Bay Area Air Quality Management District

375 Beale Street, Suite 600
San Francisco, CA 94105
(415) 771-6000

Permit Evaluation
and
Statement of Basis
for

Renewal of
MAJOR FACILITY REVIEW PERMIT

for

Shore Terminals LLC
Facility #A0581

Facility Address:
90 San Pablo Ave.
Crockett, CA 94525

Mailing Address:
90 San Pablo Ave.
Crockett, CA 94525

June 2016

Application Engineer: M.K. Carol Lee
Site Engineer: Xuna Cai

Applications: 24048, 14948

TABLE OF CONTENTS

Permit Evaluation/Statement of Basis for Renewal of Major Facility Review Permit

A. Background

This facility is subject to the Operating Permit requirements of Title V of the federal Clean Air Act, Part 70 of Volume 40 of the Code of Federal Regulations (CFR), and BAAQMD Regulation 2, Rule 6, Major Facility Review because it is a major facility as defined by BAAQMD Regulation 2-6-212. It is a major facility because it has the "potential to emit," as defined by BAAQMD Regulation 2-6-218, more than 100 tons per year of a regulated air pollutant, and 10 tons per year of a hazardous air pollutant, or more than 25 tons per year of a combination of hazardous air pollutants.

Major Facility Operating permits (Title V permits) must meet specifications contained in 40 CFR Part 70 as contained in BAAQMD Regulation 2, Rule 6. The permits must contain all applicable requirements (as defined in BAAQMD Regulation 2-6-202), monitoring requirements, recordkeeping requirements, and reporting requirements. The permit holders must submit reports of all monitoring at least every six months and compliance certifications at least every year.

In the Bay Area, State and District requirements are also applicable requirements and are included in the permit. These requirements can be federally enforceable or non-federally enforceable. All applicable requirements are contained in Sections I through VI of the permit.

Each facility in the Bay Area is assigned a facility identifier that consists of a letter and a 4-digit number. This identifier is also considered to be the identifier for the permit. The identifier for this facility is A0581.

This facility received its initial Major Facility Review permit on March 12, 2001 under Shore Terminals, LLC (formerly known as Wickland Oil Company), and it was renewed on July 11, 2007. This application seeks to renew the Title V permit for the second time.

The District proposes to renew the permit. The permit will include modifications requested by the permittee, as well as other modifications by the District, and it will incorporate earlier permit revisions and modifications between the two renewals. The standard sections of the permit have been updated to include new standard language used in all Title V permits and new requirements applicable to all Title V facilities. Also, various other corrections have been made to the permit.

All of these revisions are described below in the permit content section. The proposed permit shows all changes to the permit in strikeout/underline format.

The facility submitted 17 applications that were not reflected in the renewal Major Facility Review permit that was issued on July 11, 2007. A detailed summary of the 17 applications is provided in the Appendix of this Statement of Basis. Of the 17 applications, 10 were for permit exemptions that did not result in any required amendment of the permit. The remaining 7 applications did affect that permit and the following is a list of the applications:

Application #	Description
14948	Title V Amendment for App # 15326
15326	Change of Conditions (#6185)
22758	Emergency Standby Generator
22960	Modify A-1 Vapor Recovery Unit
24048	Renewal Title V Permit
24953	Change of Conditions (#6185)
26088	Emergency Standby Generator

Application 24048 seeks renewal of the Title V permit, which is the subject of this action. Application 14948 seeks to incorporate the change of condition processed under Application 15326 in the District permit into the facility's Title V permit. Application 14948 has been incorporated into this renewal and will be completed upon completion of this action.

Application 15326 sought a change of condition to part 1 of condition 6185 to change the switching time between carbon canisters from A-421 and A-422 Regenerative Carbon Units.

Application 22758 exempted a small 49 HP emergency diesel engine from District permit requirements in accordance with Regulation 2-1-114.2.1. However, because it qualifies as a significant source it has been added to the Title V permit in Table IIC in Section II.

Application 22960 sought to modify the A-1 Vapor Recovery Unit abating S-22 Truck Loading Rack in order to comply with new monitoring requirements contained in Regulation 8-33.

Application 24953 sought to change Part 16 of Condition 6185 to clarify it by adding the term "using A-421 and A-422".

Application 26088 permitted a new Emergency Standby Generator at the facility. This new source and its applicable requirements were added to Section II, IV, and VII.

This Statement of Basis will cover the evaluation of Application 14948 and 24048. See Appendix A for copies of the evaluation reports for Applications 15326, 22758, 22960, 24958, and 26088.

B. Facility Description

The facility is a bulk terminal that receives gasoline and petroleum products, and distributes them either by pipelines or truck racks.

This bulk terminal consists of thirteen fixed roof tanks, ten external floating roof tanks, 1 tank truck loading rack, 1 marine loading wharf, 1 water pond, 1 oil-water separator, and 1 emergency diesel generator. The thirteen fixed roof tanks, which store gasoline or other petroleum products, and the marine loading wharf are abated by two Charcoal Adsorption Vapor Recovery Units (A-421 and A-422). The gasoline truck loading rack is abated by the Vapor Recovery System (A-1).

With this Title V permit renewal application, the following changes were incorporated into the Title V permit:

- Changed name and telephone information of facility contact.

C. Permit Content

The legal and factual basis for the permit follows. The permit sections are described in the order presented in the permit.

I. Standard Conditions

Section I contains administrative requirements and conditions that apply to all facilities. If the Title IV (Acid Rain) requirements for fossil-fuel fired electrical generating facilities or the accidental release (40 CFR § 68) programs apply, the section will contain a standard condition pertaining to these programs. Many of these conditions derive from 40 CFR § 70.6, Permit Content, which dictates certain standard conditions that must be placed in the permit. The language that the District has developed for many of these requirements has been adopted into the BAAQMD Manual of Procedures, Volume II, Part 3, Section 4, and therefore must appear in the permit.

The standard conditions also contain references to BAAQMD Regulation 1, General Provisions and Definitions, and Regulation 2, Permits.

Changes to permit:

- The dates of adoption and approval of rules in Standard Condition 1.A have been updated.
- The address of the Bay Area Air Quality Management District in Section I.F has been updated.
- Added 40 CFR Part 68 (Accidental Release) as Part K of the Standard Conditions because facility is subject to this requirement.

II. Equipment

Section II of the permit lists all permitted or significant sources. Each source is identified by S and a number (e.g., S24, S-24).

Permitted sources are those sources that require a BAAQMD operating permit pursuant to BAAQMD Rule 2-1-302.

Significant sources are those sources that have a potential to emit of more than 2 tons per year of a "regulated air pollutant," as defined in BAAQMD Rule 2-6-222, or 400 pounds per year of a "hazardous air pollutant," as defined in BAAQMD Rule 2-6-210.

Major Facility Review permits list all abatement (control) devices.

The equipment section is considered to be part of the facility description. It contains information that is necessary for applicability determinations, such as fuel types, contents or sizes of tanks, etc. This information is part of the factual basis of the permit.

Each of the permitted sources has previously been issued an authority to construct or a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. These permits are issued in accordance with State law and the District's regulations.

Changes to permit:

- S-11, Slop Tank T-101 was shut down and will be deleted from the equipment list.
- S-46, Emergency Diesel Generator was shutdown and will be deleted from the equipment list.
- S-48, Emergency Diesel Generator will be added to the equipment list.
- S-47, Emergency Standby Generator was added to the significant sources list.
- Added a column to show the basis for the capacity and applicable limit and basis of limit for consistency with other Title V permits.

III. Generally Applicable Requirements

Section III of the permit lists requirements that generally apply to all sources at a facility, including insignificant sources and portable equipment that may not require a District permit. If a generally applicable requirement applies specifically to a source that is permitted or significant, the standard will also appear in Section IV and the monitoring for that requirement will appear in Sections IV and VII of the permit. Parts of this section apply to all facilities (e.g., particulate, architectural coating, odorous substance, and sandblasting standards). In addition, standards that apply to insignificant or unpermitted sources at a facility (e.g., refrigeration units that use more than 50 pounds of an ozone-depleting compound) are placed in this section.

Sources that do not require permits to operate are exempt from normal District permits pursuant to an exemption in BAAQMD Regulation 2, Rule 1. They may, however, be specifically described in a Major Facility Review permit if they are considered significant sources pursuant to the definition in BAAQMD Rule 2-6-239.

Changes to permit:

Section III has been modified to state that SIP standards are now found on EPA's website and are not included as part of the permit.

Table III has been updated by adding the following rules and standards to conform to current practice:

- SIP Regulation 2, Rule 1, General Requirements
- SIP Regulation 2, Rule 1, Section 429, Federal Emissions Statement
- BAAQMD Regulation 2, Rule 2, New Source Review
- SIP Regulation 2, Rule 2, New Source Review
- BAAQMD Regulation 2, Rule 4, Emission Banking
- SIP Regulation 2, Rule 4, Emission Banking
- BAAQMD Regulation 2, Rule 6, Major Facility Review
- SIP Regulation 2, Rule 6, Major Facility Review
- BAAQMD Regulation 6, Rule 1, Particulate Matter and Visible Emissions
- SIP Regulation 6, Particulate Matter and Visible Emissions
- BAAQMD Regulation 8, Rule 3, Organic Compounds – Architectural Coatings
- SIP Regulation 8, Rule 3, Organic Compounds – Architectural Coatings
- SIP Regulation 8, Rule 40, Organic Compounds – Aeration of Contaminated Soil and Removal of Underground Storage Tanks

- SIP Regulation 8, Rule 47, Organic Compounds – Air Stripping and Soil Vapor Extraction Operations
- SIP Regulation 8, Rule 51, Organic Compounds – Adhesive and Sealant Products
- SIP Regulation 12, Rule 4 – Miscellaneous Standards of Performance, Sandblasting
- California Health and Safety Code Section 93116 et seq., Airborne Toxic Control Measure for Portable Engines Rated at 50 Horsepower and Greater
- 40 CFR Part 82, Subpart F, Protection of Stratospheric Ozone; Recycling and Emissions Reduction
- 40 CFR Part 82, Subpart H, Protection of Stratospheric Ozone; Halon Emissions Reduction

The dates of adoption or approval of the rules and their "federal enforceability" status in Table III have also been updated.

IV. Source-Specific Applicable Requirements

This section of the permit lists the applicable requirements that apply to permitted or significant sources. These applicable requirements are contained in tables that pertain to one or more sources that have the same requirements. The order of the requirements is:

- District Rules
- SIP Rules (if any) are listed following the corresponding District rules. SIP rules are District rules that have been approved by EPA for inclusion in the California State Implementation Plan (SIP). SIP rules are "federally enforceable" and a "Y" (yes) indication will appear in the "Federally Enforceable" column. If the SIP rule is the current District rule, separate citation of the SIP rule is not necessary and the "Federally Enforceable" column will have a "Y" for "yes". If the SIP rule is not the current District rule, the SIP rule or the necessary portion of the SIP rule is cited separately after the District rule. The SIP portion will be federally enforceable; the non-SIP version will not be federally enforceable, unless EPA has approved it through another program.
- Other District requirements, such as the Manual of Procedures, as appropriate.
- Federal requirements (other than SIP provisions)
- BAAQMD permit conditions. The text of BAAQMD permit conditions is found in Section VI of the permit.
- Federal permit conditions. The text of Federal permit conditions, if any, is found in Section VI of the permit.

Section IV of the permit contains citations to all of the applicable requirements for particular sources. The text of the requirements is found in the regulations, which are readily available on the District's or EPA's websites, or in the permit conditions, which are found in Section VI of the permit. All monitoring requirements are cited in Section IV. Section VII is a cross-reference between the limits and monitoring requirements. A discussion of monitoring is included in Section C.VII of this permit evaluation/statement of basis.

Complex Applicability Determinations

The facility is not subject to 112(j) of the Clean Air Act because it is not a major source of hazardous air pollutants. The primary HAP emitted at this facility is benzene. The benzene emissions from this facility are much less than 10 tons per year.

Because the VOC emissions from each gasoline truck rack (S-22), marine vessel loading (S-27), and fixed roof storage tanks (S-32 through S-44), prior to abatement, exceed 100 tons per year, the units are subject to a federally-enforceable emission limit, and the abatement devices (A-1, A-21, and A-422) that are used to achieve compliance with those emission limits are subject to the requirements of 40 CFR 64, "Compliance Assurance Monitoring" (CAM).

Shore Terminals complies with CAM by having an existing continuous hydrocarbon monitoring system on abatement devices (A-1, A-421 and A-422). Monitoring is required per part 14 of permit condition 6185 and required to occurs at least four times per hour, which is considered to be "presumptively acceptable monitoring" pursuant to 40 CFR 60.44(b).

Changes to permit:

- Clarification was added to Section IV to indicate that any subsections of any requirement listed in the tables are included as part of the applicable requirement. If only certain subsections of a requirement are listed, then only those subsections listed are applicable.
- The dates of adoption or SIP approval of the rules and their "federal enforceability" status will be updated.
- Table IV-B for S-11 Internal Floating Roof Tank will be removed because the source has been shutdown and removed from service.
- Condition 6185 was amended to remove outdated parts of the condition (Parts 9 and 13) so those parts in Table IV where referenced will be removed.
- Part 27 was added to Condition 6185 to require annual emissions source test on equipment A-421 and A-22 to demonstrate NESHAP section 63.563(b)6 requirements.
- Part 8(A) of Condition 12677 has been amended to reflected the updated limit specified basis in Regulation 8-33 from 0.08 lb/Mgal to 0.04 lb/Mgal (8-33-301.2).
- Part 11 of Condition 12677 has been deleted from Table IV – A (External Floating Roof Tanks) and Table IV – B (External Floating Roof Tanks) because the maximum vessel deadweight applies mainly to the marine loading source (S-27).
- Condition 24901 has been added for S-22 Gasoline Loading Rack (Table IV – C) as an applicable requirement. It was added in Application 22960.
- Sources S-24 and S-25 were moved to Table IV-B with the other external floating roof tanks because they have the same requirements (including NSPS Subpart K_B).
- Table IV-K for S-46 Emergency Diesel Generator will be removed because the source has been shutdown and removed from service.
- Table IV-I for S-48 Emergency Standby Generator Set for Fire Pump will be added to include all specific applicable requirements for emergency diesel generator for fire pump. The source was permitted in Application 26088.

V. Schedule of Compliance

A schedule of compliance is required in all Major Facility Review permits pursuant to BAAQMD Regulation 2-6-409.10 which provides that a major facility review permit shall contain the following information and provisions:

"409.10 A schedule of compliance containing the following elements:

10.1 A statement that the facility shall continue to comply with all applicable requirements with which it is currently in compliance;

10.2 A statement that the facility shall meet all applicable requirements on a timely basis as requirements become effective during the permit term; and

10.3 If the facility is out of compliance with an applicable requirement at the time of issuance, revision, or reopening, the schedule of compliance shall contain a plan by which the facility will achieve compliance. The plan shall contain deadlines for each item in the plan. The schedule of compliance shall also contain a requirement for submission of progress reports by the facility at least every six months. The progress reports shall contain the dates by which each item in the plan was achieved and an explanation of why any dates in the schedule of compliance were not or will not be met, and any preventive or corrective measures adopted."

The responsible official for Shore Terminals LLC submitted a signed Certification Statement form dated June 8, 2016. On this form, the responsible official certified that the following statements are true:

Based on information and belief formed after reasonable inquiry, the sources identified in the Applicable Requirements and Compliance Summary form that are in compliance will continue to comply with the applicable requirements;

Based on information and belief formed after reasonable inquiry, the sources identified in the Applicable Requirements and Compliance Summary form will comply with future-effective applicable requirements, on a timely basis.

VI. Permit Conditions

The existing permit conditions are derived from previously issued District Authorities to Construct (A/C) or Permits to Operate (P/O). Permit conditions may also be imposed or revised as part of the annual review of the facility by the District pursuant to California Health and Safety Code (H&SC) § 42301(e), through a variance pursuant to H&SC § 42350 et seq., an order of abatement pursuant to H&SC § 42450 et seq., or as an administrative revision initiated by District staff. After issuance of the Title V permit, permit conditions will be revised using the procedures in Regulation 2, Rule 6, Major Facility Review. Permit conditions may also be derived from periodic monitoring requirements pursuant to BAAQMD Regulation 2-5-503, Monitoring.

Each permit condition is identified with a unique numerical identifier, up to five digits. Each part of the condition is also identified by a part number and each subpart is identified by a letter (for example, Condition 789, part 1a).

The regulatory basis is listed following each condition. The regulatory basis may be a rule or regulation. The District uses the following terms for regulatory basis:

- BACT: This term is used for a condition imposed by the Air Pollution Control Officer (APCO) to ensure compliance with the Best Available Control Technology in Regulation 2-2-301.
- Cumulative Increase: This term is used for a condition imposed by the APCO that limits a source's operation to the operation described in the permit application pursuant to BAAQMD Regulation 2-1-403.
- Offsets: This term is used for a condition imposed by the APCO to ensure compliance with the use of offsets for the permitting of a source or with the banking of emissions from a source pursuant to Regulation 2, Rules 2 and 4.
- PSD: This term is used for a condition imposed by the APCO to ensure compliance with a Prevention of Significant Deterioration permit issued pursuant to Regulation 2, Rule 2.
- TRMP: This term is used for a condition imposed by the APCO to ensure compliance with limits that arise from the District's Toxic Risk Management Policy.

Any changes to existing permit conditions are clearly shown in "strike-out/underline" format in the proposed permit. When the permit is issued, all "strike-out" language will be deleted and all "underline" language will be retained, subject to consideration of comments received.

Condition 6185, Part 1

- Amended part to reflect change of condition that was approved in Application 15326 to changer switching time from 17 to 20 minutes.

Condition 6185, Part 9

- This part is outdated and no longer needed because the limits have already been determined and set.

Condition 6185, Part 10 and 11

- Editorial change to remove outdated reference to "project" which has been completed.

Condition 6185, Part 13

- This part is outdated and no longer needed because the number of pumps, valves, and flanges have been determined and set with completion of the "project".

Condition 6185, Part 17

- Wording has been changed to allow operating flexibility for tank degassing operations to be vented to other abatement devices as long as in accordance with Regulation 8-5-328 (Tank Degassing Requirements).

Condition 6185, Parts 19

- Wording has been changed to allow operating flexibility for tank cleaning operations to be vented to other abatement devices as long as in accordance with Regulation 8-5-331 (Tank Cleaning Requirements).

Condition 6185, Part 24

- Wording has been changed to reflect that actual tank degassing operations information shall continue to be recorded for whatever abatement device is used.

Condition 6185, Part 27

- Part 27 was added to Condition 6185 to require annual emissions source test on equipment A-421 and A-22 to demonstrate NESHAP section 63.563(b)6 requirements.

Condition 12677, Part 8(A)

- The basis of the limit is Regulation 8-33. Limit was updated to reflect updated limit of Regulation 8-33-301.2 that became effective in 2011.

Condition 12677, Part 9

- Redundant word "Regulation" deleted.

Condition 12677, Part 14

- Editorial change to correct typo.

Condition 12677, Schedule F

- Updated Name of Owner/Operator from Wickland to Shore Terminals LLC

Condition 19215

- Deleted condition which applies to S-46 Emergency Diesel Generator. Source was shutdown and removed from service.

Condition 22850

- Added condition which applies to S-48 Emergency Standby Generator Set for Fire Pump. Source was permitted in Application 26088.

Condition 24901

- Added condition which applies to S-22 Truck Loading Rack. Condition was added in Application 22960.

VII. Applicable Limits and Compliance Monitoring Requirements

Section VII of the permit summarizes the numerical limits and related monitoring requirements for each source. The summary includes a citation for each monitoring requirement, the frequency of monitoring, and the type of monitoring. The applicable requirements for monitoring are completely contained in Sections IV, Source-Specific Applicable Requirements, and VI, Permit Conditions, of the permit.

The District has reviewed all monitoring and has determined the existing continuous emission monitoring is adequate. For the vapor recovery system (A-1, A-421 and A-422), the continuous hydrocarbon monitoring system was installed as required.

Following is a list of proposed revisions to Section VII:

- Table VII-B for S-11 Internal Floating Roof Tank will be removed because the source has been shutdown and removed from service.
- Condition 6185 was amended to remove outdated parts of the condition (Parts 9 and 13) so those parts in Table VII where referenced will be removed.

- Part 27 was added to Condition 6185 to require annual emissions source test on equipment A-421 and A-22 to demonstrate NESHAP section 63.563(b)6 requirements for S-27.
- Part 8(A) of Condition 12677 has been amended to reflected the updated limit specified basis in Regulation 8-33 from 0.08 lb/Mgal to 0.04 lb/Mgal (8-33-301.2).
- Part 11 of Condition 12677 has been deleted from Table VII – A (External Floating Roof Tanks), Table VII – B (External Floating Roof Tanks) and Table VII – F (Fixed Roof Tanks) because the maximum vessel deadweight applies mainly to the marine loading source (S-27).
- Condition 24901 has been added for S-22 Gasoline Loading Rack (Table VII – C) as an applicable requirement. It was added in Application 22960.
- Sources S-24 and S-25 was moved to Table VII-B with the other external floating roof tanks because they have the same requirements (including NSPS Subpart K_B).
- Table VII-J for S-46 Emergency Diesel Generator will be removed because the source has been shutdown and removed from service.
- Table VII-I for S-48 Emergency Standby Generator Set for Fire Pump will be added will be added to include all specific applicable requirements for emergency diesel generator for fire pump. The source was permitted in Application 26088.
- The recent amendment to Regulation 8-18 has been incorporated into Table VII-H for Components.

The tables below contain only the limits for which there is no monitoring or inadequate monitoring in the applicable requirements. The District has examined the monitoring for other limits and has determined that monitoring is adequate to provide a reasonable assurance of compliance. Calculations for potential to emit will be provided in the discussion when no monitoring is proposed due to the size of a source.

Monitoring decisions are typically the result of a balancing of several different factors including: 1) the likelihood of a violation given the characteristics of normal operation, 2) degree of variability in the operation and in the control device, if there is one, 3) the potential severity of impact of an undetected violation, 4) the technical feasibility and probative value of indicator monitoring, 5) the economic feasibility of indicator monitoring, and 6) whether there is some other factor, such as a different regulatory restriction applicable to the same operation, that also provides some assurance of compliance with the limit in question.

These factors are the same as those historically applied by the District in developing monitoring for applicable requirements**.** It follows that, although Title V calls for a re-examination of all monitoring**,** there is a presumption that these factors have been appropriately balanced and incorporated in the District's prior rule development and/or permit issuance. It is possible that, where a rule or permit requirement has historically had no monitoring associated with it, no monitoring may still be appropriate in the Title V permit if, for instance, there is little likelihood of a violation**.** Compliance behavior and associated costs of compliance are determined in part by the frequency and nature of associated monitoring requirements. As a result, the District will generally revise the nature or frequency of monitoring only when it can support a conclusion that existing monitoring is inadequate**.**

PM Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-48, EMERGENCY STANDBY GENERATOR SET FOR FIRE PUMP	BAAQMD Regulation 6-1-303	Ringelmann 2.0 for 3 min. or less/hr	None
S-48, EMERGENCY STANDBY GENERATOR SET FOR FIRE PUMP	BAAQMD Regulation 6-1-305	Visible Particles	None
S-48, EMERGENCY STANDBY GENERATOR SET FOR FIRE PUMP	BAAQMD Regulation 6-1-310	0.15 gr/dscf	None

PM Discussion:

BAAQMD Regulation 6 "Particulate Matter and Visible Emissions"

S-48, Emergency Standby Generator Set for Fire Pump

In accordance with the June 24, 1999 "Periodic Monitoring Recommendations for Generally Applicable Requirements" prepared by the CAPCOA/CARB/EPA Region IX periodic monitoring workgroup, no opacity monitoring is required for diesel standby and emergency reciprocating engines. In accordance with the July 2001 "CAPCOA/CARB/EPA Region IX Recommended Periodic Monitoring for Generally Applicable Grain Loading Standards in the SIP: Combustion Sources," a facility is not required to monitor the engine exhaust from non-utility distillate-oil-fueled emergency piston-type IC engines, but the facility must maintain records of all engine usage.

SO_2 Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-48, EMERGENCY STANDBY GENERATOR SET FOR FIRE PUMP	BAAQMD 9-1-301	Ground level concentrations of SO2 shall not exceed: 0.5 ppm for 3 consecutive minutes AND 0.25 ppm averaged over 60 consecutive minutes AND 0.05 ppm averaged over 24 hours	None
S-48, EMERGENCY STANDBY GENERATOR SET FOR FIRE PUMP	BAAQMD 9-1-304	Liquid fuel < 0.5% wt. sulfur	Fuel Certification

SO2 Discussion:

BAAQMD Regulation 9-1-301

Area monitoring to demonstrate compliance with the ground level SO2 concentration requirements of Regulation 9-1-301 is at the discretion of the APCO (per BAAQMD Regulation 9-1-501). This facility does not have equipment that emits large amounts of SO2. Therefore, the APCO has not required the facility to have ground level monitoring.

The limit for sources that burn liquid fuel is 0.5% of sulfur by weight in fuel according to BAAQMD Regulation 9-1-304. The standard monitoring for this limit is fuel certification. S-46 will burn California Diesel, which has a maximum sulfur content of 0.0015% by weight. Therefore, compliance with this standard is expected.

VIII. Test Methods

This section of the permit lists test methods that are associated with standards in District or other rules. It is included only for reference. In most cases, the test methods in the rules are source test methods that can be used to determine compliance but are not required on an ongoing basis. They are not applicable requirements.

If a rule or permit condition requires ongoing testing, the requirement will also appear in Section IV of the permit.

Changes to permit

- Added test methods for Regulation 6-1 standards.
- Added test methods for Regulation 9-1 standards.

IX. Revision History

Changes in the permit since 2007 will be documented.

X. Glossary

Additions and corrections will be made to the Glossary. See Appendix B.

D. Alternate Operating Scenarios:

No alternate operating scenario has been requested for this facility.

E. Permit Shield

The District rules allow two types of permit shields. The permit shield types are defined as: (1) A provision in a major facility review permit that identifies and justifies specific federally enforceable regulations and standards that are not applicable to a source or group of sources, or (2) A provision in a major facility review permit that identifies and justifies specific federally enforceable applicable requirements for monitoring, recordkeeping and/or reporting, but which are subsumed because other applicable requirements for monitoring, recordkeeping, and reporting in the permit will assure compliance with all emission limits.

The second type of permit shield is allowed by EPA's White Paper 2 for Improved Implementation of the Part 70 Operating Permits Program. The District uses the second type of permit shield for all streamlining of monitoring, recordkeeping, and reporting requirements in Major Facility Review permits. The District's program does not allow other types of streamlining in Major Facility Review permits.

This facility has no permit shields.

F. Compliance Status:

The responsible official for Shore Terminals LLC submitted a signed Certification Statement form dated June 8, 2016. On this form, the responsible official certified that the following four statements are true:

Based on information and belief formed after reasonable inquiry, the sources identified in the Applicable Requirements and Compliance Summary form that are in compliance will continue to comply with the applicable requirements;

Based on information and belief formed after reasonable inquiry, the sources identified in the Applicable Requirements and Compliance Summary form will comply with future-effective applicable requirements, on a timely basis;

Based on information and belief formed after reasonable inquiry, information on application forms, all accompanying reports, and other required certifications is true, accurate, and complete;

All fees required by Regulation 3, including Schedule P have been paid.

APPENDIX A

New Source Review Permit Evaluations

SUMMARY OF PERMIT APPLICATIONS FOR A0581

Application #	Issuance Date	Permit Type	Project Description	PERMIT CHANGED?
16728	12/12/2007	Alteration/Exemption	Upgrade monitoring system of A-1 Vapor Recovery System, A-421 and A-422 Regenerative Carbon Units. No change in emissions or permit condition.	NO
19306	4/7/2009	Alteration/Exemption	S-100 Stormwater Storage Vault, exempt per Regulation 2-1-123 and 2-1-113.2.4.	NO
20062	6/23/2009	Alteration/Exemption	Replace seals of S-30 Tank which results in lower roof fitting loss emissions. No change in permit for S-30.	NO
20689	7/17/2009	Alteration/Exemption	Install a New Heat Exchanger on A-1 Truck Rack Vapor Recovery Unit. Exempt per Regulation 2-1-128.21.	NO
20908	9/17/2009	Alteration/Exemption	Install a New Heat Exchanger for A-421 and A-422 Marine Tank Vapor Recovery Units. Exempt per Regulation 2-1-128.21.	NO
22286	9/28/2010	Alteration/Exemption	New Supply Line from S-25 Tank 1510 to existing fin-fan cooler. Exempt per Regulation 2-1-128.21.	NO
22508	10/22/2010	Alteration/Exemption	Replace check valve pallets at S-37, S-39, S-40, S-41, S-43 Tanks and check valves at S-42 and S-44 Tanks. Exempt per Regulation 2-1-128.21.	NO
22881	1/12/2011	Alteration/Exemption	Install vacuum booster blower at A-1 Truck Rack Vapor Recovery Unit. Exempt per Regulation 2-1-128.21.	NO
23352	7/1/2011	Alteration/Exemption	Install a New Heat Exchanger for S-25 Tank 1510. Exempt per Regulation 2-1-128.21.	NO
23633	9/28/2011	Alteration/Exemption	Install Dual PVR Assembly.	NO
15326	1/24/2007	Change of Condition	Condition Number 6185, Part 1 change 17 minutes to 20 minutes for switching time between carbon canisters for A-421 and A-422 Regenerative Carbon Units.	YES
24953	3/28/2013	Change of Condition	Condition Number 6185, Part 16 to add term "using A-421 and A-422".	YES

SUMMARY OF PERMIT APPLICATIONS FOR A0581

Application #	Issuance Date	Permit Type	Project Description	PERMIT CHANGED?
22758	12/15/2010	Exemption	S-47 Emergency Standby Generator (49 HP). Exempt per Regulation 2-1-114.2.1.	YES as Exempt Source > 2 TPY.
22960	4/28/2011	Modification	Modify A-1 Vapor Recovery Unit abating S-22 Truck Loading Rack, in order to comply with new monitoring requirements contained in Regulation 8-33. Addition of Condition 24901.	YES
26088	8/26/2014	Permit	S-48 Emergency Standby Generator Set for Fire Pump	YES
14948		Title V	Application to amend Condition # 6185 in Title V permit.	YES
24048		Title V	Renewal of Title V permit	YES

EVALUATION REPORT
SHORE TERMINALS-SELBY
Application #15326 - Plant #581

90 San Pablo Ave.
Crokett, CA 94525

I. BACKGROUND

Shore Terminal - Selby has applied for a condition change to the Permit to Operate for the following equipment:

A-421 Regenerative Carbon Unit, John Zink, abated Storage Tanks S-32 through S-44 and Marine Loading Terminal, S-27.
A-422 Regenerative Carbon Unit, John Zink, abated Storage Tanks S-32 through S-44 and Marine Loading Terminal, S-27.

Shore Terminals requested that Condition # 6185 Part 1, the switching time between regenerative carbon units (A-421 and A-422), be changed from 17 minutes to 30 minutes. A-421 and A-422 are parallel carbon adsorption and absorption units that are abating storage tanks and a marine loading terminal. Shore Terminals requested for 30 minutes because the District has given a similar carbon unit (A-1), that abates the truck loading operation, 30 minutes of switching time under Condition 12677, Part 8F.

According to the letter dated March 30, 2006 from John Zink Service Technician, the unit needs 16-17 minutes to regenerate. This allows enough time for the carbon unit under regeneration to be drawn down to a deep vacuum and enough time for purge air to polish the carbon to remove as much of the hydrocarbon vapors as possible to prevent high emissions. Then it would take another 2-3 minutes to shut the regeneration valve, re-pressurize the carbon unit, and open the inlet valve to allow waste vapors to the newly regenerated unit. The whole process requires approximately 18-19 minutes. The letter indicates that the shorter time a carbon unit is in regeneration mode, the lesser amount of hydrocarbon vapors being removed from the carbon.

Per conversation with Marco Hernandez of Source Test Division on Jan. 4, 2007, his concern was that 30 minutes switching time might over-load the other carbon unit that is receiving or abating the waste vapors; thus, reducing the control efficiency. As the result, the District's staff decided to allow 20 minutes of switching time, to ensure that deep carbon regeneration and good control efficiency can both take place.

II. EMISSION INCREASES

POC Emissions will not increase because of this revision. The overall control efficiency is expected to remain the same.

III. TOXIC SCREENING ANALYSIS

N/A

IV. BEST AVAILABLE CONTROL TECHNOLOGY

N/A

V. OFFSETS

N/A

VI. PLANT CUMULATIVE INCREASE SINCE 4/5/1991

N/A

VII. STATEMENT OF COMPLIANCE

This application is subject and expected to comply with Regulation 8, Rule 5-301 and 306, which requires that fixed roof storage tanks with vapor pressure greater than 11.0 psia be equipped with a vapor control device with an abatement efficiency of at least 95% by weight.

Source S-27, Marine loading operation is subject to and in compliance with Regulation 8-44-301.1 with emissions of precursor organic compounds that are less than 2 pounds per 1000 barrels of organic liquid loaded or reduce emissions to at least 95% by weight from uncontrolled conditions.

This project is considered to be ministerial under the District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 4.2 and 3.1.

This project is over 1,000 ft from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

BACT, PSD, and NESHAPS are not triggered.

VIII. CONDITIONS

COND# 6185
Shore Terminals-Selby

1. Storage Tanks S-32 through S-45 and Marine Loading Berth S-27 shall be vented at all times of operation to the properly maintained and properly operated A-421 and A-422 Regenerative Carbon Units. The switching time between carbon canisters for these units shall not exceed ~~17~~ 20 minutes. This condition shall not apply to exempt materials. [Basis: Cumulative Increase]

2. The combined total of all hydrocarbon liquids loaded into Storage Tanks S-32 through S-45 shall not exceed 18.8 million barrels in any consecutive 12 month period. [Basis: Cumulative Increase]

3. The combined total of all hydrocarbon liquids loaded into Storage Tanks S-32 through S-45 shall not exceed 145,000 barrels in any calendar day. Daily records of the total liquid loaded into Storage Tanks S-32 through S-45 shall be kept in a District approved log and retained for at least two years from the date of entry. This log shall be kept on site and made available to District staff upon request. [Basis: Cumulative Increase]

4. The combined total of all hydrocarbon liquids loaded into marine vessels at the Marine Loading Terminal S-27 shall not exceed 47.6 million barrels in any consecutive 12 month period. Monthly records of the total hydrocarbon liquid loaded into marine vessels at S-27 shall be kept in a District approved log and retained for at least two years from the date of entry. This log shall be kept on site and made available to District staff upon request. [Basis: Cumulative Increase]

5. Emissions from the A-421 and A-422 Regenerative Carbon Units shall not exceed 1 pound of POC's per 1000 barrels of hydrocarbon liquid transferred at S-27 and S-32 through S-34. . [Basis: Cumulative Increase]

6. Benzene emissions from the A-421 and A-422 Carbon Systems combined shall not exceed 0.15 lbs per calendar day. . [Basis: Cumulative Increase]

7. The average benzene concentration in all hydrocarbon liquids stored in Storage Tanks S-32 through S-45 shall not exceed 2% by weight. The owner/operator of sources S-32 through S-45 shall analyze all materials stored in each of these tanks for benzene concentration at least once every 6 months. Each tank shall be sampled within 30 days of start-up. If the owner/operator can demonstrate that several tanks contain hydrocarbon from a single source (shipment), then a single benzene analysis may be performed for that group of tanks. These records shall be kept on file for at least 2 years after the date of entry and shall be made available to District personnel upon request. All tests shall be performed in accordance with District approved laboratory procedures. . [Basis: Cumulative Increase]

8. The owner/operator of the A-421 and A-422 Regenerative Carbon Units shall perform a District approved source test within 60 days of the start-up of S-45 to confirm compliance with permit Condition nos. 5 and 6. The District may require the performance of this source test when a representative portion of all the sources abated by A-421 and A-422 units are operating. The source test procedures and methods shall be approved by the District's Source Test Manager prior to conducting this test. This test shall be conducted under worst case loading circumstances (maximum loading rates with the most volatile permitted materials). [Basis: Cumulative Increase]

9. The District shall adjust the throughput limits established in permit conditions 2,3, and 4, and the emission rate limitation in permit condition 5, if the owner/operator of this facility is able to demonstrate, to the satisfaction of the APCO, that an emission rate less than 1 lb POC/1000 bbl is achievable on a consistent basis. The District would then change the above referenced permit conditions before the issuance of the Permit to Operate for this project. Under no circumstances shall the increase in POC emissions from S-27 as a result of this project plus the new emissions from S-32 through S-45 exceed 150 lb/day, nor shall the Cumulative Increase from this facility exceed 40 TPY. [Basis: Cumulative Increase]

10. All new hydrocarbon liquid product pumps associated with this project shall be equipped with either double mechanical shaft seals or shall utilize sealless magnetically coupled pumps. These new pumps shall be subject to the inspection and maintenance requirements District Regulation 8-18 and any future revisions to this rule. [Basis: Reg. 8-18]

11. All new valves and flanges associated with this project shall be subject to the inspection and maintenance criteria of District Regulation 8-18 and any future revisions to this rule. [Basis: Reg. 8-18]

12. Storage Tanks S-32 through S-45 shall be equipped with properly installed and properly operated pressure relief valves which do not open under normal operating conditions and thereby allow bypassing of the A-421/A-422 Carbon System. The S-27 Marine Terminal shall use connection couplings which minimize fugitive leaks during connection and disconnection of the product loading and vapor recovery piping. [Basis: Reg. 8-18]

13. The owner/operator of this facility shall submit an accounting of all new pumps, valves, and flanges associated with this project, and shall also identify the numbers of existing pumps, valves,

and flanges, within 60 days of project completion. This accounting shall recalculate fugitive emissions from both these new sources and from existing fugitive sources. The calculations shall also compare the actual new fugitive emissions versus the projected fugitive emissions calculated in the permit application. The District may adjust the plant Cumulative Increase based on the recalculated actual emission rate. [Basis: Cumulative Increase]

14. The owner/operator of the A-421 and A-422 Regenerative Carbon Systems shall install an infrared combustible gas detector or District approved equivalent at the outlet of each of these carbon units. This detector shall continuously measure and record hydrocarbon concentration in PPM as butane. The type and design specifications of this detector shall be approved by the District's Source Test Manager before installation. [Basis: Cumulative Increase]

15. The A-421 and A-422 Regenerative Carbon Systems shall include a continuous temperature monitor and recorder to measure the temperature of each of the four carbon beds. These temperature monitors shall alarm and cause all product transfer at sources S-32 through S-45 and S-27 to stop when the carbon temperature exceeds the manufacturer's recommended maximum operating temperature. [Basis: Cumulative Increase]

16. The total number of tank degassing operations at this facility shall not exceed 6 in any consecutive 12 month period. [Basis: Cumulative Increase]

17. The tank degassing operations shall be vented at all times to either the properly maintained and properly operated Carbon Adsorption/Desorption System (A-421 & 422) or Thermal Oxidizer (A-423). [Basis: Cumulative Increase]

18. The Thermal Oxidizer (A-423) shall maintain a minimum operating temperature of 1400^{o}F, a minimum residence time of 0.5 seconds, and a maximum blower size of 1100 cfm. [Basis: Cumulative Increase]

19. The control equipment (A-421, 422, & 423) shall cause the tank to operate at negative pressure during tank cleaning operations. Fugitive emissions during tank cleaning operations shall be minimized. This control equipment shall begin operating prior to flushing the tank with water. [Basis: Cumulative Increase]

20. The storage tank vapors shall be vented to the A421, 422, & 423 control equipment for as long as is necessary to reduce the POC concentration in the vapor stream to less than 1% (vol) or 10,000 ppm. [Basis: Cumulative Increase]

21. A-423 Thermal Oxidizer shall be equipped with a continuous temperature controller set to maintain the operating temperature above 1400^{o}F as required in Part #18. [Basis: Cumulative Increase]

22. A-421, A-422, & A-423 shall be equipped with a continuous hydrocarbon concentration monitor and recorder, which measures both the inlet and the outlet concentrations at this abatement equipment. [Basis: Cumulative Increase]

23. The owner/operator shall not degas any tanks to the A-421/A-422 Carbon Systems during bulk liquid transfers at any other sources abated by A-421 and A-422. [Basis: Cumulative Increase]

24. The owner/operator of A421, A422, & A423 shall maintain the following records:
    a) Number of tank degassing operations,
    b) Abatement device used for each degassing operation

c) The operating temperature of the Thermal Oxidizer (A423), and
d) The hydrocarbon concentration at the inlet and outlet of the abatement device during the venting operation.

These records shall be kept in a District approved log and retained for at least two years from the date of entry. This log shall be kept on site and made available to District Staff upon request. [Basis: Record Keeping]

25. The combined total pumping rate through the three loading arms associated with S-27 shall not exceed 10,000 barrels per hour. [Basis: Cumulative Increase]

26. Only the following materials shall be transferred at Marine Loading Terminal S-27:
1) Crude Oil
2) Gasoline
3) MTBE
4) Any material which is exempt from District permitting requirements (as long as the loading of this exempt material has been properly reported to the District), or any other petroleum hydrocarbon material with a vapor pressure less than unleaded gasoline (6.2 psia at 70 deg F) and toxicity less than unleaded gasoline (4% benzene by weight). [Basis: Cumulative Increase, toxics]

IX. RECOMMENDATION

It is recommended that a change of condition to the Permit to Operate be granted to Shore Terminal - Selby for the following equipment:

A-421 Regenerative Carbon Unit, John Zink, abated Storage Tanks S-32 through S-44 and Marine Loading Terminal, S-27.
A-422 Regenerative Carbon Unit, John Zink, abated Storage Tanks S-32 through S-44 and Marine Loading Terminal, S-27.

_____
Thu H. Bui
Senior Air Quality EngineerI
Engineering Division

Date:

EVALUATION REPORT
Shore Terminals LLC

Plant Number: 581 **Application Number: 22758**

1. Background:

Shore Terminals LLC is a gasoline bulk terminal in Crockett. The facility has proposed to install the following source:

S-47 Emergency Standby Generator Set: Diesel Engine, Make Caterpillar, Model D30-8S, Model Year 2009, Rated 49 BHP.

The standby diesel engine is exempt from the requirements of Regulation 2-1-301 and 302 according to:
2-1-114 Exemption, Combustion Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, only if the source does not emit pollutants other than combustion products, and those combustion products are not caused by the combustion of a pollutant generated from another source, and the source does not require permitting pursuant to Section 2-1-319.
114.2 Internal Combustion Engines and Gas Turbines:
2.1 Internal combustion (IC) engines and gas turbines with a maximum output rating less than or equal to 50 hp.

2. Emission Calculations:

Emissions were estimated to determine if the source required permitting pursuant to Section 2-1-319.

The engine is CARB certified with Executive Order U-R-026-0245, and the emission factors were based on the certified levels. The facility also proposed to operate the engine 12 hours/year for reliability testing.

NOx	=	(	3.68	g/hp-hr)	(	49	hp)	(	12	hr/yr)	(lb/454g)	=	4.77 lb/yr
CO	=	(	0.75	g/hp-hr)	(	49	hp)	(	12	hr/yr)	(lb/454g)	=	0.97 lb/yr
POC	=	(	0.19	g/hp-hr)	(	49	hp)	(	12	hr/yr)	(lb/454g)	=	0.25 lb/yr
PM_{10}	=	(	0.13	g/hp-hr)	(	49	hp)	(	12	hr/yr)	(lb/454g)	=	0.16 lb/yr

Because the annual PM10 emissions from the engine is below the chronic trigger level of diesel PM (0.34 lb/yr) in Table 2-5-1 of Regulation 2-5, a Health Risk Screening Analysis is not required.

3. Statement of Compliance:

The exempt project described in Section 1 is exempt from Sections 2-1-301 and 302, in accordance with the specific section(s) of Regulation 2-1 cited in Section 1. I have verified that:

- The exempt project does not emit one or more toxic air contaminants in quantities that exceed the limits listed in Table 2-5-1 of Regulation 2-5. Hence, a Health Risk Screening is not required.
- This exempt project has not received two or more public nuisance violations, under Regulation 1-301 or Section 41700 of the California Health and Safety Code, within any consecutive 180-day period.
- The emission rate of any regulated air pollutant from the exempt project is NOT greater than 5 tons per year.

The project is considered to be ministerial under the District's CEQA regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emissions factors outlined in the Permit Handbook Chapter 2.3.1 and therefore is not discretionary as defined by CEQA.

Because the engine is rated less than 50 brake horsepower, it is not subject to the State's Airborne Toxic Control Measure for Stationary Compression Ignition (CI) Engines.

The engine is subject to 40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines because it was manufactured after April 1, 2006, as required by Section 60.4200(a)(2)(i). Because the engine has been certified by EPA and CARB, compliance with the NSPS is expected.

Prevention of Significant Deterioration and National Emission Standards for Hazardous Air Pollutants requirements are not triggered.

4. Exemption:

I recommend that the Applicant be issued exemption status for the following source:

S-47 Emergency Standby Generator Set: Diesel Engine, Make Caterpillar, Model D30-8S, Model Year 2009, Rated 49 BHP.

Reviewed By:_____ Date:_____
Xuna Cai
Air Quality Engineer

EVALUATION REPORT
Shore Terminals, LLC.
Plant 581
Application Number 22960

Background

Shore Terminals, LLC. (Shore) is proposing to alter/modify its A-1, Vapor Recovery Unit (Carbon Adsorption), abating S-22, Truck Loading Racks, in order to comply with new monitoring requirements contained in Regulation 8-33 at its gasoline bulk terminal located in Richmond. The additional monitoring equipment installation is required per section 8-33-309.10. This application is treated more like an alteration even though there will be an increase in emissions as a result of installing additional fugitive components associated with the required monitoring equipment. Section 1-115 would not subject this modification to either BACT or offsets since the modification is required by a change in the regulations. However, section 1-115 does not exempt these modifications for purposes of Regulation 2-5 (NSR for TACs). The facility has provided emission estimates to demonstrate that the TAC emissions in this project are below the trigger levels in Regulation 2-5, and therefore a health risk screening analysis is not required. The district workgroup associated with Regulation 8-33 also requested that a permit condition be added to clarify the correlation testing requirement in section 8-33-309.10.

Emission Calculations

There will be a small increase in emissions as a result of this application due to the installation of fugitive components. However, this increase in emissions is not subject to BACT/Offsets/cumulative increase.

The emission estimate is contained in Attachment 1.

Plant Cumulative Increase

There will be no increase in the plant cumulative increase as a result of this application.

Toxics Risk Screening Analysis

Toxic	Emissions Rates	Trigger Levels
Benzene	0.10 #/hr, 3.38 #/yr	2.9 #/hr, 3.8 #/yr

A health risk screening analysis was not required for this application since the increase in toxic emissions as a result of this application will not exceed the toxic trigger levels identified in Regulation 2-5.

Statement of Compliance

A-1 will continue to comply with Regulation 8-33, sections 301 – 307, and 309, which require that organic emissions not exceed 0.04 pounds per thousand gallons, the VRU be CARB certified, delivery vehicle requirements including bottom filling, equipment maintained leak free, vapor tight and in good working order, operating practices that minimize emissions, and not exceeding VRU capacity, and that the delivery vehicle gauge pressure not exceed 18 inches of water column during loading operations. Section 309.10 requires both that new monitoring equipment be installed and that annual correlation testing be performed. Section 309.4 also requires annual source testing in order to demonstrate compliance with section 8-33-301.

This application is not subject to BACT/Offsets per Regulation 1, section 115.

This application does not require a health risk screening analysis per Regulation 2-5 since the toxic emissions will not exceed the respective trigger levels.

This application is not subject to CEQA since the evaluation is a ministerial action that can be performed using fixed standards and objective measurements outlined in the Permit Handbook Chapter's 3.1 and 3.4. This application is also considered exempt from CEQA per section 2-1-312.2 since it is for the installation of abatement equipment.

NSPS, NESHAPs, and PSD do not apply to this application.

Recommendation

Recommend that the following equipment be granted a Permit to Operate:

A-1 Vapor Recovery Unit, Carbon Adsorption; abating S-22 Truck Loading Rack; equipped with backpressure monitoring

Permit Conditions

Permit Condition # 24901

1. Within 30 days of installing the back pressure monitors on the vapor collection piping of each loading rack abated by A-1 and the related fugitive components, such as but not limited to connectors, flanges, open-ended lines, pump seals, and valves as required by the 2009 amendments to Regulation 8, Rule 33, the owner/operator shall provide the permit engineer in the Bay Area Air Quality Management District's (herein after District) Engineering Division assigned to Plant 581 a final count of all fugitive components installed, along with each installed component's unique and permanent identification number.
[Basis: Regulation's 2-1-403 and 8-33-309.10]

2. Until such time a final count of all fugitive components installed is provided to the District's permit engineer assigned to Plant 581 and for the interim, the owner/operator has proposed to and has been permitted by the District under Application 22960 to install the following fugitive components: 8 flanges; 8 connectors; 5 valves; and 4 pressure relief valves.
[Basis: Cumulative Increase, Regulation 2, Rule 5, Regulation 8, Rule 33]

3. On a quarterly basis, the owner/operator shall monitor the fugitive components installed as part of Application 22960 for leaks with a device such as, but not limited to, a flame ionization detector (FID). For the purposes of this permit condition, a leak is defined as the concentration of total organic compounds

(TOC) above background, expressed as methane, as measured 1 centimeter or less from a leaking fugitive component using EPA Reference Method 21 (40 CFR 60, Appendix A).
[Basis: Regulation 8, Rule 33]

4. Within 30 days of discovering a leak, the owner/operator shall repair and re-inspect all flanges, connectors, and valves installed under Application 22960 that are found to be leaking in excess of 100 ppm of TOC expressed as methane.
[Basis: Regulation 2-1-403 and Regulation 2, Rule 5]

5. Within 30 days of discovering a leak, the owner/operator shall repair and re-inspect all pressure relief valves installed under Application 22960 that are found to be leaking in excess of 500 ppm of TOC expressed as methane.
[Basis: Regulation 2-1-403 and Regulation 2, Rule 5]

6. Each backpressure monitor installed by the owner/operator under Application 22960 shall be correlation tested as follows:

a. The owner/operator shall conduct a District-approved correlation source test within 60 days of startup and annually thereafter, with pressure measured at the loading rack/cargo tank interface.
b. The owner/operator shall submit a correlation testing protocol for each backpressure monitor installed under Application 22960 to be reviewed and approved by the Source Test Manager at least 15 days prior to conducting testing.
c. The owner/operator shall notify the Manager of Source Test Section (STS) at least 7 days prior to the date the test is to be conducted, and shall submit the final source test reports to the above individual within 60 days of testing.

Protocol, notification and final report submission should be made electronically by the owner/operator to the Manager of Source Test at: sourcetest@baaqmd.gov. [Basis: Regulation 8, Rule 33]

7. The owner/operator shall maintain a District-approved monthly log of monitoring results and leak repairs performed at fugitive components installed as part of Application 22960 for at least 24 months from date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit). The log may be in the form of computer-generated data, which is available to District personnel on short notice (rather than actual paper copies).
[Basis: Regulation 2-1-403]

by_____date_____
Xuna Cai
Air Quality Engineer

ENGINEERING EVALUATION
SHORE TERMINAL, LLC/NUSTAR
PLANT 581
APPLICATION 26088

BACKGROUND

NuStar is applying for an Authority to Construct and/or Permit to Operate a new standby generator:

S-48 Emergency Standby Generator Set for Fire Pump: Diesel Engine, Make Caterpillar, Model C18, Model Year 2012, Rated 900 BHP.

The emergency standby generator is used to power a fire water pump, so the diesel engine is not a direct-drive fire pump engine.

EMISSIONS SUMMARY

Annual Emissions:

Basis:
- 900 horsepower (hp) output rating for full-load, standby operation
- 50 hours/year operation for reliability-related activities
- The engine of S-48 is certified to meet the EPA Tier 2 standards according to the EPA Certificate Number CCPXL18.INYS-018. Emission factors were calculated using the manufacturer's emission testing data submitted to EPA for certification.

Pollutant	Emission Factor (g/hp-hr)
NOx	4.13
CO	0.60
POC	0.22
PM_{10}	0.06

- The emission factor for SO_2 is from Chapter 3, Table 3.4-1 of the EPA Document AP-42, Compilation of Air Pollutant Emission Factors, which is based on full conversion of fuel sulfur to SO_2 and which will therefore be considered applicable to any diesel engine (sulfur content will be assumed to be the California limit of 0.0015 wt% sulfur):
SO_2: 8.09E-3 (% S in fuel oil) lb/hp-hr = 8.09E-3 (0.0015% S) (454 g/lb) = 0.0055 g/hp-hr

NOx	=	(	4.13	g/hp-hr)	(	900	hp)	(	50	hr/yr)	(lb/454g)	=	409.61	lb/yr	=	0.205 TPY
CO	=	(	0.60	g/hp-hr)	(	900	hp)	(	50	hr/yr)	(lb/454g)	=	59.47	lb/yr	=	0.030 TPY
POC	=	(	0.22	g/hp-hr)	(	900	hp)	(	50	hr/yr)	(lb/454g)	=	21.56	lb/yr	=	0.011 TPY
PM_{10}	=	(	0.06	g/hp-hr)	(	900	hp)	(	50	hr/yr)	(lb/454g)	=	5.947	lb/yr	=	0.003 TPY
SO_2	=	(	0.0055	g/hp-hr)	(	900	hp)	(	50	hr/yr)	(lb/454g)	=	0.55	lb/yr	=	0.000 TPY

Maximum Daily Emissions:

Daily emissions are calculated to establish whether a source triggers the requirement for Best Available Control Technology (10 lb/highest day total source emissions for any class of pollutants). A full 24-hour day will be assumed since no daily limits are imposed on intermittent and unexpected operations.

NOx	=	(	4.13	g/hp-hr)	(	900	hp)	(	24	hr/day)	(lb/454g)	=	196.61	lb/day
CO	=	(	0.60	g/hp-hr)	(	900	hp)	(	24	hr/day)	(lb/454g)	=	28.55	lb/day
POC	=	(	0.22	g/hp-hr)	(	900	hp)	(	24	hr/day)	(lb/454g)	=	10.35	lb/day
PM_{10}	=	(	0.06	g/hp-hr)	(	900	hp)	(	24	hr/day)	(lb/454g)	=	2.85	lb/day
SO_2	=	(	0.0055	g/hp-hr)	(	900	hp)	(	24	hr/day)	(lb/454g)	=	0.26	lb/day

PLANT CUMULATIVE INCREASE (tons/year, post 4/5/1991)

Pollutant	Current	Application Increase	New Total
NOx	0	0.205	0.205
CO	0	0.030	0.030
POC	0	0.011	0.011
PM10	0	0.003	0.003

TOXICS RISK SCREENING

The calculated emissions increase of diesel exhaust particulate matter (PM) associated with the engine are in excess of the chronic risk screening trigger as set forth in Regulation 2, Rule 5, as shown below. Therefore, a health risk screening analysis is required for this project.

Source:	PM_{10} Emission Factor (g/hp-hr)	HP	Annual Usage (hr/year)	Diesel Exhaust Particulate Emissions (lb/year):	Trigger Level (lb/yr)
S-48	0.06	900	50	5.947	0.34

Per the attached May 8, 2014 memo from Daphne Y. Chong, results from the health risk screening analysis indicate that, for the project as defined in Regulation 2-5, the maximum cancer risk is 5.2 in a million and the maximum chronic hazard index is 0.0037 for 50 hours of operation per year. In accordance with the District's Regulation 2-5, the source is compliance with the TBACT for PM10 (=< 0.15 g/hp-hr) and project risk requirements.

STATEMENT OF COMPLIANCE

The owner/operator of S-48 shall comply with Regulation 6-1 (Particulate Matter and Visible Emissions Standards) and Regulation 9-1-301 (Inorganic Gaseous Pollutants: Sulfur Dioxide for Limitations on Ground Level Concentrations). Since the engine meets TBACT for PM_{10} (=<0.15 g/hp-hr), it is expected to comply with Regulation 6-1. Ultra-low sulfur diesel (15 PPM sulfur) will be used to meet the sulfur limitation of 0.5wt% in Regulation 9-1-304 as well as to minimize PM_{10} emissions. Because S-48 is an emergency standby generator, Regulation 9-8-110 (Inorganic Gaseous Pollutants: Nitrogen Oxides and Carbon Monoxide rom Stationary Internal Combustion Engines) exempts the requirements for emission limits of Sections 9-8-301 through 305. Allowable operating hours and the corresponding record keeping in Regulation 9-8-330 and 530 will be included in the permit conditions.

The diesel engine is subject to the Stationary Diesel Airborne Toxics Control Measure (ATCM) and is considered new stationary emergency standby diesel engine since it will be installed after January 1, 2005 and is larger than 50 hp. The requirements of the ATCM will be included in the permit conditions.

The project is considered to be ministerial under the District's CEQA regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emissions factors outlined in the Permit Handbook Chapter 2.3.1 and therefore is not discretionary as defined by CEQA.

The project is over 1000 feet from the nearest school and therefore not subject to the public notification requirements of Regulation 2-1-412.

Best Available Control Technology (BACT):
In accordance with Regulation 2-2-301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NOx, CO, SO_2 or PM_{10}.

Based on the emission calculations above, the owner/operator of S-48 is subject to BACT for NOx, CO and POC . The District's BACT requirements for "IC Engine - Compression Ignition: Stationary Emergency > 50 bhp" are addressed in the BACT Guideline, document # 96.1.3, revision 7, dated December 22, 2010. The BACT2 requirements are 4.56 g/bhp-hr for NOx, 2.6 g/bhp-hr for CO, and 0.24 g/bhp-hr for POC for engines with maximum power greater than 750 HP, , which is the same as the EPA Tier 2 standards. Since the S-48 engine is certified to meet the EPA Tier 2 standards according to the EPA Certificate Number CCPXL18.INYS-018, S-48 meets the BACT2 requirements .

Offsets:
Offsets must be provided for any new or modified source at a facility that emits more than 10 tons per year of POC or NOx. If a facility emits or will be permitted to emit more than 10 tons per year but less than 35 tons per year, on a pollutant specific basis, of POC or NOx, emission offsets will be provided by the District's Small Facility Bank at a 1.0 to 1.0 ratio. If a facility emits or will be permitted to emit 35 tons per year or more, the facility must provide the offsets at a 1.15 to 1.0 ratio.

Because NuStar's has been permitted to emit more than 35 tons of NOx and POC per year, the facility must provide offset credits for the NOx and POC emission increase in this application at

a 1.0 to 1.15 ratio. The facility has provided Banking Certificate 1418 for the required NOx offset credits (0.236 TPY), and Banking Certificate 1249 for the required POC offset credits (0.013 TPY).

New Source Performance Standards (NSPS):
The engine is subject to 40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines because it was manufactured after April 1, 2006, as required by Section 60.4200(a)(2)(i).

The engine of S-48 has a total displacement of 18.13 liters and 4 cylinders. Therefore, each cylinder has a volume of less than 10 liters. The engine is a 2012 engine and is not a direct-drive fire pump engine. Section 60.4205(b) requires these engines to comply with the standards in Section 60.4202 that apply to the same model year and maximum engine power. For engines above 50 hp, below 3000 hp, and that have a displacement less than 10 liters per cylinder, the requirement is to comply with the certification standards in 40 CFR 89.112 and 89.113 for all pollutants.

For engines between 560 kW and 900 kW, the standards in Section 89.112 are:

- NMHC+NOx: 6.4 g/kW-hr
- CO: 3.5 g/kW-hr
- PM: 0.20 g/kW-hr

Section 89.113 states that the exhaust opacity must not exceed:

- 20 percent during acceleration
- 15 percent during lugging
- 50 percent during peaks in acceleration or lugging modes

Since the engine has been certified by EPA to meet these standards, it will comply with the above standards.

The owner/operator is expected to comply with Sections 60.4206 and 60.4211(a), which require that the owner/operator operate and maintain the engine according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine.

Section 60.4209(a) requires a non-resettable hour meter. This requirement is already in the standard permit conditions.

The engine will comply with the requirement in Section 60.4211(e) to run for less than 100 hours per year for maintenance checks and readiness testing, and the prohibition of running for any reason other than emergency operation, maintenance, and testing because the facility is limited by permit condition to 50 hours per year for reliability testing and otherwise may only operate for emergencies.

The owner/operator is not required to perform tests in accordance with Section 60.4212 or 60.4213.

Section 60.4214 states that owner/operator does not have to submit an initial notification to EPA for emergency engines.

The owner/operator is required to comply with certain sections of 40 CFR 60, Subpart A, General Provisions.

Prevention of Significant Deterioration (PSD):
The emission increase resulting from this project is expected to be less than 1 TPY for any class of pollutants. Since it is far below the PSD thresholds, the project is not subject to PSD review.

National Emission Standards for Hazardous Air Pollutants (NESHAP)
This engine is subject to the emission or operating limitations in 40 CFR 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. Because it is a new engine at an area source for HAP, this engine must meet the requirements in 40 CFR part 60 subpart IIII and no further requirements apply to this engine under this subpart according to §63.6590(c)(1).

PERMIT CONDITIONS

S-48 will be subject to Permit Condition 22850 and as shown below.

Permit Condition Number 22850

1. The owner/operator shall not exceed 50 hours per year per engine for reliability-related testing. [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection 93115.6 (b)(3)(A)(1)(a)]

2. The owner/operator shall operate each emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, State or Federal emission limit, or for reliability-related activities (maintenance and other testing, but excluding emission testing). Operating while mitigating emergency conditions or while emission testing to show compliance with District, State or Federal emission limits is not limited. [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection 93115.6 (b)(3)(A)(1)(a)]

3. The owner/operator shall operate each emergency standby engine only when a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that

measures the hours of operation for the engine is installed, operated and properly maintained.
[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection 93115.10 (e)(1)]

4. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit). Log entries shall be retained on-site, either at a central location or at the engine's location, and made immediately available to the District staff upon request.

   a. Hours of operation for reliability-related activities (maintenance and testing).
   b. Hours of operation for emission testing to show compliance with emission limits.
   c. Hours of operation (emergency).
   d. For each emergency, the nature of the emergency condition.
   e. Fuel usage for each engine(s).

   [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection 93115.10 (g) (or, Regulation 2-6-501)]

5. At School and Near-School Operation:
   If the emergency standby engine is located on school grounds or within 500 feet of any school grounds, the following requirements shall apply:
   The owner/operator shall not operate each stationary emergency standby diesel-fueled engine for non-emergency use, including maintenance and testing, during the following periods:

   a. Whenever there is a school sponsored activity (if the engine is located on school grounds)
   b. Between 7:30 a.m. and 3:30 p.m. on days when school is in session.

   "School" or "School Grounds" means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). "School" or "School Grounds" includes any building or structure, playground, athletic field, or other areas of school property but does not include unimproved school property.
   [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection 93115.6 (b)(2)]

RECOMMENDATION

Issue the Authority to Construct to NuStar for:

S-48 Emergency Standby Generator Set for Fire Pump: Diesel Engine, Make Caterpillar, Model C18, Model Year 2012, Rated 900 BHP.

By:_____ Date:_____
Xuna Cai
Air Quality Engineer

APPENDIX B

Glossary

ACT
Federal Clean Air Act

APCO
Air Pollution Control Officer

API
American Petroleum Institute

ARB
Air Resources Board

BAAQMD
Bay Area Air Quality Management District

BACT
Best Available Control Technology

BARCT
Best Available Retrofit Control Technology

Basis
The underlying authority that allows the District to impose requirements.

C_5
An Organic chemical compound with five carbon atoms

C_6
An Organic chemical compound with six carbon atoms

CAA
The federal Clean Air Act

CAAQS
California Ambient Air Quality Standards

CAPCOA
California Air Pollution Control Officers Association

CEC
California Energy Commission

CEQA
California Environmental Quality Act

CEM
Continuous Emission Monitor: a monitoring device that provides a continuous direct measurement of some pollutant (e.g. NOx concentration) in an exhaust stream.

CFP

Clean Fuels Project

CFR
The Code of Federal Regulations. 40 CFR contains the implementing regulations for federal environmental statutes such as the Clean Air Act. Parts 50-99 of 40 CFR contain the requirements for air pollution programs.

CO
Carbon Monoxide

CO_2
Carbon Dioxide

Cumulative Increase
The sum of permitted emissions from each new or modified source since a specified date pursuant to BAAQMD Rule 2-1-403, Permit Conditions (as amended by the District Board on 7/17/91) and SIP Rule 2-1-403, Permit Conditions (as approved by EPA on 6/23/95). Used to determine whether threshold-based requirements are triggered.

DAF
A "dissolved air flotation" unit is a process vessel where air bubbles injected at the bottom of the vessel are used to carry solids in the liquid into a froth on the liquid surface, where it is removed.

DWT
Dead Weight Ton

District
The Bay Area Air Quality Management District

DNF
Dissolved Nitrogen Flotation (See DAF)

dscf
Dry Standard Cubic Feet

dscm
Dry Standard Cubic Meter

E 6, E 9, E 12
Very large or very small number values are commonly expressed in a form called scientific notation, which consists of a decimal part multiplied by 10 raised to some power. For example, 4.53 E 6 equals (4.53) x (10^6) = (4.53) x (10 x 10 x 10 x 10 x 10 x 10) = 4,530,000. Scientific notation is used to express large or small numbers without writing out long strings of zeros.

EFRT
An "external floating roof tank" minimizes VOC emissions with a roof with floats on the surface of the liquid, thus preventing the formation of a VOC-rich vapor space above the liquid surface as the level in the tank drops. If such a vapor space were allowed to form, it would be expelled when the tank was re-filled. On an EFRT, the floating roof is not enclosed

by a second, fixed tank roof, and is thus described as an "external" roof.

EPA
The federal Environmental Protection Agency.

ETP
Effluent Treatment Plant

Excluded
Not subject to any District Regulations.

FCC
Fluid Catalytic Cracker

Federally Enforceable, FE
All limitations and conditions which are enforceable by the Administrator of the EPA including those requirements developed pursuant to 40 CFR Part 51, subpart I (NSR), Part 52.21 (PSD), Part 60, (NSPS), Part 61, (NESHAPs), Part 63 (HAP), and Part 72 (Permits Regulation, Acid Rain), and also including limitations and conditions contained in operating permits issued under an EPA-approved program that has been incorporated into the SIP.

FP
Filterable Particulate as measured by BAAQMD Method ST-15, Particulate.

FR
Federal Register

FRT
Floating Roof Tank (See EFRT and IFRT)

GDF
Gasoline Dispensing Facility

GLM
Ground Level Monitor

grain
1/7000 of a pound

Graphitic
Made of graphite.

HAP
Hazardous Air Pollutant. Any pollutant listed pursuant to Section 112(b) of the Act. Also refers to the program mandated by Title I, Section 112, of the Act and implemented by both 40 CFR Part 63, and District Regulation 2, Rule 5.

H_2S
Hydrogen Sulfide

H_2SO_4

Sulfuric Acid

Hg
Mercury

HHV
Higher Heating Value. The quantity of heat evolved as determined by a calorimeter where the combustion products are cooled to 60F and all water vapor is condensed to liquid.

IFRT
An "internal floating roof tank" minimizes VOC emissions with a roof with floats on the surface of the liquid, thus preventing the formation of a VOC-rich vapor space above the liquid surface as the level in the tank drops. If such a vapor space were allowed to form, it would be expelled when the tank was re-filled. On an IFRT, the floating roof is enclosed by a second, fixed tank roof, and thus is described as an "internal" roof.

ISOM
Isomerization plant

LHV
Lower Heating Value. Similar to the higher heating value (see HHV) except that the water produced by the combustion is not condensed but retained as vapor at 60F.

Lighter
"Lightering" is a transfer operation during which liquid is pumped from an ocean-going tanker vessel to a smaller vessel such as a barge. Like any liquid transfer operation, lightering of organic liquids produces organic vapor emissions.

Long ton
2200 pounds

Major Facility
A facility with potential emissions of: (1) at least 100 tons per year of any regulated air pollutant, (2) at least 10 tons per year of any single hazardous air pollutant, and/or (3) at least 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity of hazardous air pollutants as determined by the EPA administrator.

MDEA
Methyl Diethanolamine

MFR
Major Facility Review. The District's term for the federal operating permit program mandated by Title V of the Act and implemented by District Regulation 2, Rule 6.

Mo Gas
Motor gasoline

MOP
The District's Manual of Procedures.

MOSC

Mobil Oil Sludge Conversion (licensed technology)

MSDS
Material Safety Data Sheet

MTBE
methyl tertiary-butyl ether

NA
Not Applicable

NAAQS
National Ambient Air Quality Standards

NESHAPs
National Emission Standards for Hazardous Air Pollutants. Contained in 40 CFR Part 63.

NMHC
Non-methane Hydrocarbons

NMOC
Non-methane Organic Compounds (Same as NMHC)

NO2
Nitrogen Dioxide.

NOx
Oxides of nitrogen.

NSPS
Standards of Performance for New Stationary Sources. Federal standards for emissions from new stationary sources. Mandated by Title I, Section 111 of the Act, and implemented by both 40 CFR Part 60 and District Regulation 10.

NSR
New Source Review. A federal program for pre-construction review and permitting of new and modified sources of air pollutants for which the District is classified "non-attainment". Mandated by Title I of the Clean Air Act and implemented by 40 CFR Parts 51 and 52 as well as District Regulation 2, Rule 2. (Note: There are additional NSR requirements mandated by the California Clean Air Act.)

O2
The chemical name for naturally-occurring oxygen gas.

Offset Requirement
A New Source Review requirement to provide federally enforceable emission offsets at a specified ratio for the emissions from a new or modified source and any pre-existing cumulative increase minus any onsite contemporaneous emission reduction credits. Applies to emissions of POC, NOx, PM10, and SO2.

Phase II Acid Rain Facility

A facility that generates electricity for sale through fossil-fuel combustion and by virtue of certain other characteristics (defined in Regulation 2, Rule 6) is subject to Titles IV and V of the Clean Air Act.

POC
Precursor Organic Compounds

PM
Total Particulate Matter

PM10
Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns

PSD
Prevention of Significant Deterioration. A federal program for permitting new and modified sources of air pollutants for which the District is classified "attainment" of the National Air Ambient Quality Standards. Mandated by Title I of the Act and implemented by both 40 CFR Part 52 and District Regulation 2, Rule 2.

Regulated Organic Liquid
"Regulated organic liquids" are those liquids which require permits, or which are subject to some regulation, when processed at a liquid-handling operation. For example, for refinery marine terminals, regulated organic liquids are defined as "organic liquids" in Regulation 8, Rule 44.

RFG
Refinery Fuel Gas

RMG
Refinery Make Gas

SCR
A "selective catalytic reduction" unit is an abatement device that reduces NOx concentrations in the exhaust stream of a combustion device. SCRs utilize a catalyst, which operates at a specific temperature range, and injected ammonia to promote the conversion of NOx compounds to nitrogen gas.

SIP
State Implementation Plan. State and District programs and regulations approved by EPA and developed in order to attain the National Air Ambient Quality Standards. Mandated by Title I of the Act.

SO2
Sulfur dioxide

SO_2 Bubble
An SO2 bubble is an overall cap on the SO2 emissions from a defined group of sources, or from an entire facility. SO2 bubbles are sometimes used at refineries because combustion sources are typically fired entirely or in part by "refinery fuel gas" (RFG), a waste gas product from refining operations. Thus, total SO2 emissions may be conveniently quantified by monitoring the total amount of RFG that is consumed, and the concentration of H2S and other

sulfur compounds in the RFG.

SO_3
Sulfur trioxide

THC
Total Hydrocarbons (NMHC + Methane)

therm
100,000 British Thermal Units

Title V
Title V of the federal Clean Air Act. Requires a federally enforceable operating permit program for major and certain other facilities.

TOC
Total Organic Compounds (NMOC + Methane, Same as THC)

TPH
Total Petroleum Hydrocarbons

TRMP
Toxic Risk Management Plan

TRS
"Total reduced sulfur" is a measure of the amount of sulfur-containing compounds in a gas stream, typically a fuel gas stream, including, but not limited to, hydrogen sulfide. The TRS content of a fuel gas determines the concentration of SO2 that will be present in the combusted fuel gas, since sulfur compounds are converted to SO2 by the combustion process.

TSP
Total Suspended Particulate

TVP
True Vapor Pressure

VESSEL CALLING
Communication between vessel to vessel, or vessel to harbor authority for notification of distance or position of the vessel.

VOC
Volatile Organic Compounds

Units of Measure:

bbl	=	barrel of liquid (42 gallons)
bhp	=	brake-horsepower

btu	=	British Thermal Unit
C =	degrees Celcius	
F =	degrees Fahrenheit	
f^3 =	cubic feet	
g	=	grams
gal	=	gallon
gpm	=	gallons per minute
gr	=	grain
hp	=	horsepower
hr	=	hour
lb=	pound	
in=	inches	
max	=	maximum
m^2	=	square meter
min	=	minute
M	=	thousand
mm	=	million
Mg	=	mega-gram, one thousand grams
µg	=	micro-gram, one millionth of a gram
MM	=	million
mm	=	millimeter
MMbtu	=	million btu
mm Hg	=	millimeters of Mercury (pressure)
MW	=	megawatts
ppmv	=	parts per million, by volume
ppmw	=	parts per million, by weight
psia	=	pounds per square inch, absolute
psig	=	pounds per square inch, gauge
scfm	=	standard cubic feet per minute
yr	=	year

Symbols:

<	=	less than
>	=	greater than
≤	=	less than or equal to
≥	=	greater than or equal to