



October 4, 2023

Leonel Jimenez  
Horn Technologies and Services Inc  
2020 S Golden State Blvd  
Suite 103  
Fowler, CA 93625

**Re: Notice of Preliminary Decision - Authority to Construct**  
**Facility Number: S-10045**  
**Project Number: S-1232320**

Dear Mr. Jimenez:

Enclosed for your review and comment is the District's analysis of Horn Technologies and Services Inc's application for an Authority to Construct for the addition of Methyl Bromide fumigation under the existing fumigation operation listed in S-10045-1-0, at 12371 Ave 120 Pixley, CA 93256.

The notice of preliminary decision for this project has been posted on the District's website ([www.valleyair.org](http://www.valleyair.org)). After addressing all comments made during the 30-day public notice period, the District intends to issue the Authority to Construct. Please submit your written comments on this project within the 30-day public comment period, as specified in the enclosed public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Ms. Paola Pantoja of Permit Services at (661) 392-5617.

Sincerely,

*Steven Davidson*

Brian Clements  
Director of Permit Services

BC:pp

Enclosures

cc: Courtney Graham, CARB (w/ enclosure) via email

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Executive Director/Air Pollution Control Officer

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# San Joaquin Valley Air Pollution Control District

## Authority to Construct Application Review

### Fumigation Operations

Facility Name: Horn Technologies and Services Inc      Date: 07/21/2023  
Mailing Address: 2020 S Golden State Blvd Suite      Engineer: Paola Pantoja  
103 Fowler, CA 93625      Lead Engineer: Steve Davidson  
Contact Person: Leonel Jimenez  
Telephone: 559-316-7034  
E-Mail: [ljimenez@horn-technologies.com](mailto:ljimenez@horn-technologies.com)  
Application #(s): S-10045-1-1  
Project #: S-1232320  
Deemed Complete: 06/23/2023

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#### I. Proposal

Horn Technologies and Services Inc. has requested an Authority to Construct (ATC) permit for the addition of Methyl Bromide fumigation inside of sea containers under the existing fumigation operation listed in S-10045-1-0. The current Final ATC is included in Appendix B.

#### II. Applicable Rules

Rule 2201	New and Modified Stationary Source Review Rule (4/20/23)
Rule 2410	Prevention of Significant Deterioration (6/16/11)
Rule 2520	Federally Mandated Operating Permits (8/15/19)
Rule 4101	Visible Emissions (2/17/05)
Rule 4102	Nuisance (12/17/92)
Rule 4201	Particulate Matter Concentration (12/17/92)
Rule 4202	Particulate Matter-Emission Rate (12/17/92)
Rule 4801	Sulfur Compounds (12/17/92)
CH&SC 41700	Health Risk Assessment
CH&SC 42301.6	School Notice

Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)  
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

#### III. Project Location

The facility is located at 12371 Ave 120 Pixley, CA 93256. The equipment is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project. See Appendix G.

#### **IV. Process Description**

Horn Technologies is a post-harvest fumigation facility that uses a wide variety of commodities using various types of fumigants. Some of their commodities include citruses, nuts, stone fruits, and wood chips. Their fumigation services include, but are not limited to, using chambers, tarps, silos, containers, reefers, green houses and trailers. They use Aluminum phosphide, Methyl Bromide, VaporPH3os, Eco2Fume and ProFume for fumigation. After the commodities have been fumigated they are shipped to different markets overseas such as South Korea, Australia, and India. They also ship to various states across the United States. Commodities are fumigated for the designated exposure hours and at specific temperatures.

#### **V. Equipment Listing**

##### Pre-Project Equipment Description:

S-10045-1-0: FUMIGATION OPERATION FOR FUMIGATION OF ENCLOSED SEA CONTAINERS AND TARPED AREAS UTILIZING PHOSPHINE GAS, SULFURYL FLUORIDE

##### Proposed Modification:

S-10045-1-1: MODIFICATION OF FUMIGATION OPERATION FOR FUMIGATION OF ENCLOSED SEA CONTAINERS AND TARPED AREAS UTILIZING ALUMINUM PHOSPHIDE, PHOSPHINE, AND SULFURYL FLUORIDE: ADD METHYL BROMIDE FUMIGATION TO OPERATION.

##### Post-Project Equipment Description:

S-10045-1-1: FUMIGATION OPERATION FOR FUMIGATION OF ENCLOSED SEA CONTAINERS AND TARPED AREAS UTILIZING PHOSPHINE GAS, SULFURYL FLUORIDE AND METHYL BROMIDE.

#### **VI. Emission Control Technology Evaluation**

##### Methyl Bromide

Only fumigation for Methyl Bromide ( $\text{CH}_3\text{Br}$ ) fumigation. No after controls are proposed for the  $\text{CH}_3\text{Br}$  fumigation. Moreover, there is no readily available and reliable data concerning the amount  $\text{CH}_3\text{Br}$  absorbed by the produce fumigated. Thus, all the  $\text{CH}_3\text{Br}$  used is assumed to be emitted to the atmosphere. However, emissions will be minimized with air-tight fumigation chambers and using fumigant amounts recommended by the manufacturer.

## VII. General Calculations

### A. Assumptions

1. There are a total of 50 sea containers each measuring 40' x 8' x 8'.
2. The following fumigants will have these percentages associated with the emission calculations:
  - C. Methyl Bromide
    - i. 100% VOC
3. The pounds/day and pounds/year limits are proposed by the applicant
4. Since sulfuryl fluoride is not considered an affected pollutant, the requirements of District Rule 2201 (including DEL, BACT, and offsets) are not applicable. Therefore, no calculations are required for sulfuryl fluoride and no usage limits are required to be placed on the permit.
5. Methyl bromide is a fumigant however the district assumes 100% VOC and therefore Rule 2201 calculations will be done for the methyl bromide calculation.

### B. Emission Factors

- The PE for VOC assumes no fumigant is absorbed by the fruit; 100% assumed to be exhausted to atmosphere.

Emission Factors			
Fumigant	Pollutant	Lb-toxin/lb-fumigant	Source
Methyl Bromide	Methyl Bromide	1	District Practice

### C. Calculations

#### 1. Pre-Project Potential to Emit (PE1)

PE1 (lb/year)					
Permit Unit	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
S-10045-1-0	0	0	0	0	0
<b>SSPE1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## 2. Post-Project Potential to Emit (PE2)

Methyl Bromide (VOC) PE2		
Area	Daily Emissions (lb/day)	Yearly Emissions (lb/yr)
Sea Containers	288	5,500
<b>Total (VOC)</b>	<b>288</b>	<b>5,500</b>

## 3. Pre-Project Stationary Source Potential to Emit (SSPE1)

Pursuant to District Rule 2201, the SSPE1 is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of Emission Reduction Credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions (AER) that have occurred at the source, and which have not been used on-site.

Since the facility did not have emissions for criteria pollutants prior to this project the SSPE1 is equal to zero.

## 4. Post-Project Stationary Source Potential to Emit (SSPE2)

Pursuant to District Rule 2201, the SSPE2 is the PE from all units with valid ATCs or PTOs at the Stationary Source and the quantity of ERCs which have been banked since September 19, 1991 for AER that have occurred at the source, and which have not been used on-site.

SSPE2 (lb/year)					
Permit Unit	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
S-10045-1-1	0	0	0	0	5,500
<b>SSPE1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5,500</b>

## 5. Major Source Determination

### **Rule 2201 Major Source Determination:**

Pursuant to District Rule 2201, a Major Source is a stationary source with a SSPE2 equal to or exceeding one or more of the following threshold values. For the purposes of determining major source status the following shall not be included:

- any ERCs associated with the stationary source
- Emissions from non-road IC engines (i.e. IC engines at a particular site at the facility for less than 12 months), pursuant to the Clean Air Act, Title 3, Section 302, US Codes 7602(j) and (z)
- Fugitive emissions, except for the specific source categories specified in 40 CFR 70.2

<b>Rule 2201 Major Source Determination (lb/year)</b>						
	<b>NO<sub>x</sub></b>	<b>SO<sub>x</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO</b>	<b>VOC</b>
SSPE1	0	0	0	0	0	0
SSPE2	0	0	0	0	0	5,500
Major Source Threshold	20,000	140,000	140,000	140,000	200,000	20,000
Major Source?	No	No	No	No	No	No

Note: PM2.5 assumed to be equal to PM10

As seen in the table above, the facility is not an existing Major Source and is not becoming a Major Source as a result of this project.

### **Rule 2410 Major Source Determination:**

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(iii). Therefore the PSD Major Source threshold is 250 tpy for any regulated NSR pollutant.

<b>PSD Major Source Determination (tons/year)</b>						
	<b>NO<sub>2</sub></b>	<b>VOC</b>	<b>SO<sub>2</sub></b>	<b>CO</b>	<b>PM</b>	<b>PM<sub>10</sub></b>
Estimated Facility PE before Project Increase	0	0	0	0	0	0
PSD Major Source Thresholds	250	250	250	250	250	250
PSD Major Source?	No	No	No	No	No	No

As shown above, the facility is not an existing PSD major source for any regulated NSR pollutant expected to be emitted at this facility.

## 6. Baseline Emissions (BE)

The BE calculation (in lb/year) is performed pollutant-by-pollutant for each unit within the project to calculate the QNEC, and if applicable, to determine the amount of offsets required.

Pursuant to District Rule 2201, BE = PE1 for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to District Rule 2201.

As shown in Section VII.C.5 above, the facility is not a Major Source for any pollutant.

Therefore BE = PE1.

As calculated in Section VII.C.1 above, PE1 is summarized in the following table:

BE (lb/year)						
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO	VOC
S-10045-1-1	0	0	0	0	0	0

## 7. SB 288 Major Modification

40 CFR Part 51.165 defines a SB 288 Major Modification as any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act.

Since this facility is not a major source for any of the pollutants addressed in this project, this project does not constitute an SB 288 major modification and no further discussion is required.

As calculated in the Calculation section above:

SB 288 Major Modification Thresholds			
Pollutant	Project PE2 (lb/year)	Threshold (lb/year)	SB 288 Major Modification Calculation Required?
NO <sub>x</sub>	0	50,000	No
SO <sub>x</sub>	0	80,000	No
PM <sub>10</sub>	0	30,000	No
VOC	5,500	50,000	No

Since none of the SB 288 Major Modification Thresholds are surpassed with this project, this project does not constitute an SB 288 Major Modification and no further discussion is required.

## 8. Federal Major Modification / New Major Source

### Federal Major Modification

District Rule 2201 states that a Federal Major Modification is the same as a “Major Modification” as defined in 40 CFR 51.165 and part D of Title I of the CAA.

As defined in 40 CFR 51.165, Section (a)(1)(v) and part D of Title I of the CAA, a Federal Major Modification is any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act. The significant net emission increase threshold for each criteria pollutant is included in Rule 2201.

Since this facility is not a Major Source for any pollutants, this project does not constitute a Federal Major Modification and no further discussion is required.

## 9. Rule 2410 – Prevention of Significant Deterioration (PSD) Applicability Determination

Rule 2410 applies to any pollutant regulated under the Clean Air Act, except those for which the District has been classified nonattainment. The pollutants which must be addressed in the PSD applicability determination for sources located in the SJV and which are emitted in this project are: (See 52.21 (b) (23) definition of significant)

- SO<sub>2</sub> (as a primary pollutant)
- Sulfuric acid mist
- Hydrogen sulfide (H<sub>2</sub>S)
- Total reduced sulfur (including H<sub>2</sub>S)
- Reduced sulfur compounds



## **I. Project Emissions Increase - New Major Source Determination**

The post-project potentials to emit from all new and modified units are compared to the PSD major source thresholds to determine if the project constitutes a new major source subject to PSD requirements.

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(iii). The PSD Major Source threshold is 250 tpy for any regulated NSR pollutant.

<b>PSD Major Source Determination: Potential to Emit (tons/year)</b>						
	<b>NO<sub>2</sub></b>	<b>VOC</b>	<b>SO<sub>2</sub></b>	<b>CO</b>	<b>PM</b>	<b>PM<sub>10</sub></b>
Total PE from New and Modified Units	0	2.75	0	0	0	0
PSD Major Source threshold	250	250	250	250	250	250
New PSD Major Source?	No	No	No	No	No	No

As shown in the table above, the potential to emit for the project, by itself, does not exceed any PSD major source threshold. Therefore Rule 2410 is not applicable and no further analysis is required.

## **10. Quarterly Net Emissions Change (QNEC)**

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen. Detailed QNEC calculations are included in Appendix E.

## **VIII. Compliance Determination**

### **Rule 2201 New and Modified Stationary Source Review Rule**

#### **A. Best Available Control Technology (BACT)**

##### **1. BACT Applicability**

Pursuant to District Rule 2201, Section 4.1, BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis. Unless specifically exempted by Rule 2201, BACT shall be required for the following actions\*:

- a. Any new emissions unit with a potential to emit exceeding two pounds per day,
- b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
- c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an Adjusted Increase in Permitted Emissions (AIPE) exceeding two pounds per day, and/or
- d. Any new or modified emissions unit, in a stationary source project, which results in an SB 288 Major Modification or a Federal Major Modification, as defined by the rule.

\*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

##### **a. New emissions units – PE > 2 lb/day**

As discussed in Section I above, there are no new emissions units associated with this project. Therefore BACT for new units with PE > 2 lb/day purposes is not triggered.

##### **b. Relocation of emissions units – PE > 2 lb/day**

There are no emissions units being relocated from one stationary source to another as a result of this project; therefore, BACT is not triggered due to relocation.

**c. Modification of emissions units – AIPE > 2 lb/day**

$$\text{AIPE} = \text{PE2} - \text{HAPE}$$

Where,

AIPE = Adjusted Increase in Permitted Emissions, (lb/day)

PE2 = Post-Project Potential to Emit, (lb/day)

HAPE = Historically Adjusted Potential to Emit, (lb/day)

$$\text{HAPE} = \text{PE1} \times (\text{EF2}/\text{EF1})$$

Where,

PE1 = The emissions unit's PE prior to modification or relocation, (lb/day)

EF2 = The emissions unit's permitted emission factor for the pollutant after modification or relocation. If EF2 is greater than EF1 then EF2/EF1 shall be set to 1

EF1 = The emissions unit's permitted emission factor for the pollutant before the modification or relocation

$$\text{AIPE} = \text{PE2} - (\text{PE1} \times (\text{EF2} / \text{EF1}))$$

VOC:

S-10045-1-1:

$$\begin{aligned}\text{AIPE} &= 288.0 - (0 \times (0.046/0.046)) \\ &= 288.0 - 0 \times 1 \\ &= 288.0 \text{ lb/day}\end{aligned}$$

As demonstrated above, the AIPE is greater than 2.0 lb/day for VOC emissions. Therefore BACT is triggered. See Appendix D for the BACT Guideline and Analysis.

**d. SB 288/Federal Major Modification**

As discussed in Sections VII.C.7 and VII.C.8 above, this project does not constitute an SB 288 and/or Federal Major Modification for any pollutant. Therefore BACT is not triggered for any pollutant.

**B. Offsets**

**1. Offset Applicability**

Pursuant to District Rule 2201, Section 4.5, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the SSPE2 equals or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

The SSPE2 is compared to the offset thresholds in the following table.

Offset Determination (lb/year)					
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
SSPE2	0	0	0	0	5,500
Offset Thresholds	20,000	54,750	29,200	200,000	20,000
Offsets Triggered?	No	No	No	No	No

## 2. Quantity of District Offsets Required

As seen above, the SSPE2 is not greater than the offset thresholds for all the pollutants; therefore offset calculations are not necessary and offsets will not be required for this project.

## C. Public Notification

### 1. Applicability

Pursuant to District Rule 2201, Section 5.4, public noticing is required for:

- New Major Sources, Federal Major Modifications, and SB 288 Major Modifications,
- Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
- Any project which results in the offset thresholds being surpassed,
- Any project with an SSPE of greater than 20,000 lb/year for any pollutant, and/or
- Any project which results in a Title V significant permit modification

#### a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications

As shown in Section VII.C.5 above, this existing minor source facility is not becoming a Major Source as a result of this project. Therefore, this facility is not a New Major Source and this project does not constitute an SB 288 or a Federal Major Modification. Consequently, public noticing for this project for New Major Source, Federal Major Modification, or SB 288 Major Modification purposes is not required.

**b. PE > 100 lb/day**

The PE2 for this new unit is compared to the daily PE Public Notice thresholds in the following table:

PE > 100 lb/day Public Notice Thresholds			
Pollutant	PE2 (lb/day)	Public Notice Threshold	Public Notice Triggered?
NO <sub>x</sub>	0	100 lb/day	No
SO <sub>x</sub>	0	100 lb/day	No
PM <sub>10</sub>	0	100 lb/day	No
CO	0	100 lb/day	No
VOC	288	100 lb/day	Yes

Therefore, public noticing for PE > 100 lb/day purposes is required.

**c. Offset Threshold**

Public notification is required if the pre-project Stationary Source Potential to Emit (SSPE1) is increased to a level exceeding the offset threshold levels. The following table compares the SSPE1 with the SSPE2 in order to determine if any offset thresholds have been surpassed with this project.

Offset Thresholds				
Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
NO <sub>x</sub>	0	0	20,000 lb/year	No
SO <sub>x</sub>	0	0	54,750 lb/year	No
PM <sub>10</sub>	0	0	29,200 lb/year	No
CO	0	0	200,000 lb/year	No
VOC	0	5,500	20,000 lb/year	No

As demonstrated above, there were no thresholds surpassed with this project; therefore public noticing is not required for offset purposes.

**d. SSiPE > 20,000 lb/year**

Public notification is required for any permitting action that results in a SSiPE of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSiPE = SSPE2 – SSPE1. The SSiPE is compared to the SSiPE Public Notice thresholds in the following table.

SSiPE Public Notice Thresholds					
Pollutant	SSPE2 (lb/year)	SSPE1 (lb/year)	SSiPE (lb/year)	SSiPE Public Notice Threshold	Public Notice Required?
NO <sub>x</sub>	0	0	0	20,000 lb/year	No
SO <sub>x</sub>	0	0	0	20,000 lb/year	No
PM <sub>10</sub>	0	0	0	20,000 lb/year	No
CO	0	0	0	20,000 lb/year	No
VOC	5,500	0	5,500	20,000 lb/year	No

As demonstrated above, the SSiPEs for all pollutants were less than 20,000 lb/year; therefore public noticing for SSiPE purposes is not required.

**e. Title V Significant Permit Modification**

Since this facility does not have a Title V operating permit, this change is not a Title V significant Modification, and therefore public noticing is not required.

**2. Public Notice Action**

As discussed above, public noticing is required for this project for VOC emissions in excess of 100 lb/day. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and a public notice will be electronically published on the District's website prior to the issuance of the ATC for this equipment.

## **D. Daily Emission Limits (DELs)**

DELs and other enforceable conditions are required by Rule 2201 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. The DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT.

### **Proposed Rule 2201 (DEL) Conditions:**

#### **S-10045-1-1:**

- No fumigant other than Aluminum phosphide, ECO2FUME, VAPORPH2OS, ProFume and Methyl Bromide (CH<sub>3</sub>Br) shall be used.
- The fumigation chambers shall be sealed air-tight during the fumigation process.
- The amount of CH<sub>3</sub>Br used per fumigation cycle shall not exceed the manufacturer recommendation.
- VOC emissions shall not exceed 288.0 lb/day, equivalent to the use of 288.0 lb-CH<sub>3</sub>Br/day.

## **E. Compliance Assurance**

### **1. Source Testing**

MeBr Fumigation:

Source testing is not required as all MeBr used will be assumed to be emitted to the atmosphere.

### **2. Monitoring**

Testing with detector tubes for residual SO<sub>2</sub> gas concentration in fumigation rooms shall be performed at the end of each fumigation cycle (prior to venting to venting to atmosphere or re-opening room for storage operation).

### **3. Recordkeeping**

Recordkeeping is required to demonstrate compliance with the offset, public notification and daily emission limit requirements of Rule 2201. The following condition(s) are listed on the permit to operate:

#### **S-10045-1-1:**

- *Permittee shall maintain daily records of the amount of CH<sub>3</sub>Br used. [Rule 2201]*
- *All records shall be retained onsite for a period of at least 5 years and shall be made available for District inspection upon request. [Rule 2201]*

#### **4. Reporting**

No reporting is required to demonstrate compliance with Rule 2201.

##### **Rule 2410 Prevention of Significant Deterioration**

As shown in Section VII.C.9 above, this project does not result in a new PSD major source or PSD major modification. No further discussion is required.

##### **Rule 2520 Federally Mandated Operating Permits**

Since this facility's potential emissions do not exceed any major source thresholds of Rule 2201, this facility is not a major source, and Rule 2520 does not apply.

##### **Rule 4001 New Source Performance Standards (NSPS)**

This rule incorporates NSPS from Part 60, Chapter 1, Title 40, Code of Federal Regulations (CFR); and applies to all new sources of air pollution and modifications of existing sources of air pollution listed in 40 CFR Part 60. However, no subparts of 40 CFR Part 60 apply to fumigation operations.

##### **Rule 4002 National Emission Standards for Hazardous Air Pollutants (NESHAPs)**

This rule incorporates NESHAPs from Part 61, Chapter I, Subchapter C, Title 40, CFR and the NESHAPs from Part 63, Chapter I, Subchapter C, Title 40, CFR; and applies to all sources of hazardous air pollution listed in 40 CFR Part 61 or 40 CFR Part 63. However, no subparts of 40 CFR Part 61 or 40 CFR Part 63 apply to fumigation operations.

##### **Rule 4101 Visible Emissions**

Per Section 5.0, no person shall discharge into the atmosphere emissions of any air contaminant aggregating more than 3 minutes in any hour which is as dark as or darker than Ringelmann 1 or 20% opacity. This unit is currently required to be in compliance with the requirements of this rule. There are no changes expected that would affect this unit's emissions. Therefore, continued compliance is expected and the following condition will be placed on the permit:

- {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]



## Rule 4102 Nuisance

Rule 4102 prohibits discharge of air contaminants which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. Therefore, compliance with this rule is expected.

### California Health & Safety Code 41700 (Health Risk Assessment)

District Policy APR 1905 – *Risk Management Policy for Permitting New and Modified Sources* specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

District policy APR 1905 also specifies that the increase in emissions associated with a proposed new source or modification of an existing source shall not result in an increase in cancer risk greater than the District's significance level (20 in a million) and shall not result in acute and/or chronic risk indices greater than 1.

According to the Technical Services Memo for this project, the total facility prioritization score including this project was greater than one. Therefore, an HRA was required to determine the short-term acute and long-term chronic exposure from this project.

The resulting prioritization score, acute hazard index, chronic hazard index, and cancer risk for this project is shown below.

HRA Summary						
Units	Prioritization Score	Acute Hazard Index	Chronic Hazard Index	Maximum Individual Cancer Risk	T-BACT Required	Special Permit Requirements
1-1	18.89	0.78	0.35	N/A <sup>1</sup>	No	Yes
<b>Project Totals</b>	18.89	0.78	0.35	N/A <sup>1</sup>		
<b>Facility Totals</b>	>1	0.98	0.99	0.00E+00		

Notes:

Chronic hazard index and maximum individual cancer risk were not calculated for Units 4-4 and 5-1 since there is no risk factor or the risk factor is so low that it has been determined to be insignificant for this type of unit.

## **Discussion of T-BACT**

BACT for toxic emission control (T-BACT) is required if the cancer risk exceeds one in one million. As demonstrated above, T-BACT is not required for this project because the HRA indicates that the risk is not above the District's thresholds for triggering T-BACT requirements; therefore, compliance with the District's Risk Management Policy is expected.

In accordance with District policy APR 1905, no further analysis is required, and compliance with District Rule 4102 requirements is expected.

See Appendix C: Health Risk Assessment Summary

The following permit conditions are required to ensure compliance with the assumptions made for the risk management review:

### Unit S-10045-1-1:

#### Sea Container Methyl Bromide Fumigation

- *Fumigant offgassing shall occur no less than 40 meters distance from the residential property line to the west of the facility, no less than 100 meters from the facility's northern property line, and no less than 180 meters from the facility's southern property line. [Rule 4102]*
- *Fumigant offgassing shall only occur between the hours of 6AM and 8PM. [Rule 4102]*
- *Methyl bromide offgassing shall not exceed 12 pounds of methyl bromide per any rolling hour. [Rule 4102]*
- *Annual methyl bromide throughput shall not exceed 5,500 pounds per year. [Rule 4102]*

## **Rule 4801 Sulfur Compounds**

This rule limits sulfur compound emissions at the point of discharge at 0.2 percent by volume (2,000 ppmv), calculated as sulfur dioxide (SO<sub>2</sub>), on a dry basis averaged over 15 consecutive minutes.

There are no changes to the permit for sulfur compounds so no further discussion is required. Therefore, compliance with this rule is expected.

## **California Health & Safety Code 42301.6 (School Notice)**

The District has verified that this site is not located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

## **California Environmental Quality Act (CEQA)**

CEQA requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The District adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities;
- Identify the ways that environmental damage can be avoided or significantly reduced;
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible; and
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

The District performed an Engineering Evaluation (this document) for the proposed project and determined that all project specific emission unit(s) are not subject to Best Available Control Technology (BACT) requirements. Furthermore, the District has determined that the proposed project has no potential emission increases and will have a less than significant health impact on sensitive receptors.

Issuance of permits for emissions units not subject to BACT requirements and with health impact less than significant is a matter of ensuring conformity with applicable District rules and regulations and does not require discretionary judgment or deliberation. Thus, the District concludes that this permitting action constitutes a ministerial approval. Section 21080 of the Public Resources Code exempts from the application of CEQA those projects over which a public agency exercises only ministerial approval. Therefore, the District finds that this project is exempt from the provisions of CEQA.

### **Indemnification Agreement/Letter of Credit Determination**

According to District Policy APR 2010 (CEQA Implementation Policy), when the District is the Lead or Responsible Agency for CEQA purposes, an indemnification agreement and/or a letter of credit may be required. The decision to require an indemnity agreement and/or a letter of credit is based on a case-by-case analysis of a particular project's potential for litigation risk, which in turn may be based on a project's potential to generate public concern, its potential for significant impacts, and the project proponent's ability to pay for the costs of litigation without a letter of credit, among other factors.

The criteria pollutant emissions and toxic air contaminant emissions associated with the proposed project are not significant, and there is minimal potential for public concern for this particular type of facility/operation. Therefore, an Indemnification Agreement and/or a Letter of Credit will not be required for this project in the absence of expressed public concern.

## IX. Recommendation

Compliance with all applicable rules and regulations is expected. Issue ATC S-10045-1-1 subject to the permit conditions on the attached draft ATC in Appendix A.

## X. Billing Information

Annual Permit Fees			
Permit Number	Fee Schedule	Fee Description	Annual Fee
S-10045-1-1	3020-06	Fumigation Operation	\$128

## Appendixes

- A: Draft ATC
- B: Current Final ATC
- C: HRA Summary
- D: BACT Guideline and Analysis
- E: Quarterly Net Emissions Change
- F: Emission Profiles
- G: Location Map

## **APPENDIX A**

### **Draft ATC**

San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

ISSUANCE DATE: DRAFT

**PERMIT NO:** S-10045-1-1

**LEGAL OWNER OR OPERATOR:** HORN TECHNOLOGIES AND SERVICES INC.

**MAILING ADDRESS:** 2020 S. GOLDEN STATE BLVD STE 103  
FOWLER, CA 93625

**LOCATION:** 12371 AVE 120  
PIXLEY, CA 93256

**EQUIPMENT DESCRIPTION:**

MODIFICATION OF FUMIGATION OPERATION FOR FUMIGATION OF ENCLOSED SEA CONTAINERS AND TARPED AREAS UTILIZING ALUMINUM PHOSPHIDE, PHOSPHINE, AND SULFURYL FLUORIDE: ADD METHYL BROMIDE FUMIGATION TO OPERATION

**CONDITIONS**

1. No fumigant other than Aluminum phosphide, ECO2FUME, VAPORPH2OS, ProFume and Methyl Bromide (CH3Br) shall be used. [District Rule 2201]
2. {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
3. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
4. Fumigant offgassing shall occur no less than 40 meters distance from the residential property line to the west of the facility, no less than 100 meters from the facility's northern property line, and no less than 180 meters from the facility's southern property line. [District Rule 4102]
5. Fumigant offgassing shall only occur between the hours of 6AM and 8PM. [District Rule 4102]
6. Methyl bromide offgassing shall not exceed 12 pounds of methyl bromide per any rolling hour. [District Rule 4102]
7. Annual methyl bromide throughput shall not exceed 5,500 pounds per year. [District Rule 4102]
8. VOC emissions shall not exceed 288.0 lb/day, equivalent to the use of 288.0 lb-CH3Br/day. [District Rule 4102]
9. Northern Area of Property Sea Container Phosphine Fumigation: Fumigant offgassing shall occur no less than 40 meters distance from the residential property line to the west of the facility. [District Rule 4102]

CONDITIONS CONTINUE ON NEXT PAGE

**YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT.** This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Samir Sheikh, Executive Director / APCO

Brian Clements, Director of Permit Services

S-10045-1-1 : Oct 2 2023 1:32PM -- PANTOJAP : Joint Inspection NOT Required

10. Northern Area of Property Sea Container Phosphine Fumigation: Fumigant offgassing shall only occur between the hours of 6AM and 8PM. [District Rule 4102]
11. Northern Area of Property Sea Container Phosphine Fumigation: Annual northern area of property sea container phosphine throughput shall not exceed 1,500 pounds per year. [District Rule 4102]
12. Southern Area of Property Sea Container Phosphine Fumigation: Fumigant offgassing shall occur no less than 40 meters distance from the southernmost residential property line to the north-northwest of the facility, no less than 30 meters from the facility's western property line, no less than 50 meters from the facility's southern property line, and no less than 50 meters from the facility's eastern property line. [District Rule 4102]
13. Southern Area of Property Sea Container Phosphine Fumigation: Fumigant offgassing shall only occur between the hours of 6AM and 8PM. [District Rule 4102]
14. Southern Area of Property Sea Container Phosphine Fumigation: Annual southern area of property sea container phosphine throughput shall not exceed 1,500 pounds per year. [District Rule 4102]
15. Tarp Fumigation: Fumigant offgassing shall occur no less than 40 meters distance from the southernmost residential property line to the north-northwest of the facility, no less than 30 meters from the facility's western property line, no less than 50 meters from the facility's southern property line, and no less than 50 meters from the facility's eastern property line. [District Rule 4102]
16. Tarp Fumigation: Annual tarp fumigation phosphine throughput shall not exceed 3,206 pounds per year. [District Rule 4102]
17. Stockpile Fumigation: Fumigant offgassing shall occur no less than 40 meters distance from the southernmost residential property line to the north-northwest of the facility, no less than 30 meters from the facility's western property line, no less than 50 meters from the facility's southern property line, and no less than 50 meters from the facility's eastern property line. [District Rule 4102]
18. Stockpile Fumigation: Annual stockpile fumigation phosphine throughput shall not exceed 1,069 pounds per year. [District Rule 4102]
19. Sea Container, Tarp, and Stockpile Phosphine Fumigation: The total facility phosphine fumigant usage shall not exceed 7,275 pounds per year. [District Rule 4102]
20. Sea Container, Tarp, and Stockpile Phosphine Fumigation: Total monthly facility usage of phosphine shall not exceed the following conditions for any of the months listed. [District Rule 4102]
21. January, February, March, and December: No more than 8% of the annual phosphine total (582 pounds) shall be used in each of these four months. [District Rule 4102]
22. April: No more than 10% of the annual phosphine total (727.5 pounds) shall be used in this month. [District Rule 4102]
23. May and June: No more than 4% of the annual phosphine total (291 pounds) shall be used in each of these two months. [District Rule 4102]
24. July and August: No more than 3% of the annual phosphine total (218.3 pounds) shall be used in each of these two months. [District Rule 4102]
25. September: No more than 9% of the annual phosphine total (654.7 pounds) shall be used in this month. [District Rule 4102]
26. October: No more than 20% of the annual phosphine total (1,455 pounds) shall be used in this month. [District Rule 4102]
27. November: No more than 15% of the annual phosphine total (1,091.2 pounds) shall be used in this month. [District Rule 4102]
28. Permittee shall maintain daily records of the amount of CH<sub>3</sub>Br used. [District Rule 2201]
29. All records shall be retained onsite for a period of at least 5 years and shall be made available for District inspection upon request. [District Rule 2201]

## **APPENDIX B**

### **Current Final ATC**





## AUTHORITY TO CONSTRUCT

**PERMIT NO:** S-10045-1-0

**ISSUANCE DATE:** 05/25/2023

**LEGAL OWNER OR OPERATOR:** HORN TECHNOLOGIES AND SERVICES INC.

**MAILING ADDRESS:** 2020 S. GOLDEN STATE BLVD STE 103  
FOWLER, CA 93625

**LOCATION:** 12371 AVE 120  
PIXLEY, CA 93256

**EQUIPMENT DESCRIPTION:**

FUMIGATION OPERATION FOR FUMIGATION OF ENCLOSED SEA CONTAINERS AND TARPED AREAS UTILIZING ALUMINUM PHOSPHIDE, PHOSPHINE, AND SULFURYL FLUORIDE.

## CONDITIONS

1. No fumigant other than Aluminum phosphide, ECO2FUME, VAPORPH2OS, and ProFume shall be used. [District Rule 2201]
2. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
3. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
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### CONDITIONS CONTINUE ON NEXT PAGE

**YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT.** This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Samir Sheikh, Executive Director / APCO

*Steven D Davidson*

Brian Clements, Director of Permit Services

S-10045-1-0 : May 25 2023 9:59AM - PANTOJAP : Joint Inspection NOT Required

8. Southern Area of Property Sea Container Phosphine Fumigation: Fumigant offgassing shall only occur between the hours of 6AM and 8PM. [District Rule 4102]
9. Southern Area of Property Sea Container Phosphine Fumigation: Annual southern area of property sea container phosphine throughput shall not exceed 1,500 pounds per year. [District Rule 4102]
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11. Tarp Fumigation: Annual tarp fumigation phosphine throughput shall not exceed 3,206 pounds per year. [District Rule 4102]
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18. May and June: No more than 4% of the annual phosphine total (291 pounds) shall be used in each of these two months. [District Rule 4102]
19. July and August: No more than 3% of the annual phosphine total (218.3 pounds) shall be used in each of these two months. [District Rule 4102]
20. September: No more than 9% of the annual phosphine total (654.7 pounds) shall be used in this month. [District Rule 4102]
21. October: No more than 20% of the annual phosphine total (1,455 pounds) shall be used in this month. [District Rule 4102]
22. November: No more than 15% of the annual phosphine total (1,091.2 pounds) shall be used in this month. [District Rule 4102]

## **APPENDIX C**

### **HRA Summary**

# San Joaquin Valley Air Pollution Control District

## Risk Management Review

To: Paola Pantoja – Permit Services  
From: Michael Scott – Technical Services  
Date: July 12, 2023  
Facility Name: HORN TECHNOLOGIES AND SERVICES INC.  
Location: AVE 120 AND RD 124, PIXLEY  
Application #(s): S-10045-1-1  
Project #: S-1232320

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### 1. Summary

#### 1.1 Risk Management Review (RMR)

Units	Prioritization Score	Acute Hazard Index	Chronic Hazard Index	Maximum Individual Cancer Risk	T-BACT Required	Special Permit Requirements
1-1	18.89	0.78	0.35	N/A <sup>1</sup>	No	Yes
<b>Project Totals</b>	18.89	0.78	0.35	N/A <sup>1</sup>		
<b>Facility Totals</b>	>1	0.98	0.99	0.00E+00		

Notes:

1. Maximum individual cancer risk was not calculated for Unit 1-1 since there is no risk factor or the risk factor is so low that it has been determined to be insignificant for this type of unit.

#### 1.2 Proposed Permit Requirements

To ensure that human health risks will not exceed District allowable levels; the following shall be included as requirements for:

##### Unit # 1-1

##### Sea Container Methyl Bromide Fumigation

1. Fumigant offgassing shall occur no less than 40 meters distance from the residential property line to the west of the facility, no less than 100 meters from the facility's northern property line, and no less than 180 meters from the facility's southern property line.
2. Fumigant offgassing shall only occur between the hours of 6AM and 8PM.
3. Methyl bromide offgassing shall not exceed 12 pounds of methyl bromide per any rolling hour.
4. Annual methyl bromide throughput shall not exceed 5,500 pounds per year.

## 2. Project Description

Technical Services received a request to perform a Risk Management Review (RMR) for the following:

- Unit -1-1: MODIFICATION OF FUMIGATION OPERATION FOR FUMIGATION OF ENCLOSED SEA CONTAINERS AND TARPED AREAS UTILIZING ALUMINUM PHOSPHIDE, PHOSPHINE, AND SULFURYL FLUORIDE: ADD METHYL BROMIDE FUMIGATION TO OPERATION

## 3. RMR Report

### 3.1 Analysis

The District performed an analysis pursuant to the District's Risk Management Policy for Permitting New and Modified Sources (APR 1905, May 28, 2015) to determine the possible cancer and non-cancer health impact to the nearest resident or worksite. This policy requires that an assessment be performed on a unit by unit basis, project basis, and on a facility-wide basis. If a preliminary prioritization analysis demonstrates that:

- A unit's prioritization score is less than the District's significance threshold and;
- The project's prioritization score is less than the District's significance threshold and;
- The facility's total prioritization score is less than the District's significance threshold

Then, generally no further analysis is required.

The District's significant prioritization score threshold is defined as being equal to or greater than 1.0. If a preliminary analysis demonstrates that either the units', the project's or the facility's total prioritization score is greater than the District threshold, a screening or a refined assessment is required.

If a refined assessment is greater than one in a million but less than 20 in a million for carcinogenic impacts (cancer risk) and less than 1.0 for the acute and chronic hazard indices (non-carcinogenic) on a unit by unit basis, project basis and on a facility-wide basis the proposed application is considered less than significant. For units that exceed a cancer risk of one in a million, Toxic Best Available Control Technology (TBACT) must be implemented.

Toxic emissions for this project were calculated using the following methods:

- Fumigant emission rates for the proposed fumigation operation were provided by the Permit Engineer. These emissions were speciated into toxic air contaminants using emission factors derived from the District's FYI 81.

These emissions were input into the San Joaquin Valley APCD's Hazard Assessment and Reporting Program (SHARP). In accordance with the District's Risk Management Policy, risks from the proposed unit's toxic emissions were prioritized using the procedure in the 2016 CAPCOA Facility Prioritization Guidelines. The prioritization score for this proposed facility was greater than 1.0 (see RMR Summary Table). Therefore, a refined health risk assessment was required.

The AERMOD model was used, with the parameters outlined below and meteorological data for 2007-2011 from Tipton (rural dispersion coefficient selected) to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the SHARP Program, which then used the Air Dispersion Modeling and Risk Tool (ADMRT) of the Hot Spots Analysis and Reporting

Program Version 2 (HARP 2) to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

Source Process Rates					
Unit ID	Process ID	Process Material	Process Units	Hourly Process Rate	Annual Process Rate
1-1	1 (Sea Container MB)	Methyl Bromide	Lbs.	12.0	5,500

Point Source Parameters						
Unit ID	Unit Description	Release Height (m)	Temp. (°K)	Exit Velocity (m/sec)	Stack Diameter (m)	Vertical/ Horizontal/ Capped
1-1	Sea Container MB	9.14	Ambient	58.21	0.20	Vertical

## 4. Conclusion

### 4.1 RMR

The cumulative acute and chronic indices for this facility, including this project, are below 1.0; and the cumulative cancer risk for this facility, including this project, is less than 20 in a million. In addition, the cancer risk for each unit in this project is less than 1.0 in a million. **In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).**

To ensure that human health risks will not exceed District allowable levels; the permit requirements listed on page 1 of this report must be included for this proposed unit.

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

## 5. Attachments

- A. Modeling request from the project engineer
- B. Additional information from the applicant/project engineer
- C. Prioritization score w/ toxic emissions summary
- D. Facility Summary

# RMR REQUEST PROJECT INFORMATION Form

**I. Project Description:** MODIFICATION OF FUMIGATION OPERATION FOR FUMIGATION OF ENCLOSED SEA CONTAINERS AND TARPED AREAS UTILIZING ALUMINUM PHOSPHIDE, PHOSPHINE, AND SULFURYL FLUORIDE: ADD METHYL BROMIDE FUMIGATION TO OPERATION

## II Receptor Location(s)

Receptor Description	Distance From Source
Residence	20-200 FT
Business	1280 FT

## III. Process Rate to be Modeled

Process Description	Process Rates	
	Hourly Rate	Annual Rate
methyl bromide Fumigation	12	4368 HRS/YEAR

## IV. Emission Rate or Substances to be Modeled

Potential to Emit to be modeled (lb/hr)						
Permit	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	*PM <sub>2.5</sub>	CO	VOC
-1-1						

Potential to Emit to be modeled (lb/year)						
Permit	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	*PM <sub>2.5</sub>	CO	VOC
-1-1						

\*For projects triggering AAQA

## V. Project Location (Select One)

- ☐ Urban – Area of dense population  
☒ Rural – Area of sparse population

## VI. Point Sources

Stack Parameters:

Stack Height (Units)	Rain Cap Type	Inside Diameter (Units)	Gas Exit Flowrate (Units)	Exhaust Discharge Direction	Gas Exit Temperature (Units)
	Select Type				

## VII. Area Sources<sup>1</sup> Parameters

Release Height <sup>2</sup> (Units)	Length Of Side (Units)

1. An area source is defined as in an area with four equal sides.

2. Release height is defined as the physical height of the source. For example, if a sump has a three meter brim surrounding it. The physical height of the sump is three meters. Height is measured from the ground to the top of the source.



# Prioritization Score For Horn Technologies Project : S-1232320 Monthly

Device ID	Device Name	Emissions and Potency					Dispersion Adjustment		
1	Methyl Bromide Containers	Method					Method		
Process ID : 1									
CAS#	Pollutant Name	Lbs / Hour	Lbs / Year	Cancer	Chronic	Acute	Cancer	Chronic	Acute
74839	Methyl bromide {Bromomethane}	1.20E+01	5.50E+03		18.887	4.615		18.89	4.62
Prioritization Score for Process 1					1.89E+01	4.62E+00		1.89E+01	4.62E+00
Prioritization Score for Device 1					1.89E+01	4.62E+00		1.89E+01	4.62E+00

## Emissions and Potency Method

### Prioritization Scores

Cancer	CHRONIC	ACUTE
	1.89E+01	4.62E+00

TS = Total Score  
t = Specific Toxic Substance  
EYR = Emissions Lbs / Year  
EHR = Emissions Lbs / Hour  
NF = Normalization Factor ( Cancer = 7700, Acute = 1500, Chronic = 150)  
URF = Unit Risk Factor  
AREL = Acute Reference Exposure Level  
CREL = Chronic Reference Exposure Level  
RP = Receptor Proximity Adjustment Factor  
R = Receptor Distance

RP	
0m < R < 100m	1.0
100m < R < 250m	0.25
250m < R < 500m	0.04
500m < R < 1000m	0.011
1000m < R < 1500m	0.003
1500m < R < 2000m	0.002
R > 2000m	0.001

Cancer Score:  
 $TS(t) = EYR(t) * URF(t) * RP * 7700$

Acute Score:  
 $TS(t) = [ EHR(t) / AREL(t) ] * RP * 1500$

Chronic Score:  
 $TS(t) = \{ ( [ EYR(t) / \text{Hours Of Operation} ] / CREL(t) ) * RP * 150 \}$

## Dispersion Adjustment Method

### Prioritization Scores

Cancer	CHRONIC	ACUTE
	1.89E+01	4.62E+00

TS = Total Score  
t = Specific Toxic Substance  
EYR = Emissions Lbs / Year  
EHR = Emissions Lbs / Hour  
NF = Normalization Factor ( Cancer = 128, Acute = 25, Chronic = 2.5)  
URF = Unit Risk Factor  
AREL = Acute Reference Exposure Level  
CREL = Chronic Reference Exposure Level  
SHA = Stack Height Adjustment ( < 20m = 60, < 45m = 9, >= 45m = 1)  
RP = Receptor Proximity Adjustment Factor  
R = Receptor Distance  
H = Stack Height

For Stack - 0m <= H < 20m		For Stack - 20m <= H < 45m		For Stack - H >= 45m	
RP		RP		RP	
0m < R < 100m	1.0	0m < R < 100m	1.0	0m < R < 100m	1.0
100m < R < 250m	0.25	100m < R < 250m	0.85	100m < R < 250m	1.0
250m < R < 500m	0.04	250m < R < 500m	0.22	250m < R < 500m	0.90
500m < R < 1000m	0.011	500m < R < 1000m	0.064	500m < R < 1000m	0.40
1000m < R < 1500m	0.003	1000m < R < 1500m	0.018	1000m < R < 1500m	0.13
1500m < R < 2000m	0.002	1500m < R < 2000m	0.009	1500m < R < 2000m	0.066
R > 2000m	0.001	R > 2000m	0.006	R > 2000m	0.042

Cancer Score:  
 $TS(t) = EYR(t) * URF(t) * RP * SHA * 128$

Acute Score:  
 $TS(t) = [ EHR(t) / AREL(t) ] * RP * SHA * 25$

Chronic Score:  
 $TS(t) = \{ ( [ EYR(t) / \text{Hours Of Operation} ] / CREL(t) ) * RP * SHA * 2.5 \}$

# Facility Summary: HORN TECHNOLOGIES

REGION: S

FACID: 10045

PROJECT	Unit ID	MOD #	EQUIPMENT	Prioritization Scores			HARP2 Risk Scores		
				CANCER	ACUTE	CHRONIC	CANCER	ACUTE	CHRONIC
1223311	1	0	Fumigation Operation	0.000	0.383	156.000	0.00E+00	1.99E-01	6.36E-01
Project Totals				0.000	0.383	156.000	0.00E+00	1.99E-01	6.36E-01
1232320	1	1	Methyl Bromide Fumigation	0.000	4.620	15.000	0.00E+00	7.80E-01	3.53E-01
Project Totals				0.000	4.620	15.000	0.00E+00	7.80E-01	3.53E-01
Facility Totals				0.000	5.003	171.000	0.00E+00	9.78E-01	9.90E-01

## **APPENDIX D**

### **BACT Guideline and Analysis**

## **Top Down BACT Analysis for the Methyl Bromide Fumigation Operation**

### **BACT Analysis for VOC Emissions**

The following VOC emission control technologies are listed in BACT guideline 5.4.12, Commodity Methyl Bromide Fumigation Chamber < 100,000 lb-CH<sub>3</sub>Br/year.

#### **Step 1: Identify All Possible Control Technologies**

Achieved in Practice or contained in SIP:

Minimize use of fumigant (i.e. use no more than product specifications recommend), and airtight fumigation

Technologically Feasible:

- 99% control (chemical scrubbing)
- 98% control (thermal or catalytic reduction)
- 90% control (carbon adsorption)
- 80% control (condensation refrigeration system)

Alternate Basic Equipment:

There is no alternate basic equipment listed in this guideline.

#### **Step 2: Eliminate Technologically Infeasible Options**

For option: 98% control (thermal or catalytic reduction)

Thermal incineration of methyl bromide produces toxic gas hydrogen bromide. The incineration process must be followed with a chemical scrubber to treat this toxic gas. Furthermore, installing such an incineration apparatus would result in significant increases in collateral emissions (mainly NO<sub>x</sub>).

Catalytic incineration of methyl bromide will foul the catalyst. Furthermore, installing such incineration apparatus would result in significant increases in collateral emissions (mainly NO<sub>x</sub>).

Therefore, thermal and catalytic incineration is considered to be technologically infeasible for this operation and is eliminated from further analysis.

All other options identified above are considered to be technologically feasible.

#### **Step 3: Rank Remaining Control Technologies by Control Effectiveness**

1. 99% control – Chemical scrubbing system (Technologically Feasible)
2. 90% control – Carbon adsorption (Technologically Feasible)
3. 80% control – Condensation using a refrigeration system (Technologically Feasible)
4. Use of air-tight fumigation chambers and minimized use of fumigant (i.e. use no more than product specification recommend). (Achieved in Practice)

#### Step 4: Cost Effectiveness Analysis

A cost-effective analysis will now be performed for the control technologies specified above. As shown in section VII.C.2 of this document, the uncontrolled VOC emissions from the fumigation operation is calculated to 5,500 lbs/yr.

##### Option 1: Chemical Scrubber with 99% control

As discussed in project N-1160591, no fumigation facility in the District has been permitted to use a chemical scrubber system to control methyl bromide emissions from fumigation operation. Therefore, an actual cost quote for a chemical scrubber system that would be capable to achieve 99% control efficiency provided under engineering evaluation N-1062096, for a similar MeBr fumigation operation, is used.

Per project N-1062096, the proposed fumigation operation will be conducted inside an airtight atmospheric chamber with minimal use of fumigant. Most methyl bromide fumigation operations permitted in the District are conducted inside of this type of chamber and utilize no more than product specification recommended amount of fumigant. US Department of Agriculture also requires fumigations be conducted inside airtight chambers. Therefore, using airtight atmospheric chamber with minimal use of fumigant is determined to be "industry standard".

The annual methyl bromide usage for the fumigation operation under project N-1062096 is 19,999 pounds. Based on economics of scales, it is obvious that any control found to not be cost-effective at this level of throughput in 2006 would be even less cost-effective at lower capacities in 2023, such as the annual methyl bromide usage of 5,500 pounds in this application.

This cost quote provided in project N-1062096 includes two elements:

- 1) Two scrubbers should be connected in series for every 100 acfm to obtain 99% control.
- 2) Scrubber cost is \$45,000/unit.

For the Horn Technologies and Services Inc project the exhaust airflow rate of the proposed fumigation operation is 4,000 cfm per Sea container. Therefore, the control system would need 80 scrubbers with a total cost of \$3,600,000 (\$45,000/unit x 80 units).

Adjusting from 2006 dollars to 2023 dollars; since \$1.00 in 2006 is worth \$1.51 then we will multiply the dollar amount from 2006 by 1.51 to get the 2023 dollar amount.

The cost of the scrubbers system = \$3,600,000 x 1.51 = \$5,436,000

Annualized Capital Investment = Initial Capital Investment x Amortization Factor

$$\text{Amortization Factor} = \left[ \frac{0.1(1.1)^{10}}{(1.1)^{10} - 1} \right] = 0.163 \text{ per District policy, amortizing over 10 years at 10\%}$$

Therefore,

Annualized Capital Investment = \$5,436,000 x 0.163 = \$886,068

$$\begin{aligned}\text{Controlled VOC emissions} &= 5,500 \text{ lb-VOC/yr} \times 1 \text{ tons-VOC}/2,000 \text{ lb-VOC} \times 0.99 \\ &= 2.73 \text{ ton-VOC/yr}\end{aligned}$$

Cost of VOC reduction is calculated as follows:

$$\begin{aligned}\text{Cost of VOC reduction} &= \text{cost of system} \div \text{controlled VOC emissions} \\ &= \$886,068/\text{yr} \div 2.73 \text{ ton-VOC/yr} \\ &= \$2,412,320/\text{ton-VOC}\end{aligned}$$

Since the calculated cost of VOC reduction exceeds the VOC cost effective threshold of \$23,700/ton, this control technology of utilizing a chemical scrubber system is deemed not cost effective and will be removed from consideration at this time.

#### Option 2: Carbon Adsorption with 90% control

Carbon adsorption occurs when air containing VOC mixture is blown through a carbon canister and the VOC mixture is adsorbed onto the surface of the cracks in the activated carbon particles.

#### Equipment Cost

Per information provided by Calgon on January 19, 2017, under project N-1160591 (a 10,000 lb-MeBr/yr operation) for a bigger fumigation operation, two Protect RO-10 units connected in parallel were recommended. Each Protect RO-10 unit would hold 10,000 pounds of VPR 4X10 reactivated carbon. The cost of each Protect RO-10 unit filled with VPR 4X10 reactivated carbons is \$89,250. The capital cost of the carbon adsorption system for that project was \$178,500 (\$89,250 x 2)<sup>2</sup>. Since the fumigation operation under this project uses only 5,500 lb of MeBr/yr, it will be assumed that a much smaller system will be required. This will provide a worst case, since the smaller system will cost less. Assuming the system will cost 40% of the system in project N-1160591, the cost of the system is \$71,400 (\$178,500 x 40%). This cost does not include sales tax, freight expenses, operational and maintenance costs, site preparation, etc, so just using this cost will provide a worst case.

In addition, the spent carbons contain MeBr which is considered a hazardous waste per Resource Conservation and Recovery Act (RCRA)<sup>1</sup>, and Calgon will charge one time RCRA hazardous reactivation testing fee of \$1,000 for the reactivation services.

$$\text{The total initial capital investment} = \$71,400 + \$1,000 = \$72,400$$

$$\text{Annualized Capital Investment} = \text{Initial Capital Investment} \times \text{Amortization Factor}$$

$$\text{Amortization Factor} = \left[ \frac{0.1(1.1)^{10}}{(1.1)^{10} - 1} \right] = 0.163 \text{ per District policy, amortizing over 10 years at 10\%}$$

Therefore,

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<sup>1</sup> <https://www.gpo.gov/fdsys/pkg/CFR-2012-title40-vol27/xml/CFR-2012-title40-vol27-part261.xml>

<sup>2</sup> To be conservative these prices will not be adjusted for inflation.

Annualized Capital Investment =  $\$72,400 \times 0.163 = \$11,801$

### Carbon Exchange Cost

Carbon exchange is required after each aeration period of six hours for the proposed fumigation operation. According to project C-1172458, the cost to exchange these units would be  $\$4,200^2$  for the service plus  $\$0.98/\text{lb}$  for VPR 4X10 carbon replacement.

Based on the annual MeBr usage of 5,500 pounds per year and 100 lb-MeBr per cycle, the maximum number of fumigation cycle is calculated to 550 cycles per year.

The annual carbon exchange service cost is  $\$231,000/\text{year}$  ( $\$4,200/\text{service} \times 550$  services/year). The VPR 4X10 carbon cost is calculated to  $\$107,800/\text{year}$  ( $\$0.98/\text{lb-carbon} \times 100 \text{ lb-carbon/unit} \times 2 \text{ units/cycle} \times 550 \text{ cycles/year}$ ).

Therefore, the total cost is calculated as:

Total Cost =  $\$11,801/\text{yr} + \$231,000/\text{yr} + \$107,800/\text{yr} = \$350,601/\text{yr}$

Controlled VOC emissions =  $5,500 \text{ lb-VOC/yr} \times 1 \text{ tons-VOC}/2,000 \text{ lb-VOC} \times 0.95$   
=  $2.61 \text{ ton-VOC/yr}$

Cost of VOC reduction is calculated as follow:

Cost of VOC reduction = cost of carbon  $\div$  controlled VOC emissions  
=  $\$350,601/\text{yr} \div 2.61 \text{ ton-VOC/yr}$   
=  $\$134,329/\text{ton-VOC}$

Since the calculated cost of VOC reduction exceeds the VOC cost effective threshold of  $\$23,100/\text{ton}$ . Therefore, this control technology of utilize a carbon adsorption system is deemed not cost effective and will be removed from consideration at this time.

### Option 3: Condensation Refrigeration System with 80% control

As discussed in project N-1160591 for a similar but bigger fumigation operation, the cost of the electricity required to operate a refrigerated vapor condenser system alone will be sufficiently to cause this control technology to be not cost effective per District BACT policy. This partial cost estimate does not include the capital equipment costs, or any associated operational and maintenance costs.

This process requires the methyl bromide and exhaust air to be cooled from the typical chamber exhaust temperature of  $70^\circ\text{F}$  to the methyl bromide dew point of  $35^\circ\text{F}$  and then cooled to a final temperature of  $32^\circ\text{F}$ .

An SDUPA study estimated the cost for electricity to run a compressor at  $\$44,000/\text{cycle}$ , assuming  $\$0.10/\text{kW-hr}$  and 234,000 cubic foot of air chilled from  $70^\circ\text{F}$  to  $35^\circ\text{F}$ .



For Horn Technologies' project the capacity of each container is 2,560 ft<sup>3</sup> (8 ft x 8 ft x 40 ft) and for a total of 50 containers, the cost to chill the air from 70°F to 35°F for each container is calculated to:

$$\text{Cost} = \$44,000/\text{cycle} \times (2,560 \text{ ft}^3 \div 234,000 \text{ ft}^3) \times 50 \text{ containers} = \$42,050/\text{cycle}$$

Per PG&E Electric Schedule AG-1, Rate B with summer season, the electric rate is \$0.23614/kW-hr.

Adjusting the cost calculated in the SDUPA study to reflect \$0.23614/kW-hr results in an electrical compressor cost as follows:

$$\text{Cost} = \$42,050/\text{cycle} \times (\$0.23614/\text{kW-hr} \div \$0.10/\text{kW-hr}) = \$99,297/\text{cycle}$$

Based on the annual MeBr usage of 5,500 pounds per year and 100 lb-MeBr per cycle, the maximum fumigation cycle is calculated to 550 cycles per year. Therefore, the annual electricity cost is calculated to:

$$\text{Cost} = \$99,297/\text{cycle} \times 550 \text{ cycle/yr} = \$54,613,279/\text{yr}$$

$$\begin{aligned} \text{Controlled VOC emissions} &= 5,500 \text{ lb-VOC/yr} \times 1 \text{ tons-VOC}/2,000 \text{ lb-VOC} \times 0.80 \\ &= 2.2 \text{ ton-VOC/yr} \end{aligned}$$

Cost of VOC reduction is calculated as follow:

$$\begin{aligned} \text{Cost of VOC reduction} &= \text{cost of system} \div \text{controlled VOC emissions} \\ &= \$54,613,279/\text{yr} \div 2.2 \text{ ton-VOC/yr} \\ &= \$28,424,217/\text{ton-VOC} \end{aligned}$$

Since the calculated cost of VOC reduction exceeds the VOC cost effective threshold of \$23,700/ton. Therefore, this control technology of utilize a condensation refrigeration system is deemed not cost effective and will be removed from consideration at this time.

### **Step 5: Select BACT**

None of the technologically feasible control technologies are cost effective. Therefore, no emissions control equipment is required, and use no more than product specifications recommend and airtight fumigation shall be considered BACT for this operation.

# GENERAL CARBON CORPORATION

## VAPOR PHASE CARBON USAGE

**Client:** Leonel Jimenez, Horn Tech.  
4000 cfm Methyl Bromide Capture

**Date:** 6/14/2023

Inlet Concentration

$$T = (6,430,000 \times S \times W) / (Q \times M \times C)$$



Page 1

Enter values in yellow boxes

3 second contact time

W (Lbs. of Carbon)	5,000	2268.0 Kg
Q (CFM Air Flow)	4000	6796.8 M3/Hr

14ppmv = 200#/day over 24 hours

T = Time (hours)

S = Adsorption Cap. (5%=0.05)

W = Weight of carbon (lbs)

Q = Flow rate (CFM)

M = Molecular Weight

C = Constant (1)

Ref No.	Compound	Conc. (PPMV)	M (MW)	S (Cap)	T (Days)	Lbs. Carbon / Hr	Lbs. Carbon / Day
1	-	-	-	-	-	-	-
2	20 METHYL BROMIDE	14	94.94	0.00389	1	212.74366	5105.84789
3	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-
Total :		14	-	-	1	212.744	5105.848

Operation Period: 23.502 Hrs

0.979 Days

0.00 Years

33 Paterson Street, Paterson, New Jersey 07501 Tel: 973 523 2223 Fax: 973 523 1494

website: [www.generalcarbon.com](http://www.generalcarbon.com)

email: [sales@generalcarbon.com](mailto:sales@generalcarbon.com)



## **GC 4 X 8S**

coconut shell granular activated carbon

**GC 4x8S** granular activated carbon is ideal for most air purification purposes. Made from selected grades of coconut shell, its superior level of hardness makes it cleaner than most other carbons and gives it longer life expectancy. This, combined with its high activity level, makes it well suited for use in any kind of carbon filter or system.

### **Specifications**

Mesh Size - 4x8, %:	90 (min)
Less than No. 4, %:	5 (max)
Greater than No. 8, %:	5 (max)
CCl <sub>4</sub> Activity, %:	60 (min)
Iodine No., mg/g:	1100 (min)
Hardness No., %:	98 (min)
Ash Content, %:	5 (max)
Moisture, % (as packaged):	5 (avg)
Typical Density, lbs./cu.ft.:	29-32
g/cc:	0.47-0.50

\*Standard packaging is in 55 lb. vinyl bags. Other packaging is available upon request.

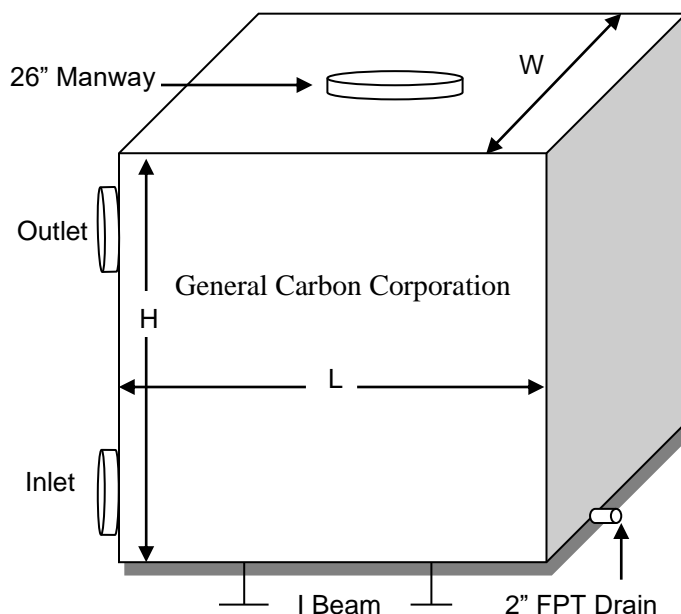
### **Caution!**

*Wet activated carbon removes oxygen from air causing a severe hazard to workers inside carbon vessels. Confined space/low oxygen procedures should be put in place before any entry is made. Such procedures should comply with all applicable Local, State and Federal guidelines.*



## VAPOR BOX ADSORBERS

**General Carbon's** Vapor Box series of carbon adsorbers are versatile high airflow units. Each filter is easily transportable via the “I” beams support structure or lifting lugs. The large bed surface area in each model allows for the treatment of higher airflow rates. The Vapor Box adsorbers are constructed of mild steel and have two part epoxy coatings on the inside and industrial enamel on the outside to provide long service life. They are equipped with a manhole large enough for easy carbon change-outs. Several different grades of virgin and reactivated carbon are available to satisfy your unique filtration requirements.



\*Vapor Boxes are also available in stainless steel \*

<u>Name</u>	<u>Dimensions</u> <u>L x W x H</u>	<u>CFM</u>	<u>Carbon</u> <u>WT.</u>	<u>IN/OUT</u>	<u>Bed Depth</u>	<u>OAH</u> <u>Approx.</u>
VB-1000	4 x 4 x 6	480 – 960	1000	8 inch	27”	72”
VB-2000	4 x 4 x 6	480 – 960	2000	8 inch	53”	72”
VB-3000	5 x 5 x 7	750 – 1500	3000	10 inch	52”	78”
VB-4000	6 x 6 x 7	1100–2200	4000	14 inch	48”	78”
VB-5000	7 x 7 x 7	1500–3000	5000	14 inch	44”	78”

**Installation & Start-up** – The Vapor Box adsorbers require no special procedure for start up. Remove the shipping covers from the inlet and outlet and make the proper connections to your system. The unit is now ready for service and can be started up. Unions or quick-disconnect fittings are recommended if the unit will be disconnected frequently. Multiple units are usually connected in series with testing advised between the units to determine when the first unit needs to be changed-out.

**Maintenance** – When in use, the Vapor Box requires no maintenance other than the monitoring of the influent and effluent liquid streams and the operating pressure of the system. Monitoring the air stream into the last unit in a series arrangement is a recommended safeguard against breakthrough in the final outflow. When the concentration of contaminants in the outflow equals the concentration in the inflow, the Vapor Box has reached its removal capacity and should be removed from service. The working life of each adsorber is dependent upon the type of contaminant in the water as well as its concentration and the air flow rate. A pressure relief device is advised to prevent damage to the canister in the event of excessive pressure buildup.

**Recharging the General** – Once the carbon is saturated by contaminants, the unit should be removed and replaced with a fresh one. To purchase replacement carbon or to arrange for a carbon change-out, please contact our office.

**Disposal** – Dispose of the spent carbon in accordance with Federal, State and Local regulations.

**WARNING!**

***Wet activated carbon removes oxygen from air causing a severe hazard to workers inside carbon vessels. Confined space/low oxygen procedures should be put in place before any entry is made. Such procedures should comply with all applicable local, State and Federal guidelines.***

## **APPENDIX E**

### **Quarterly Net Emissions Change (QNEC)**

## Quarterly Net Emissions Change (QNEC)

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District's PAS database. The QNEC shall be calculated as follows:

$QNEC = PE2 - PE1$ , where:

QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr.

PE2 = Post-Project Potential to Emit for each emissions unit, lb/qtr.

PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr.

Using the values in Sections VII.C.2 and VII.C.1 in the evaluation above, quarterly PE2 and quarterly PE1 can be calculated as follows:

$$\begin{aligned} PE2_{\text{quarterly}} &= PE2_{\text{annual}} \div 4 \text{ quarters/year} \\ &= 5,500 \text{ lb/year} \div 4 \text{ qtr/year} \\ &= 1,375 \text{ lb PM}_{10}/\text{qtr} \end{aligned}$$

$$\begin{aligned} PE1_{\text{quarterly}} &= PE1_{\text{annual}} \div 4 \text{ quarters/year} \\ &= 0 \text{ lb/year} \div 4 \text{ qtr/year} \\ &= 0 \text{ lb PM}_{10}/\text{qtr} \end{aligned}$$

Quarterly NEC [QNEC]			
Pollutant	PE2 (lb/qtr)	PE1 (lb/qtr)	QNEC (lb/qtr)
NO <sub>x</sub>	0	0	0
SO <sub>x</sub>	0	0	0
PM <sub>10</sub>	0	0	0
CO	0	0	0
VOC	1,375	0	1,375

## **APPENDIX F**

### **Emissions Profiles**



Permit #: S-10045-1-1	<b>Last Updated</b>
Facility: HORN TECHNOLOGIES AND	07/21/2023 PANTOJAP

Equipment Pre-Baselined: NO

	<u><b>NOX</b></u>	<u><b>SOX</b></u>	<u><b>PM10</b></u>	<u><b>CO</b></u>	<u><b>VOC</b></u>
Potential to Emit (lb/Yr):	0.0	0.0	0.0	0.0	5500.0
Daily Emis. Limit (lb/Day)	0.0	0.0	0.0	0.0	288.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	0.0	0.0	0.0	0.0	1375.0
Q2:	0.0	0.0	0.0	0.0	1375.0
Q3:	0.0	0.0	0.0	0.0	1375.0
Q4:	0.0	0.0	0.0	0.0	1375.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

## **APPENDIX G**

### **Location Map**

