | Comments on emission verification:                                                                                                                                                                                                                                                                   |
| 116.111(a)(2)(D)    | Subject to NSPS? <span style="float: right;">Yes</span>                                                                                                                                                                                                                                              |
|                     | Subparts <b>A, IIII, KKKK, OOOO, &amp; OOOOa</b>                                                                                                                                                                                                                                                     |
| 116.111(a)(2)(E)    | Subject to NESHAP? <span style="float: right;">Yes</span>                                                                                                                                                                                                                                            |
|                     | Subparts <b>A &amp; ZZZZ</b>                                                                                                                                                                                                                                                                         |
| 116.111(a)(2)(F)    | Subject to NESHAP (MACT) for source categories? <span style="float: right;">No</span>                                                                                                                                                                                                                |
|                     | Subparts &                                                                                                                                                                                                                                                                                           |
| 116.111(a)(2)(H)    | <b>Nonattainment review applicability:</b><br>The project is evaluated retrospectively, with respect to the Severe Nonattainment designation in the Houston-Galveston-Brazoria (HGB) area at the time the original project was authorized in 2014, as discussed in the emission summary table above. |
| 116.111(a)(2)(I)    | <b>PSD review applicability:</b><br>The site is a PSD minor source of each criteria pollutant, and PSD review is not applicable.                                                                                                                                                                     |
| 116.111(a)(2)(L)    | Is Mass Emissions Cap and Trade applicable to the new or modified facilities? <span style="float: right;">Yes</span>                                                                                                                                                                                 |
|                     | If yes, did the proposed facility, group of facilities, or account obtain allowances to operate: <span style="float: right;">Yes</span>                                                                                                                                                              |
| 116.140 - 141       | Permit Fee: \$ <b>75,000.00</b> Fee certification: <b>M717033B</b>                                                                                                                                                                                                                                   |
|                     | Applicable Outstanding Fees: <b>N/A</b>                                                                                                                                                                                                                                                              |

**Title V Applicability - 30 TAC Chapter 122 Rules**

| Rule Citation | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 122.10(14)    | <b>Title V applicability:</b><br>Title V is applicable since Federal Operating Permit No. O-3958 is currently pending for this site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 122.602       | <b>Periodic Monitoring (PM) applicability:</b><br>PM is applicable. For the new equipment for this project: Hours of operation will be recorded for the emergency engines: EPNs PTFFEG-6, PTFFWP2, PTFEAC-2. All new fugitives will be monitored with 28MID LDAR. The new heaters (EPNs 69B-81A, 69B-81B, 69B-81C) will have monitoring for flue gas recirculation rate and oxygen content. Visible emission checks performed quarterly for all new stacks. Outlet temperature and O <sub>2</sub> will be continuously monitored for the new RTO (EPN TO4).                                                                                      |
| 122.604       | <b>Compliance Assurance Monitoring (CAM) applicability:</b><br>The flare (EPN PTFFFLARE) controls VOC greater than 100 tons per year so CAM applies to it. EPN PTFFFLARE has a flow monitor and a pilot flame monitor to ensure proper destruction of VOCs. The combustion turbine (EPN CT) is controlled by selective catalytic reduction for NO <sub>x</sub> and is controlled by oxidation catalyst for CO and VOC. EPN CT is major pre-control for NO <sub>x</sub> and CO. NO <sub>x</sub> and CO CEMS monitor the pollutants directly. The CO CEMS is also a surrogate for VOC monitoring by ensuring the catalyst is functioning correctly |

**Request for Comments**

| <b>Received From</b>                         | <b>Program/Area Name</b> | <b>Reviewed By/Date</b>                       | <b>Comments</b>                                                                       |
|----------------------------------------------|--------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------|
| Region:                                      | <b>12</b>                | <b>Kimberly Lindolph / September 13, 2017</b> | <b>Should EPNs 69B-81A through 69B-81C be added to Special Condition 34(G)?</b>       |
| City:                                        | <b>Freeport</b>          |                                               | <b>Not required</b>                                                                   |
| County:                                      | <b>Brazoria</b>          |                                               | <b>Not required</b>                                                                   |
| ADMT:                                        |                          | <b>Rachel Melton / December 19, 2017</b>      | <b>Air quality analysis was found acceptable for all review types and pollutants.</b> |
| EB&T:                                        |                          | <b>Melissa Ruana / April 19, 2018</b>         | <b>Special Condition No. 32 was found acceptable.</b>                                 |
| Toxicology:                                  |                          |                                               | <b>Not required</b>                                                                   |
| Compliance:                                  |                          |                                               | <b>Not required</b>                                                                   |
| Legal:                                       |                          |                                               | <b>Not required</b>                                                                   |
| Comment resolution and/or unresolved issues: |                          |                                               | <b>Region 12 comments incorporated into Conditions.</b>                               |

## Process/Project Description

Pipeline quality natural gas is supplied from interconnecting intrastate pipeline systems through Freeport LNG Development's existing Stratton Ridge meter station. The gas will be purified in the three currently authorized trains to remove carbon dioxide, sulfur compounds, water, mercury, BTEX, and natural gas liquids. The treated natural gas will then be delivered to the Liquefaction Plant through Freeport LNG's 42-inch gas pipeline.

This project will incorporate a fourth train which will operate identically to the existing three trains and will increase total production capacity from 15.3 million metric tonnes per annum (mtpa) to 20.40 mtpa of treated natural gas.

For this project new equipment being added includes:

- A fourth train for pretreatment of natural gas.
- Three 132 million Btu/hr (MMBtu/hr) heaters, EPNs 69B-81A, 69B-81B, 69B-81C
- One Regenerative Thermal Oxidizer (RTO), EPN TO4
- Emergency Generator, 755 hp, EPN PTFEG-6
- Firewater Pump, 452 hp, EPN PTFFWP2
- Emergency Air Compressor, 580 hp, PTFEAC-2
- Two (2) Slop Oil Tanks, EPNs PTFSOT, PTFSOT-T4 (8,820 gallons each)
- Two (2) Oily Water Tanks, EPNs PTFOWT, PTFOWT-T4 (8,820 gallons each)
- Two (2) Heating Media Tanks, EPNs PTFHMT, PTFHMT-T4 (83,677 gallons each)
- One (1) Amine Storage Tank (147,677 gallons)
- Three (3) Diesel Storage Tanks for the above listed engines, EPNs PTFEGT-6 (750 gallons), PTFFWPT-2 (550 gallons), PTFEACT-2 (550 gallons)

Freeport LNG is also requesting updates to representations for certain of the existing components in Trains 1 through 3 including:

- Increase in the maximum firing rate for the currently authorized heaters (EPNs 65B-81A through 65B-81E) from 130 MMBtu/hr to 132 MMBtu/hr.
- Adjustment to the permitted allowable emission rates for the previously permitted RTOs
- Update to the previously represented horsepower ratings and emission profiles for the existing emergency generators, firewater pumps, and air compressors.
- Increase in permitted allowable fugitive emission rates
- Authorization of ammonia emissions from loading of aqueous ammonia

Due to better project definition, the emissions from Trains 1 – 3 are now calculated as less than what was previously authorized. A review of the revised emission calculations for the Combustion Turbine (EPN CT) indicates that a better heat rate (a higher efficiency), a higher heating value for the combustion gas, and better emission factors are all utilized when compared to the previous emission calculations. This realizes a drop of 9.56 tpy for NO<sub>x</sub> alone for the turbine. In a similar manner, since the actual emergency engines being purchased are now known, more accurate performance and emission factor data can now be used to calculate engines emissions. Overall, preliminary data has now been replaced with data that better represents the final construction effort.

## **Pollution Prevention, Sources, Controls and BACT- [30 TAC 116.111(a)(2)(C)]**

Emissions from the Freeport LNG Liquefaction Plant (NSR Permit No. 100114) were de-aggregated from the Freeport LNG Pretreatment Facility on March 24, 2015.

The application for this project was submitted while construction for Trains 1 – 3 (previously authorized) was ongoing. In light of this the current project has been aggregated with the previous project for initial construction of Trains 1 – 3. This aggregated project will be evaluated retrospectively per the Severe Nonattainment designation in the Houston-Galveston-Brazoria (HGB) area at the time the original project was authorized in 2014.

The Lowest Achievable Emission Rate (LAER) will be applied to NO<sub>x</sub> emissions and Best Available Control Technology (BACT) will be applied to all other pollutants.

In addition to a review of control technology for steady state operations, the BACT and LAER analyses include startup and shutdown emissions and the numerical emission limits in the draft permit reflect this analysis. BACT and LAER for each pollutant include the numerical limits in the Maximum Allowable Emission Rate Table (MAERT).

As part of the BACT and LAER review process, the Texas Commission on Environmental Quality (TCEQ) evaluates information from the Environmental Protection Agency's (EPA's) RACT/BACT/LAER Clearinghouse (RBLC), on-going permitting in Texas and other states, and the TCEQ's continuing review of emissions control developments.

### **Heating Medium Heaters (EPNs 69B-81A, 69B-81B, 69B-81C)**

#### *NO<sub>x</sub>*

The proposed heating medium heaters will each be equipped with an ultra-low NO<sub>x</sub> burner and SCR that will achieve a maximum 2 ppmvd NO<sub>x</sub> at the exhaust of the SCR. This is less than the 5 ppmvd NO<sub>x</sub> @ 3% O<sub>2</sub> value which was determined to be LAER for the previously authorized heaters (EPNs 65B-81A through 65B-81E) in the issuance of the initial permit for this facility. An updated query of the RBLC database did not return lower LAER requirements than were approved with the previous application.

#### *CO*

The heaters will combust boil-off gas (BOG) or pipeline quality natural gas as fuel. Because BOG is a cleaner form of pipeline natural gas, hereafter, either one or a mix of the two will be referenced as natural gas. BACT for CO is the use of natural gas and good combustion practices. The heaters will also incorporate the use of a catalyst ring to achieve an emission limit of 5 ppmvd CO @ 3% O<sub>2</sub>, which is well below the BACT threshold of 50 ppmvd @ 3% O<sub>2</sub>.

#### *VOC*

BACT for VOC is the use of natural gas. Additionally, a catalyst ring will reduce VOC emissions to 1.25 ppmvd @3% O<sub>2</sub> which is an improvement upon the Train 3 heaters which have a 5 ppmvd VOC threshold.

#### *SO<sub>2</sub>, H<sub>2</sub>SO<sub>4</sub>, PM, PM<sub>10</sub>, PM<sub>2.5</sub>*

Low sulfur natural gas and good combustion practices is BACT for these pollutants.

#### *NH<sub>3</sub>*

A search of the RBLC identified a fired heater in the Galena Park area utilizing low NO<sub>x</sub> burners and SCR, with an ammonia emission limit of 10 ppmvd. Ammonia emissions for the Heating Medium Heaters will be 10 ppmvd and is accepted as BACT.

### **Regenerative Thermal Oxidizer (EPN TO4)**

While the thermal oxidizer is a control for VOC and sulfur compounds, it emits NO<sub>x</sub>, PM/PM<sub>10</sub>/PM<sub>2.5</sub>, and CO in addition to SO<sub>2</sub>. The exhaust stream from the RTO will be routed to a packed-bed liquid scrubber and then to a wet electrostatic precipitator. Emission controls identical to the currently authorized RTOs are proposed.

$NO_x$

Freeport LNG proposes the use of low- $NO_x$  burners to limit  $NO_x$  emissions to 0.06 lb/MMBtu to meet LAER. This was determined to be LAER for the previously authorized RTOs. An updated query of the RBLC database did not return lower LAER requirements than were approved with the previous application.

CO

The RTO will use of natural gas as fuel and good combustion practices to meet an emission limit of 5 ppmvd @ 3%  $O_2$ . This is BACT.

VOC

The RTO will be designed to achieve a 99% destruction efficiency for VOCs or else will not exceed 10 ppmvd @ 3% $O_2$ , depending on the incoming vent gas stream. This is BACT.

$SO_2$ ,  $H_2SO_4$ ,  $PM_{10}$ ,  $PM_{2.5}$

For air quality impact reasons, the applicant additionally proposes a wet scrubber and electrostatic precipitator (ESP) to control  $SO_2$  and  $PM/PM_{10}/PM_{2.5}$ . The wet scrubber will achieve 98% control of  $SO_2$ . The ESP will limit  $PM_{10}/PM_{2.5}$  to 0.008 grains per dry standard cubic foot. This is BACT.

### **Emergency Generators, Firewater Pump, Backup Air Compressor**

As the facility has moved into construction, the project has become better defined and the ratings for the currently authorized diesel engines have been revised:

- Emergency generators EPN PTFEG-1 to PTFEG-3 are now rated at 755 HP Tier 2
- Emergency generators EPN PTFEG-4 to PTFEG-5 are now rated at 1,490 HP Tier 2
- Firewater pump engine EPN PTFFWP is now rated at 452 HP Tier 3
- Emergency air compressor engine EPN PTFEAC-1 is now rated at 580 HP Tier 4F

The new additional engines in this project have the following ratings:

- Emergency generator EPN PTFEG-6 is rated at 755 HP (563 kW) Tier 2
- Firewater pump engine EPN PTFFWP2 is rated at 452 HP (337 kW) Tier 3
- Emergency air compressor engine EPN PTFEAC-2 is rated at 580 HP (433 kW) Tier 4F

All engines will utilize ultra-low sulfur diesel fuel (15 ppm sulfur). The firewater pump engines will operate a maximum of 100 hours / year and all other engines will operate for a maximum of 50 hours / year. This is BACT for all engines for CO, VOC, PM,  $PM_{10}$ ,  $PM_{2.5}$ , and  $SO_2$ .

The Tier 2 and Tier 3 engines will adhere to 40 Code of Federal Regulation (CFR) Part 89 and will have limited hours of operation. The Tier 4 engines will be equipped with SCR for the control of  $NO_x$  emissions and diesel particulate filters, and also have limited hours of operation. This is LAER for  $NO_x$  for all engines.

### **Storage Tanks**

Submerged filling and aluminum or white exposed surfaces (as represented in the application) is BACT for the Slop Oil, Oily Water, and Heating Medium storage tanks.

### **Diesel Tanks**

Diesel tanks for the three new additional emergency engines range in size from 550 to 750 gallons. Given the low vapor pressure of diesel (0.022 pounds per square inch at 95 degrees Fahrenheit) and the size of the tanks, no control is economically reasonable. This is BACT for VOC.

### **Ammonia Handling System**

Ammonia emissions from the ammonia storage tank (FIN 67T-94), ammonia day tank (FIN 67T-94), and truck unloading

emissions will be controlled by an ammonia scrubber (EPN 67Z-97-Z1). The ammonia scrubber will have a minimum 99% recovery or 10 ppmv ammonia in the vent gas to satisfy BACT.

### Fugitive Emissions from Piping Components

The fugitive emissions from new piping components (EPNs FUG-TRN4 and FUG-HTR) will be subject to TCEQ BACT for VOC. In alignment with previously authorized fugitive emissions the 28MID LDAR program will be implemented for the new components for fugitive VOC. The TCEQ's AVO program for fugitive components in ammonia service will also be implemented. This is BACT for these types of piping components.

### Emission Reduction Credits

NOx emissions for Trains 1 – 3 have been recalculated as 41.47 tons per year. NOx emissions from Train 4 are calculated as 4.42 tons per year. A multiplier of 1.3 will be used for all four Trains. Thus total emission reduction credits are calculated as 59.7 tons per year. Special Condition No. 32 was modified to reflect this.

### Impacts Evaluation - 30 TAC 116.111(a)(2)(J)

|                                                                     |  |     |                   |        |
|---------------------------------------------------------------------|--|-----|-------------------|--------|
| Was modeling conducted?                                             |  | Yes | Type of Modeling: | AERMOD |
| Will GLC of any air contaminant cause violation of NAAQS?           |  |     |                   | No     |
| Is this a sensitive location with respect to nuisance?              |  |     |                   | No     |
| [§116.111(a)(2)(A)(ii)] Is the site within 3000 feet of any school? |  |     |                   | No     |
| Additional site/land use information:                               |  |     |                   |        |
| None                                                                |  |     |                   |        |

### Summary of Modeling Results

The air quality analysis, as supplemented by the Air Dispersion Modeling Team (ADMT), is deemed acceptable for all review types and pollutants per TCEQ Memorandum dated December 19, 2017. The results are summarized below, and more detailed information regarding the modeling analysis may be found in the aforementioned memo.

### Minor Source NSR and Air Toxics Analysis

**Table 1. Project-Related Modeling Results for State Property Line**

| Pollutant                      | Averaging Time | Previous GLCmax (µg/m³) | Current GLCmax (µg/m³) | Cumulative GLCmax (µg/m³) | De Minimis (µg/m³) |
|--------------------------------|----------------|-------------------------|------------------------|---------------------------|--------------------|
| SO <sub>2</sub>                | 1-hr           | 4.34                    | 1.14                   | 5.48                      | 20.4               |
| H <sub>2</sub> S               | 1-hr           | 0.86                    | 0.1                    | 0.96                      | 2                  |
| H <sub>2</sub> SO <sub>4</sub> | 1-hr           | 0.33                    | 0.09                   | 0.42                      | 1                  |
| H <sub>2</sub> SO <sub>4</sub> | 24-hr          | 0.13                    | 0.05                   | 0.18                      | 0.3                |

**Table 2. Modeling Results for Minor NSR De Minimis**

| Pollutant       | Averaging Time | Previous GLCmax (µg/m³) | Current GLCmax (µg/m³) | Cumulative GLCmax (µg/m³) | De Minimis (µg/m³) |
|-----------------|----------------|-------------------------|------------------------|---------------------------|--------------------|
| SO <sub>2</sub> | 1-hr           | 4.34                    | 1.14                   | 5.48                      | 7.8                |

|                   |        |      |      |      |      |
|-------------------|--------|------|------|------|------|
| SO <sub>2</sub>   | 3-hr   | 3    | 0.92 | 3.92 | 25   |
| SO <sub>2</sub>   | 24-hr  | 1.67 | 0.58 | 2.25 | 5    |
| SO <sub>2</sub>   | Annual | 0.39 | 0.09 | 0.48 | 1    |
| PM <sub>10</sub>  | 24-hr  | 4.95 | 1.93 | 6.88 | 5    |
| PM <sub>2.5</sub> | 24-hr  | 4.5  | 1.86 | 6.36 | 1.2  |
| PM <sub>2.5</sub> | Annual | 0.76 | 0.36 | 1.12 | 0.3  |
| NO <sub>2</sub>   | 1-hr   | 4.64 | 2.2  | 6.84 | 7.5  |
| NO <sub>2</sub>   | Annual | 0.49 | 0.12 | 0.61 | 1    |
| CO                | 1-hr   | 550  | 224  | 774  | 2000 |
| CO                | 8-hr   | 325  | 125  | 450  | 500  |

**Table 3. Total Concentrations for Minor NSR NAAQS (Concentrations > De Minimis)**

| Pollutant         | Averaging Time | GLCmax (µg/m <sup>3</sup> ) | Background (µg/m <sup>3</sup> ) | Total Conc. = [Background + GLCmax] (µg/m <sup>3</sup> ) | Standard (µg/m <sup>3</sup> ) |
|-------------------|----------------|-----------------------------|---------------------------------|----------------------------------------------------------|-------------------------------|
| PM <sub>10</sub>  | 24-hr          | 6.88                        | 62                              | 69                                                       | 150                           |
| PM <sub>2.5</sub> | 24-hr          | 3.45                        | 22                              | 25                                                       | 35                            |
| PM <sub>2.5</sub> | Annual         | 0.81                        | 8.9                             | 10                                                       | 12                            |

The 24-hr PM<sub>2.5</sub> GLCmax is the highest five-year average of the 98<sup>th</sup> percentile of the annual distribution of predicted 24-hr concentrations determined for each receptor. The annual PM<sub>2.5</sub> GLCmax is the highest five-year average of the predicted annual concentrations determined for each receptor. The 24-hr PM<sub>10</sub> GLCmax is the sum of the maximum predicted concentrations from the current project and the previous project.

The ADMT supplemented the NAAQS analysis of 24-hr PM<sub>10</sub> by obtaining a representative background concentration from the EPA AIRS monitor 483550034 located at 5707 Up River Rd., Corpus Christi, Nueces County. The ADMT calculated the highest second high 24-hr concentration from the years 2014-2016 for the 24-hr value. The use of this monitor is reasonable based on a quantitative review of emission sources in the surrounding area of the monitor site relative to the project site.

Background concentrations for PM<sub>2.5</sub> were obtained from the EPA AIRS monitor 483550034 located at 5707 Up River Rd., Corpus Christi, Nueces County. The applicant calculated a three-year average (2014-2016) of the 98<sup>th</sup> percentile of the annual distribution of the 24-hr concentrations for the 24-hr value. The applicant calculated a three-year average (2014-2016) of the annual mean concentrations for the annual value. The use of this monitor is reasonable based on a comparison of county-wide emissions, population, and a quantitative review of emission sources in the surrounding area of the monitor site relative to the project site.

**Table 4. Minor NSR Site-wide Modeling Results for Health Effects**

| Pollutant & CAS# | Averaging Time | GLCmax (µg/m <sup>3</sup> ) | ESL (µg/m <sup>3</sup> ) |
|------------------|----------------|-----------------------------|--------------------------|
|------------------|----------------|-----------------------------|--------------------------|

|                      |        |      |       |
|----------------------|--------|------|-------|
| Ammonia<br>7664-41-7 | 1-hr   | 170  | 180   |
| Benzene<br>71-43-2   | 1-hr   | 2    | 170   |
| Benzene<br>71-43-2   | Annual | 0.05 | 4.5   |
| Isobutane<br>75-28-5 | 1-hr   | 103  | 23000 |

The GLCmax are located along the fence line.

Except as noted above, maximum allowable hourly emission rates were used for the short-term averaging time analyses, and annual average emission rates were used for the annual averaging time analyses.

#### Permit Concurrence and Related Authorization Actions

|                                                                 |                        |
|-----------------------------------------------------------------|------------------------|
| Is the applicant in agreement with special conditions?          | <b>Yes</b>             |
| Company representative(s):                                      | <b>Ruben Velasquez</b> |
| Contacted Via:                                                  | <b>email</b>           |
| Date of contact:                                                | <b>April 3, 2018</b>   |
| Other permit(s) or permits by rule affected by this action:     | <b>No</b>              |
| List permit and/or PBR number(s) and actions required or taken: | <b>N/A</b>             |



April 19, 2018



4/19/18

Project Reviewer  
Michael Cheek, P.E.

Date

Team Leader  
Chase Perry

Date