

**Bay Area Air Quality Management District**

375 Beale Street  
San Francisco, CA 94105  
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**Permit Evaluation  
and  
Statement of Basis  
for  
RENEWAL of**

**MAJOR FACILITY REVIEW PERMIT**

**"Revision 6"**

for

**Tesoro Refining and Marketing Company  
Facility # B2758 & B2759**

**Facility Address:**

Golden Eagle Refinery	Amorco Terminal
150 Solano Way	1750 Marina Vista Way
Martinez, CA 94553	Martinez, CA 94553

**Mailing Address:**

Golden Eagle Refinery  
150 Solano Way  
Martinez, CA 94553

Application Engineer: Arthur Valla  
Site Engineer: Arthur Valla

Application: 27688  
January 2019

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## **Title V Statement of Basis**

### **A. Background**

This facility is subject to the Operating Permit requirements of Title V of the federal Clean Air Act, Part 70 of Title 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.

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 identifiers for these facilities are B2758 and B2759.

The District issued the initial Title V permit to these facilities on December 1, 2003. The permit has been reopened several times, as outlined below.

*Revision 1:* The District issued a reopened permit, Revision 1, that amended flare and Regulation 9-10 requirements, corrected errors, and incorporated some new sources and permit conditions on December 16, 2004. This reopening is generally referred to as “Revision 1”.

*Revision 1.5:* On October 8, 2004, EPA sent a letter formally objecting to the permit because it did not include monitoring or a design review for the destruction efficiency of thermal oxidizers. The permit was revised to address EPA’s objection in a reopening of the permit that was proposed on February 1, 2005. The revised permit was issued on April 12, 2005. This reopening is generally referred to as “Revision 1.5”. There are no revisions designated 1.1, 1.2, 1.3 or 1.4.

*Revision 2:* EPA’s October 8, 2004 letter also included comments identifying a number of issues to be resolved in the District’s refinery Title V permits. (Note that EPA commented on five refineries in this letter. Not all comments concern this facility.) To address those deficiencies, the District proposed another reopening, generally referred to as “Revision 2”, and published it for public comment on April 15, 2005. In addition, some issues raised in the refinery’s appeal to the December 16, 2004 permit and some refinery comments on that permit were addressed.

*Revision 3:* On March 15, 2005, shortly before the Revision 2 reopening was proposed, EPA issued an Order directing the District to reopen the permit to address possible deficiencies that EPA had identified based on petitions it received from the public to object to the permit. To address those possible deficiencies, the District proposed another reopening, generally referred to as Revision 3, in order to address the issues raised in the Order. The District proposed Revision 3 and published it for public comment on August 2, 2005. EPA and one other organization submitted comments. The District finalized Revision 2 and Revision 3 concurrently. The revised permit was issued on March 9, 2007.

*Revision 4:* During the time the District was addressing the issues of the Revision 2 reopening and the Revision 3 reopening, many permit applications were received from the facility. Revision 4 was a Significant Revision incorporating changes from all of these applications (listed in the statement of basis for that Revision). Revision 4 was the final permit revision prior to the 2008 permit renewal and forms the basis for the renewal submission. The revised permit was issued on March 20, 2008.

*Revision 5:* During the time the District was addressing the Revision 4 permit revision, many permit applications were received from the facility. Revision 5 was a Minor Revision incorporating changes from all of these applications (listed in the statement of basis for that Revision). Revision 5 was the final permit revision prior to this permit renewal and forms the basis for the renewal submission. The revised Revision 5 permit was issued on January 11, 2016.

*Revision 6.* This application is for a 5-year permit renewal, and will be designated "Revision 6". Although the current permit expired on June 27, 2016, it continues in force until the District takes final action on the permit renewal. The proposed permit shows all changes to the permit in strikeout/underline format. Details of proposed permit changes are listed in Section C of this document.

This statement of basis concerns only changes to the permit. A comprehensive statement of basis was prepared for the initial issuance of the permit and for each subsequent issuance (Revision 1, Revision 2, Revision 2/3, Revision 4 and Revision 5). These documents are considered to be the statement for basis for the entire permit. They are available on request.

## **B. Facility Description**

The Title V permit includes the Refinery and the Amorco Marine Terminal.

An oil refinery is an intermediary between crude oil and a refined product. It takes dirty, low-value oil from the ground and distills it under atmospheric pressure into its primary components: gases (light ends), gasolines, kerosene and diesels (middle distillates), heavy distillates, and heavy bottoms. The heavy bottoms go on to a vacuum distillation unit to be distilled again, this time under a vacuum, to further recover any light ends or middle distillates that did not get separated under atmospheric pressure; the heaviest bottoms continue on to a coker or an asphalt plant.

Other product components are processed by downstream units to be cleaned (hydrotreated), cracked (catalytic or hydrocracking), reformed (catalytic reforming), or alkylated (alkylation) to

form gasolines and high-octane blending components, or to have sulfur or other impurities removed to make over-the-road diesel (low sulfur) or off-road diesel (higher sulfur). Depending on the process units in a refinery and the crude oil input, an oil refinery can produce a wide range of salable products: many different grades of gasoline and gasoline blend stocks, several grades of diesel, kerosene, jet and aviation fuel, fuel oil, bunker fuels, waxes, solvents, sulfur, coke, asphalt, or chemical plant feedstocks.

A more detailed description of petroleum refinery processes and the resulting air emissions may be found in Chapter 5 of EPA's publication AP-42, Compilation of Air Pollutant Emission Factors. This document may be found at:

<http://www.epa.gov/ttn/chief/ap42/ch05/>

The principal sources of air emissions from refineries are:

- Combustion units (furnaces, boilers, and cogeneration facilities)
- FCC (Fluidized Catalytic Cracking)
- Storage tanks
- Fugitive emissions from pipe fittings, pumps, and compressors
- Sulfur plants
- Wastewater treatment facilities

Tesoro also owns and operates the following additional sources of air emissions:

- Ammonia Recovery Unit
- Sulfuric Acid Manufacturing Plant

Combustion unit emissions are generally controlled through the use of burner technology, steam injection, or selective catalytic reduction. Emissions from the FCCU are controlled through the use of improved catalyst regeneration, CO boilers, electrostatic precipitators, hydrotreating the feed, and use of catalysts to remove impurities. Storage tank emissions are controlled through the use of add on control and or fitting loss control. Fugitive emissions have been controlled through the use of inspection and maintenance frequencies. Sulfur plants are equipped with tail gas units to reduce emissions. Wastewater treatment facilities are controlled by covering units, gasketing covers, and add on controls such as carbon canisters. The Ammonia Recovery Unit is controlled by the Ammonia Plant Flare and the Sulfuric Acid Manufacturing Plant is controlled with the Final Absorber and Brink mist eliminators.

### **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**

This section contains administrative requirements and conditions that apply to all facilities. 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 and Regulation 2. These are the District’s General Provisions and Permitting rules.

**Changes to permit**

<b>Changes to Section I</b>				
<b>Item</b>	<b>Sources</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
1	All	Cover Page	Changed Facility Contact	Tesoro 8-3-18 Comment #1
2	All	I.A	Updated dates.	Dates of amendments.
3	All	I.F & I.J.2	Updated address.	BAAQMD relocated.
4	All	I.F & G	Added e-mail addresses.	Electronic option now available.

**II. Equipment**

This section of the permit lists all permitted, significant, exempt and contractor sources. Each source is identified by an S and a number (e.g., S24 or S-24).

Permitted sources are those sources that require a BAAQMD operating permit pursuant to Regulation 2-1-302. Significant sources are those sources that have a potential to emit of more than 2 tons of a “regulated air pollutant,” as defined in BAAQMD Rule 2-6-222, per year or 400 pounds of a “hazardous air pollutant,” as defined in BAAQMD Rule 2-6-210, per year. Exempt sources are those sources that are exempt from permitting in accordance with an exemption in BAAQMD Regulation 2, Rule 1. The applicable exemption is listed for each exempt source. Contractor sources are those sources not owned or operated by the owner/operator of the Major Facility and are stationary sources because they have been located at the Major Facility for more than a 12-month period.

All abatement (control) devices that control permitted or exempt sources are listed. Each abatement device whose primary function is to reduce emissions is identified by an A and a number (e.g., A-24). If a source is also an abatement device, such as when an engine controls VOC emissions, it will be listed in the abatement device table but will have an “S” number. An abatement device may also be a source (such as a thermal oxidizer that burns fuel) of secondary emissions. If the primary function of a device is to control emissions, it is considered an abatement (or “A”) device. If the primary function of a device is a non-control function, the device is considered to be a source (or “S”). Flares are unique in that they are considered both a source and an abatement device. Flares are considered sources, subject to BAAQMD Regulation 12, Rules 11 and 12, and have source (or "S") numbers. Flares are also abatement devices, as defined in Regulation 1-240, because the sole purpose of a flare is to reduce emissions associated with the vent gas sent to the flares. Consequently, the flares are, per District policy, included in both the permitted source and the abatement device tables.

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 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. The capacities in the permitted sources table are the maximum allowable capacities for each source, pursuant to Standard Condition I.J and Regulation 2-1-403.

**Changes to permit**

Following is a list of the changes in Section II Equipment List between the Revision 5 and the Renewal:

<b>Changes to Section II</b>				
<b>Table II A1 - Permitted Sources – Golden Eagle Refinery</b>				
<b>Item</b>	<b>Source</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
1	S100	All	Removed source from table	Applications 27990/27991
2	S108	All	Removed source from table	Applications 27990/27991
3	S315	All	Removed source from table	Source demolished
4	S318	All	Removed source from table	Source demolished
5	S367	All	Removed source from table	Source demolished
6	S513	All	Removed source from table	Source demolished
7	S529	All	Removed source from table	Source demolished
8	S530	All	Removed source from table	Source demolished
9	S587	All	Removed source from table	Source demolished
10	S588	All	Removed source from table	Source demolished
11	S629	All	Removed source from table	Removed from service
12	S659	All	Removed source from table	Source demolished
13	S660	All	Removed source from table	Source demolished
14	S690	Limit Basis	Added “New Source Review”	S690 was subject to the requirements of Regulation 2, Rule 2 in NSR Application 11737
15	S830	Capacity	Updated capacity	Applications 25718/25719
16	S904	Capacity	Updated capacity	Applications 27054/27065
17	S963	All	Deleted source	Applications 28445/28446
18	S973	Capacity	Corrected capacity	Corrected a typo from Rev 5.
19	S980	Capacity	Updated capacity	Applications 25718/25719
20	S1013	Capacity	Corrected capacity	Permitted in 1983 NSR Application 29050
21	S1411	Limit Basis	Added Condition 26266	Applications 27564/27565
22	S1469	All	Removed source from table	Applications 27990/27991



<b>Changes to Section II</b>				
23	S1475	All	Removed source from table	Source removed from service and off site. (Tesoro 3/3/17 letter)
24	S1476	All	Removed source from table	Source removed from service and off site. (Tesoro 3/3/17 letter)
25	S1508	All	Removed source from table	Applications 27990/27991
26	S1509	All	Removed source from table	Applications 27990/27991
27	S1528	Capacity	Added Firm Limit	Condition 13605
28	S1549	Description	Removed specific diesel additive product name	Applications 29278/29274
29	S1550	Capacity	Added firing rate limit for all 5 backup boilers	Applications 27395/27396
30	S1551	Capacity	Added firing rate limit for all 5 backup boilers	Applications 27395/27396
31	S1553	Capacity	Added firing rate limit for all 5 backup boilers	Applications 27395/27396
32	S1557	Limit Basis	Corrected to Condition 23811	Condition 12850 was incorrect.
33	S1558	All	Added source	Applications 27395/27396
34	S1559	All	Added source	Applications 27395/27396
35	S1560	All	Added source	Applications 27990/27991; Tesoro 8/3/18 Comment #3.
36	S1561	All	Added source	Applications 27990/27991
37	S1562	All	Added source	Applications 27990/27991
38	S1563	All	Added source	Applications 27990/27991
39	S1564	All	Added source	Applications 27990/27991
40	S1571	All	Added source	Applications 28336/28346
41	S1572	All	Added source	Applications 28553/28549
<b>Table II A2 – Permitted Sources Amorco Terminal</b>				
Item	Source	Location	Change	Reason
	There are no changes to Table II A2			
<b>Table II B – Abatement Devices</b>				
Item	Device	Location	Change	Reason
1	A12	Sources Controlled	Deleted S529, S530	Sources demolished
2	A14	Sources Controlled	Deleted S100 Deleted S318 Deleted S367 Deleted S513	Applications 27990/27991; Source demolished Source demolished Source demolished
3	A14	All	Added row for S1560/A1560	Applications 27990/27991
4	A31	Applicable Requirement	Corrected 8077-B2A to 8077-A2A	Applications 27309/27310
5	A31	Operating Parameters	Revised hours for startup and shutdown to 432hrs/12-mo	Applications 27309/27310

<b>Changes to Section II</b>				
6	A31	Limit	Revised NOx limit to 2628 lb/rolling 12-mo	Applications 27309/27310
7	A963	All	Deleted device	Applications 28445/28446
8	A1403	All	Added Condition 26266 for S1411 Sulfuric Acid Plant PM-10 and SAM abatement	Applications 27564/27565
9	A1421	All	Added Condition 26266 for S1411 Sulfuric Acid Plant PM-10 and SAM abatement	Applications 27564/27565
10	A1550	Operating Parameters	Revised the number of hours of operation without abatement	Applications 27395/27396
11	A1551	Operating Parameters	Revised the number of hours of operation without abatement	Applications 27395/27396
12	A1553	Operating Parameters	Revised the number of hours of operation without abatement	Applications 27395/27396
13	A1558	All	Added abatement device	Applications 27395/27396
14	A1559	All	Added abatement device	Applications 27395/27396
15	A1560	All	Added abatement device	Applications 27990/27991

**Table II C – Sources Exempt From Permitting**

<b>Item</b>	<b>Source</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
16	S2	All	Removed source from table	Demolished
17	S198	All	Removed source from table	Demolished per 12-15 REI
18	S269	All	Removed source from table	Demolished
19	S271	All	Removed source from table	Demolished
20	S368	All	Removed source from table	Demolished
21	S369	All	Removed source from table	Removed from service
22	S377	All	Removed source from table	Demolished
23	S378	All	Removed source from table	Demolished
24	S406	All	Removed source from table	Removed from service
25	S494	Comment	Added Exemption Citation	Tesoro 8-3-18 Comment #6
26	S503	All	Removed source from table	Demolished
27	S853	All	Added source	Correct omission. Source permitted in 1984 and included in the Permit to Operate
28	S1024	All	Removed source from table	Removed from service
28a	S1498	All	Removed source from table	Correction. Removed from service in 2009
29	S1543	All	Removed source from table	Removed from facility
30	S1544	All	Removed source from table	Removed from facility
31	S1545	All	Removed source from table	Removed from facility
32	S1546	All	Removed source from table	Removed from facility
33	S1547	All	Removed source from table	Removed from facility

<b>Changes to Section II</b>				
34	S1548	All	Removed source from table	Removed from facility
35	S1552	All	Removed source from table	Transferred to Table II-A.1
36	Tank A-754	All	Added to table	New exempt tank
37	Tank A-755	All	Added to table	New exempt tank
38	Tank A-905	All	Added to table	New exempt tank
39	Tank A-932	All	Added to table	New exempt tank
40	Tank A- 933	All	Added to table	New exempt tank
41	Tank A-982	All	Added to table	New exempt tank
42	Tank A- 983	All	Added to table	New exempt tank
<b>Table II D – Federally Significant Sources</b>				
1	Added this new table listing sources with potential to emit of more than 2 tons per year of any regulated air pollutant, except GHG, more than 2,000 tons per year of GHG (measured as CO <sub>2</sub> e), or more than 400 pounds per year of any hazardous air pollutant.			
<b>Table II E –Sources Owned/Operated by Contractors</b>				
1	Added this new table listing contractor sources on site longer than 12-months			

### III. Generally Applicable Requirements

This section 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.

Unpermitted sources are exempt from normal District permits pursuant to an exemption in BAAQMD Regulation 2, Rule 1. They may, however, be specifically described in a Title V permit if they are considered “significant sources” as defined in BAAQMD Rule 2-6-239.

#### Changes to permit:

<b>Changes to Section III</b>			
<b>Item</b>	<b>Regulation</b>	<b>Change</b>	<b>Reason</b>
1	BAAQMD 2-1	Rule date updated	New rule amendment
2	SIP 2-1	Rule date updated	New EPA approval FR date
3	BAAQMD 2-2	Rule date updated	New rule amendment
4	SIP 2-2	Rule date updated	New EPA approval FR date
4a	BAAQMD 2-4	Rule date updated	New rule amendment
5	BAAQMD 2-5	Rule date updated	New rule amendment
5a	BAAQMD 2-6	Rule date updated	New rule amendment
6	BAAQMD 3	Rule date updated	New rule amendment
6a	BAAQMD 6	Added new rule	Adopted 8/1/2018
6b	BAAQMD 6-1	Rule date updated	New rule amendment
7	BAAQMD 11-18	Added rule	New rule

<b>Changes to Section III</b>			
<b>Item</b>	<b>Regulation</b>	<b>Change</b>	<b>Reason</b>
8	BAAQMD 12-15	Added rule	New rule
9	CA H&S Code Section 93115	Added date	Correct Omission
10	CA H&S Code Section 93116	Added date	Correct Omission
11	40 CFR 82 Subpart F	Regulation date updated	New rule amendment

#### **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 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. The text of the requirements is found in the regulations, which are readily available on the District or EPA 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.

#### **Section IV and VII Organization**

The following table summarizes the source category organization in Sections IV and VII.

<b>Organization of Sections IV and VII</b>		
<b>Section</b>	<b>Subsection</b>	<b>Description</b>
<b>A</b>		<b>Sitewide</b>
	<b>A.1</b>	<b>Refinery</b>
	<b>A.2</b>	<b>Amorco Terminal</b>
	<b>A.3</b>	<b>Fenceline Monitoring</b>

<b>Organization of Sections IV and VII</b>		
<b>Section</b>	<b>Subsection</b>	<b>Description</b>
<b>B</b>		<b>Process Units &amp; Miscellaneous</b>
<b>C</b>		<b>Combustion</b>
	<b>C.1</b>	<b>Combustion – Boilers</b>
	<b>C.2</b>	<b>Combustion – Flares</b>
	<b>C.3</b>	<b>Combustion – Internal Combustion Engines (ICE)</b>
	<b>C.4</b>	<b>Combustion – Process Heaters</b>
	<b>C.5</b>	<b>Combustion – Gas Turbines</b>
<b>D</b>		<b>Organic Liquid Loading</b>
<b>E</b>		<b>Solids Handling</b>
<b>F</b>		<b>Organic Liquid Storage Tanks</b>
	<b>F.1</b>	<b>Sources Listing and Applicable Permit Conditions</b>
	<b>F.2</b>	<b>Tank Group Descriptions</b>
	<b>F.3</b>	<b>Tank Group Applicable Requirements</b>
<b>G</b>		<b>Wastewater Sources</b>
<b>H</b>		<b>Sulfur and Ammonia Processing</b>
<b>J</b>		<b>Miscellaneous Organic Sources</b>
<b>K</b>		<b>Abatement</b>
<b>L</b>		<b>Remediation</b>
<b>M</b>		<b>Refinery Emissions Cap Requirements</b>

The only significant change to the permit organization is the addition of Section A.3, Fenceline Monitoring, and Section M, Refinery Emissions Cap Requirements. Section A.3 was added at the request of EPA. Instead of showing the Emissions Cap Requirements in multiple locations, they will now be shown in Section M for all sources subject to the cap.

### **Permit Applications**

The following applications, approved since the Revision 5 permit approved January 11, 2016, have been included in this renewed permit. Engineering Evaluations for these permit applications are included in Appendix D.

<b>Application #</b>	<b>Revision Type</b>	<b>Project Description</b>	<b>Comments</b>
23138/23139	Significant	S-1005 Hydrogen Plant Source Test Frequency Change of Conditions	Change of Conditions approved September 8, 2011
25718/25719	Minor	Grandfathered Limit Revisions for S-830 Wastewater Pond and S-977/S-980 Cooling Water Towers	Approved July 3, 2017
26198/26199	Administrative	S-1025 Truck Rack Backpressure Monitoring for 8-33 Compliance	Approved June 17, 2015
26422/26423	Minor	NOx Box Revision for S-920	Approved June 25, 2015

Application #	Revision Type	Project Description	Comments
26552	N/A	S-1510 Delayed Coker Steam Ejectors	Permit to Operate Granted November 13, 2014
27030/27031	Minor	S-1517 Coker Flare Change in Conditions	Approved December 30, 2015
27054/27065	Minor	S-904 No 6 Boiler Burner Replacement	Approved January 21, 2016
27309/27310	Minor	S-973 and S-974 3HDS Furnace Startup/Shutdown Duration Change in Conditions	Approved August 31, 2015
27395/27396	Minor	S1550, S1551, S1553, S1558, S1559 Back-up Boilers	Authority to Construct Granted January 27, 2016
27564/27565	Minor	S-1411 Sulfuric Acid Plant Production Limit	Approved June 20, 2016
27791/27792	Minor	S-963 Alkylation Unit Gas Turbine Revised CAM Plan	Approved October 6, 2016
27799/27800	Minor	S-1555 Reformate Splitter Modification	Authority to Construct Granted November 8, 2017
27990/27991	Minor	S-1526 Avon Wharf Berth 1A Project	Permit to Operate Granted June 27, 2017
28073/28104	Minor	S-901 FCCU CO Boiler Low NOx Burners	Permit to Operate Granted August 17, 2017
28445/28446	Minor	S-963 Gas Turbine Replacement with Electric Motor	Permit to Operate Granted October 10, 2017
28553/28549	Minor	S-1572 No. 4 Gas Plant Emergency Generator	Permit to Operate Granted January 11, 2018

### Complex applicability determinations

There are three complex applicability determinations below.

- A. Applicability of 40 CFR 63, Subpart DDDDD, Boiler MACT Requirements
- B. 40 CFR 64, Compliance Assurance Monitoring (CAM)
- C. Internal Combustion Engines Applicability

#### A. Applicability of 40 CFR 63, Subpart DDDDD, Boiler MACT Requirements

The Tesoro Golden Eagle refinery owns and operates boilers and process heaters subject to the requirements of 40 CFR 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process

Heaters, known as the Boiler MACT. The finalized rule for 40 CFR 63, Subpart DDDDD was published in the Federal Register on January 31, 2013. As documented in Tesoro's Initial Notification for Affected Sources submitted to the BAAQMD February 10, 2012, there are 33 existing boilers and process heaters at the refinery that became subject to 40 CFR 63, Subpart DDDDD requirements effective January 31, 2016. The following table summarizes the boiler and process heater equipment.

<b>Emission Unit ID</b>	<b>Emission Unit Name (design and manufacturer name)</b>	<b>Size: Rated Heat Input Capacity (MMBtu/hr)</b>	<b>Fuels Used</b>
S-904	No. 6 Boiler, Riley Stoker	745 mmbtu/hr 6,789,000 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-908	No. 3 Crude Heater (F8), Alco	220 mmbtu/hr 1,927,200 mmbtu/yr	Natural Gas, Refinery Fuel Gas
S-909	No. 1 Feed Prep Heater (F9), Alco	145 mmbtu/hr 1,270,200 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-912	No. 1 Feed Prep Heater (F12), Born	135 mmbtu/hr 1,182,600 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-913	No. 2 Feed Prep Heater (F13), Petro Chem	59 mmbtu/hr 516,840 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-915	Platformer Intermediate Heater (F15), Braun	50 mmbtu/hr 438,000 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-916	No. 1 HDS Heater (F16), Braun	55 mmbtu/hr 481,800 mmbtu/yr	Natural Gas, Refinery Fuel Gas
S-917	No. 1 HDS Prefract Reboiler (F17), Industrial Engineers	18 mmbtu/hr 157,680 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-919	No. 2 HDS Depent Reboiler (F19), Foster Wheeler	111 mmbtu/hr 972,360 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-920	No. 2 HDS Charge Heater (F20), Foster Wheeler	63 mmbtu/hr 551,880 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-921	No. 2 HDS Charge Heater (F21), Foster Wheeler	63 mmbtu/hr 551,880 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-922	No. 5 Gas Debutanizer Reboiler (F22), Petro Chem	130 mmbtu/hr 1,138,800 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-926	No. 2 Reformer Splitter Reboiler(F26) , Petro Chem	130 mmbtu/hr 1,138,800 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-927	No. 2 Reformer Heat/Reheating (F27), Lummus	280 mmbtu/hr 2,452,800 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-928	HDN Reactor A Heater (F28), Foster Wheeler	20 mmbtu/hr 175,200 mmbtu/yr	Refinery Fuel Gas, Natural Gas

<b>Emission Unit ID</b>	<b>Emission Unit Name (design and manufacturer name)</b>	<b>Size: Rated Heat Input Capacity (MMBtu/hr)</b>	<b>Fuels Used</b>
S-929	HDN Reactor B Heater (F29), Foster Wheeler	20 mmbtu/hr 175,200 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-930	HDN Reactor C Heater (F30), Foster Wheeler	20 mmbtu/hr 175,200 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-931	Hydrocracker Reactor 1 Heater (F31), Foster Wheeler	20 mmbtu/hr 175,200 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-932	Hydrocracker Reactor 2 Heater (F32), Foster Wheeler	20 mmbtu/hr 175,200 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-933	Hydrocracker Reactor 3 Heater (F33), Foster Wheeler	20 mmbtu/hr 175,200 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-934	Hydrocracker Stabilizer Reboiler (F34), Foster Wheeler	135 mmbtu/hr 1,182,600 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-935	Hydrocracker Splitter Reboiler (F35), Foster Wheeler	135 mmbtu/hr 1,182,600 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-937	Hydrogen Plant Heater (F37), Selas	743 mmbtu/hr 6,508,680 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-950	50 Unit Crude Heater (F50), Alcorn	440 mmbtu/hr 3,854,400 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-951	No. 2 Reformer Aux Reheater (F51), Optimized Process Furnaces	30 mmbtu/hr 131,400 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-971	No. 3 Reformer UOP Furnace (F53), KTI	300 mmbtu/hr 2,628,000 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-972	No. 3 Reformer Debutanizer Reboiler (F54), Foster Wheeler/KTI	45 mmbtu/hr 394,200 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-973	No. 3 HDS Recycle Gas Heater (F55), Entec	110 mmbtu/hr 963,600 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-974	No. 3 HDS Fract Feed Heater (F56), Entec	55 mmbtu/hr 481,800 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-1106	No. 4 HDS Reactor Feed Heater (F72), Tulsa Heater	30 mmbtu/hr (24-hour average) 225.257 mmscf/yr	Natural Gas
S-1412	Sulfuric Acid Mfg Plant Startup Heater, John Zink	17.1 mmbtu/hr 9000 mmbtu/yr	Refinery Fuel Gas, Natural Gas
S-1470	No. 3 Crude Vacuum Distillation Heater (F71), Petro Chem	30 mmbtu/hr 262,800 mmbtu/yr	Refinery Fuel Gas, Natural Gas



<b>Emission Unit ID</b>	<b>Emission Unit Name (design and manufacturer name)</b>	<b>Size: Rated Heat Input Capacity (MMBtu/hr)</b>	<b>Fuels Used</b>
S-1511	Delayed Coker Heater #1 (F78), John Zinc	230 mmbtu/hr 2,014,800 MMBtu/ consecutive 12 months	Natural gas, Refinery fuel gas
S-1512	Delayed Coker Heater #2 (F79), John Zinc	230 mmbtu/hr 2,014,800 MMBtu/ consecutive 12 months	Natural gas, Refinery fuel gas

40 CFR 63, Subpart DDDDD contains requirements and emission standards for boilers and process heaters burning a variety and/or mixture of solid, liquid and gaseous fuels. The fuels are delineated into subcategories in 63.7499. Since all of the sources in the table above fire only natural gas or refinery gas, they are in Subcategory 63.7499(1), units designed to burn "gas 1 fuels". 63.7500(e) states that "Boilers and process heaters in the units designed to burn gas 1 fuels subcategory are not subject to the emission limits in Tables 1 and 2 or 11 through 13 to this subpart, or the operating limits in Table 4 to this subpart". Table 3, Work Practice Standards, is applicable and it requires a onetime energy assessment and periodic tune-ups for the units.

There are eight process heaters or boilers at the refinery that are subject to a different applicability. Each is addressed below.

S-901 is a CO Boiler for the fluid catalytic cracking unit (FCCU) catalyst regenerator in the FCCU complex. It is used to generate steam, both from heat recovery (it generates steam using heat from and cooling the regenerator exhaust gases) and from supplemental firing of refinery fuel gas. (It only generates steam solely from the firing of refinery fuel gas on a temporary basis when the FCCU is shut down or in hot standby and the refinery operation requires steam from the No 7 Boiler.) However, S-901 is also is an abatement device for the S-802 FCCU, controlling CO emissions (combusting CO generated in the FCCU Regenerator to CO<sub>2</sub> – hence the term “CO Boiler”). Therefore, S-901 is considered part of the affected source for 40 CFR 63 Subpart UUU (Refinery MACT II), pursuant to the definition of a Catalytic Cracking Unit in 63.1579:

§63.1579 – Catalytic cracking unit means a refinery process unit in which petroleum derivatives are continuously charged; hydrocarbon molecules in the presence of a catalyst suspended in a fluidized bed are fractured into smaller molecules, or react with a contact material suspended in a fluidized bed to improve feedstock quality for additional processing; and the catalyst or contact material is continuously regenerated by burning off coke and other deposits. The unit includes, but is not limited to, the riser, reactor, regenerator, air blowers, spent catalyst or contact material stripper, catalyst or contact material recovery equipment, and regenerator equipment for controlling air pollutant emissions and equipment used for heat recovery.

S-901 helps ensure that S-802 FCCU will comply with the 40 CFR 63.1565(a)(1) Refinery MACT II CO limit of 500 ppmvd (from Table 8 of Subpart UUU), and the 40 CFR 60.103(a) Refinery NSPS CO limit of 500ppmvd. (The MACT II Subpart UUU CO Emissions Standards

are a surrogate for controlling Organic HAP Emissions.) Therefore, S-901 is not subject to the requirements of 40 CFR 63, Subpart DDDDD pursuant to 63.7491(h) and (i):

§63.7491 Are any boilers or process heaters not subject to this subpart?

§63.7491(h) - Any boiler or process heater that is part of the affected source subject to another subpart of this part, such as boilers and process heaters used as control devices to comply with subparts JJJ, OOO, PPP, and U of this part. [in the case of S-901 – Subpart UUU]

§63.7491(i) Any boiler or process heater that is used as a control device to comply with another subpart of this part, or part 60, part 61, or part 65 of this chapter provided that at least 50 percent of the average annual heat input during any 3 consecutive calendar years to the boiler or process heater is provided by regulated gas streams that are subject to another standard. [in the case of S-901 – 40 CFR 63 Subpart UUU and 40 CFR 60 Subpart J]

S-902 is the Startup Heater for the fluid catalytic cracking unit (FCCU) in the FCCU complex. It is used to heat air directly to increase the temperature of the unit during startup. S-902 is fired on refinery fuel gas or natural gas and the air is injected into the hot flue gas. The combined air and flue gas is used to heat up the system, passing through the FCCU Reactor, the Regenerator, the CO Boiler and the Electrostatic Precipitator before being discharged from the FCCU complex Main Stack. S-902 does not meet the definition of “process heater” in 40 CFR 63.7575:

*Process heater* means an enclosed device using controlled flame, and the unit's primary purpose is to transfer heat indirectly to a process material (liquid, gas, or solid) or to a heat transfer material (e.g., glycol or a mixture of glycol and water) for use in a process unit, instead of generating steam. Process heaters are devices in which the combustion gases do not come into direct contact with process materials. A device combusting solid waste, as defined in §241.3 of this chapter, is not a process heater unless the device is exempt from the definition of a solid waste incineration unit as provided in section 129(g)(1) of the Clean Air Act. Process heaters do not include units used for comfort heat or space heat, food preparation for on-site consumption, or autoclaves. Waste heat process heaters are excluded from this definition.

Since S-902 does not transfer heat to the startup air indirectly, it is not a process heater as defined above. Therefore, the requirements of 40 CFR 63 Subpart DDDDD do not apply to S-902.

S-902 is a Fuel Gas Combustion Device as defined in NSPS 40 CFR 60 Subpart J and is also subject to Consent Decree requirements as detailed in Condition 23562.

S-1412 is the Start-up Heater for the Sulfuric Acid Plant (SAP). It is an indirect heater using combustion flue gas to heat the SAP process stream in a specially designed shell and tube heat exchanger. S-1412 has a design firing rate of 17.1MMBtu/hr. It is subject to Permit Condition 25846 that limits the total annual firing to 9000 MMBtu. This is about 6% of the total annual firing rate were S-1412 to be operated at the design firing rate for 8760 hours per year. Therefore, S-1412 is a "Limited-use process heater" as defined in 40 CFR 63.7575. Limited-use process heaters are subject to separate requirements in 40 CFR 63.7500(c), 63.7540(a)(12), and 63.7555(a)(3).

S-1412 is a Fuel Gas Combustion Device as defined in NSPS 40 CFR 60 Subpart J and is also subject to Consent Decree requirements as detailed in Condition 23562.

S-1550, S-1551, S-1553, S-1558 and S-1559 are 99MM Btu/hr package boilers used infrequently at the Tesoro refinery, during periods when additional steam is required. Even though all five boilers are permitted as stationary sources, with emissions fully offset, they are portable units that are brought to the refinery when the need is anticipated (e.g., as part of the refinery turnaround planning effort). These boilers satisfy the definition of “Temporary boiler” in 40 CFR 63.7575:

*Temporary boiler* means any gaseous or liquid fuel boiler or process heater that is designed to, and is capable of, being carried or moved from one location to another by means of, for example, wheels, skids, carrying handles, dollies, trailers, or platforms. A boiler or process heater is not a temporary boiler or process heater if any one of the following conditions exists:

- (1) The equipment is attached to a foundation.
- (2) The boiler or process heater or a replacement remains at a location within the facility and performs the same or similar function for more than 12 consecutive months, unless the regulatory agency approves an extension. An extension may be granted by the regulating agency upon petition by the owner or operator of a unit specifying the basis for such a request. Any temporary boiler or process heater that replaces a temporary boiler or process heater at a location and performs the same or similar function will be included in calculating the consecutive time period.
- (3) The equipment is located at a seasonal facility and operates during the full annual operating period of the seasonal facility, remains at the facility for at least 2 years, and operates at that facility for at least 3 months each year.
- (4) The equipment is moved from one location to another within the facility but continues to perform the same or similar function and serve the same electricity, process heat, steam, and/or hot water system in an attempt to circumvent the residence time requirements of this definition.

S-1550, S-1551, S-1553, S-1558 and S-1559 are not subject to the requirements of 40 CFR 63, Subpart DDDDD pursuant to 63.7491(j):

§63.7491 Are any boilers or process heaters not subject to this subpart?

§63.7491(j) -Temporary boilers and process heaters as defined in this subpart.

#### **B. 40 CFR 64, Compliance Assurance Monitoring (CAM)**

The Compliance Assurance Monitoring (CAM) regulation in 40 CFR 64 was developed to provide assurance that facilities comply with applicable emissions limitations by adequately monitoring control devices. The CAM rule was effective on November 21, 1997. However, most facilities are not affected by CAM requirements until they submit applications for Title V permit renewal. As required, Tesoro provided an applicability analysis for CAM for both the Golden Eagle Refinery and Amorco Terminal as part of the 2010 renewal application. Tesoro updated the CAM applicability determination as part of this renewal application.

CAM applies to a source of criteria pollutant or hazardous air pollutant (HAP) emissions if all the following requirements are met:

- The source is located at a major source for which a Title V permit is required; and
- The source is subject to a federally enforceable emission limitation or standard for a criteria pollutant or HAP; and
- The source uses a control device to comply with the federally enforceable emission limitation or standard; and
- The source has potential pre-control emissions of the regulated pollutant that are equal to or greater than the major source threshold for the pollutant (in BAAQMD, the major source thresholds are 100 tons per year for each criteria pollutant, 10 tons per year for a single HAP, and 25 tons per year for two or more HAPs); and
- The source is not otherwise exempt from CAM.

CAM exemptions are specified in 40 CFR 64.2(b)(1) – Exempt Emission Limitations or Standards. Exemptions that could reasonably apply to emission sources at the Golden Eagle Refinery and Amorco Terminal are:

- 40 CFR 62(b)(1)(i) – Emission limitations or standards proposed by the Administrator after November 15, 1990, pursuant to section 111 or 112 of the ACT; or
- 40 CFR 62(b)(1)(vi) – Emission limitations or standards for which a Title V Permit specifies a continuous compliance determination method (a method, specified by the applicable standard or an applicable permit condition, which: (1) is used to determine compliance on a continuous basis, consistent with the averaging period established for the emission limitation or standard; and (2) Provides data either in units of the standard or correlated directly with the compliance limit).

Emission sources at Golden Eagle Refinery and the Amorco Terminal were first evaluated by the following criteria to identify sources requiring further analysis for CAM applicability:

- The source is listed in the existing Title V Permit or will be added to the permit in this renewal application; and
- The source uses a control device to routinely control the emissions of a regulated pollutant (criteria pollutant or listed HAP).

Appendix C contains the Tesoro detailed CAM analysis for the emission sources that met these criteria. This analysis was completed in June 2016. No emission sources were identified for the Amorco Terminal. The analysis identified one emission source at the Golden Eagle Refinery that is subject to CAM for oxides of nitrogen (NO<sub>x</sub>). However, this source -- S963 Alkylation Plant Turbine -- was removed from service in 2017 (Applications 28445/28446).

### **C. Internal Combustion Engines Applicability**

***40 CFR 60, Subpart IIII,  
40 CFR 60, Subpart JJJJ,  
40 CFR 63, Subpart ZZZZ  
California Air Toxic Control Measures***

Tesoro, or its contractors, own and operate Internal Combustion Engines (aka “ICE”, “RICE” in the federal regulations, or just “Engines”), both portable and stationary sources. The stationary Engine requirements are detailed in Section IV-C.3 and VII-C.3 of the permit.

The following table summarizes the Tesoro engine applicability in the Title V permit.

<b>Internal Combustion Engine Applicability Summary</b>						
<b>Sources</b>	<b>Design/Service</b>	<b>NSPS IIII</b>	<b>NSPS JJJJ</b>	<b>MACT ZZZZ</b>	<b>ATCM</b>	<b>Permit Table</b>
S952 S953 S954	SI, 4SRB	N/A	No	Existing, < 500HP	N/A	C.3.2
S955 S956, S957 S958 S959 S960	SI, 2SLB	N/A	No	Existing, > 500HP. Exempt per §63.6590 (b)(3)(i)	N/A	C.3.3
S1469 S1471 S1472 S1487	CI, Fire Pump	No	N/A	Existing, < 500HP	In-Use	C.3.4
S57	CI, Fire Pump	No	N/A	Existing, > 500HP Exempt per 63.6590 (b)(3)(iii)	In-Use	C.3.1
S1488	CI, Fire Pump	No	N/A	New, > 500HP Exempt per 63.6590 (b)(1)(i)	In-Use	C.3.5
S1518 S1519	CI, Fire Pump	Yes (<)	N/A	New, < 500HP Comply with IIII per 63.6590(c)	New	C.3.6

<b>Internal Combustion Engine Applicability Summary</b>						
<b>Sources</b>	<b>Design/Service</b>	<b>NSPS IIII</b>	<b>NSPS JJJJ</b>	<b>MACT ZZZZ</b>	<b>ATCM</b>	<b>Permit Table</b>
S1562 S1563	CI, Fire Pump	Yes (>)	N/A	New, > 500HP Exempt per 63.6590 (b)(1)(i)	New	C.3.9
S58 (>) S1552(<) S1561(>)	CI, Not Fire Pump	Yes (<&>)	N/A	New, < 500HP Comply with IIII per 63.6590(c)	New	C.3.7
S1557 S1572	CI, Not Fire Pump	Yes (>)	N/A	New, > 500HP Exempt per 63.6590 (b)(1)(i)	New	C.3.8

CI=Compression Ignition; SI = Spark Ignition; 2SLB=2 Stroke Lean Burn; 4SRB=4 Stroke Rich Burn;  
For NSPS Subpart IIII applicability: (<) =Model Year earlier than 2007; (>) =Model Year 2007 or later

The remainder of this determination explains how this summary table was developed.

Portable engines are all registered under the Statewide Portable Equipment Registration Program (California Code of Regulations Title 13, Division 3, Chapter 3, Article 5). These engines are exempt from permitting pursuant to Regulation 2-1-105. The portable engines fired on diesel fuel are subject to California Health and Safety Code Title 17, Section 93116, Airborne Toxic Control Measure for Diesel Particulate Matter from Portable Engines Rated at 50 Horsepower and Greater. This requirement is specified in Table III, Generally Applicable Requirements.

The Stationary Engines owned or operated by Tesoro are summarized in the following table.

<b>Source</b>	<b>Description</b>	<b>Year Constructed (Model Year)</b>	<b>HP</b>	<b>Other</b>
S-56	Amorco Wharf On-Shore Firewater Pump Engine	2001	660	Owned by Tesoro Logistic Operations. See Title V Permit for Facility E1200
S-57	Amorco Wharf Off-Shore Firewater Pump Engine	2001	700	CI, Emergency Diesel
S-58	Amorco Wharf Standby Generator Engine	2010(2010)	312	CI, Emergency Diesel
S-952	No 1 Gas Plant Compressor 4023 Engine	1938	300	NG, SI, 4SRB

Source	Description	Year Constructed (Model Year)	HP	Other
S-953	No 1 Gas Plant Compressor 4024 Engine	1938	300	NG, SI, 4SRB
S-954	No 1 Gas Plant Compressor 4025 Engine	1938	300	NG, SI, 4SRB
S-955	No 4 Gas Plant Compressor 4064 Engine	1945	880	NG, SI, 2SLB
S-956	No 4 Gas Plant Compressor 4065 Engine	1945	880	NG, SI, 2SLB
S-957	No 4 Gas Plant Compressor 4066 Engine	1945	880	NG, SI, 2SLB
S-958	No 4 Gas Plant Compressor 4067 Engine	1945	880	NG, SI, 2SLB
S-959	No 4 Gas Plant Compressor 4068 Engine	1945	880	NG, SI, 2SLB
S-960	No 4 Gas Plant Compressor 4096 Engine	1945	660	NG, SI, 2SLB
S-1469	Avon Wharf Firewater Pump Engine	1982	400	CI, Emergency Diesel
S-1471	Landsend Firewater Pump Engine	1977	130	CI, Emergency Diesel
S-1472	Tract 4 North Firewater Pump Engine	1989	430	CI, Emergency Diesel
S-1487	Tank 38 Firewater Pump Engine	2003	420	CI, Emergency Diesel
S-1488	Canal Firewater Pump Engine	2003	538	CI, Emergency Diesel
S-1518	North Reservoir West Firewater Pump Engine	2007(2004)	360	CI, Emergency Diesel
S-1519	North Reservoir East Firewater Pump Engine	2007(2004)	360	CI, Emergency Diesel
S-1552	No 1 Pump Station Engine	2006(2006)	205	CI, Emergency Diesel
S-1557	Central Maintenance Building Standby Generator Engine	2014(2013)	762	CI, Emergency Diesel
S-1561	Avon Berth 1A Standby Generator Engine	2016(2015)	398	CI, Emergency Diesel
S-1562	Avon Berth 1A East Firewater Pump Engine	2016(2012)	700	CI, Emergency Diesel
S-1563	Avon Berth 1A West Firewater Pump Engine	2016(2012)	700	CI, Emergency Diesel
S-1572	No 4 Gas Plant Standby Generator Engine	2017(2010)	2722	CI, Emergency Diesel

CI=Compression Ignition; SI = Spark Ignition; NG = Natural Gas Fuel; 2SLB=2 Stroke Lean Burn; 4SRB=4 Stroke Rich Burn. Model Year only show for engines that are subject to NSPS subpart IIII.

Requirements of the engine regulations are based on a variety of engine properties, including date of construction, power rating, emergency service and engine design.

The first step in this applicability determination is to assess the overall applicability and engine category by date of construction.

40 CFR 60 Subpart IIII applies to Compression Ignition engines that commenced construction after 7/11/2005 [§60.4200(a)(2)] and the engine was manufactured after 4/1/2006 (7/1/2006 for fire pump engines).

40 CFR 60 Subpart JJJJ applies to Spark Ignition engines that commenced construction after 7/12/2006 [§60.4230(a)(4)] and the engine was manufactured after 7/1/2007 (1/1/2008 for lean burn engines 500<=HP<1350, 7/1/2008 for engines < 500 HP, and 1/1/2009 for emergency engines > 25 HP).

40 CFR 63 Subpart ZZZZ applies to all Reciprocating Internal Combustion Engines (RICE) since Tesoro is a major source of HAPs. The RICE with a power rating greater than 500 HP is

"Existing" if construction or reconstruction commenced before 12/19/2002 [§63.6590(a)(1)(i)]. The RICE with a power rating less than or equal to 500 HP is "Existing" if construction or reconstruction commenced before 6/12/2006 [§63.6590(a)(1)(ii)]. Otherwise, the RICE is "New".

The ATCM 93115.4(50) defines a "New" engine as one installed after 1/1/2005. Otherwise, the engine is an "In-Use" engine. The requirements for all New engines are contained in 93115.6(a). The requirements for all In-Use engines are contained in 93115.6(b). Pursuant to 93115.3(n), In-Use fire pump engines are exempt from the requirements of 93115(b)(3). In the 5/19/2011 Amendment to the ATCM, New fire pump engines are subject to the requirements of 93115.6(a)(4). In the previous version New fire pump engines were required to comply with either 93115.6(a)(3) or (a)(4).

A summary timeline of the regulatory applicability is shown in the following tables.

SI Engines	12/19/2002	6/12/2006	7/12/2006	
Rule				
JJJJ	N/A	N/A	N/A	Applicable
ZZZZ >500HP	Existing	New	New	New
ZZZZ <500HP	Existing	Existing	New	New

CI Engines	12/19/2002	1/1/2005	7/11/2005	6/12/2006	
Rule					
IIII	N/A	N/A	N/A	Applicable	Applicable
ZZZZ >500HP	Existing	New	New	New	New
ZZZZ <500HP	Existing	Existing	Existing	Existing	New
ATCM	In-Use	In-Use	New	New	New

The overall applicability is summarized by source in the following table:

Engine Applicability/Category Summary						
Applicability/Category Date:			7/11/2005	7/12/2006	12/19/2002 6/12/2006(<)	1/1/2005
Source	Description	Year Constructed	NSPS 60-III (CI)	NSPS 60-JJJ (SI)	MACT 63-ZZZZ	ATCM (CI)
S-57	Amorco Wharf Off-Shore Firewater Pump Engine	2001	No	N/A	Existing	In-Use
S-58	Amorco Wharf Standby Generator Engine	2010	Yes	N/A	New	New



<b>Engine Applicability/Category Summary</b>						
Applicability/Category Date:			7/11/2005	7/12/2006	12/19/2002 6/12/2006(<)	1/1/2005
Source	Description	Year Constructed	NSPS 60-III (CI)	NSPS 60-JJJ (SI)	MACT 63-ZZZZ	ATCM (CI)
S-952	No 1 Gas Plant Compressor 4023 Engine	1938	N/A	No	Existing	N/A
S-953	No 1 Gas Plant Compressor 4024 Engine	1938	N/A	No	Existing	N/A
S-954	No 1 Gas Plant Compressor 4025 Engine	1938	N/A	No	Existing	N/A
S-955	No 4 Gas Plant Compressor 4064 Engine	1945	N/A	No	Existing	N/A
S-956	No 4 Gas Plant Compressor 4065 Engine	1945	N/A	No	Existing	N/A
S-957	No 4 Gas Plant Compressor 4066 Engine	1945	N/A	No	Existing	N/A
S-958	No 4 Gas Plant Compressor 4067 Engine	1945	N/A	No	Existing	N/A
S-959	No 4 Gas Plant Compressor 4068 Engine	1945	N/A	No	Existing	N/A
S-960	No 4 Gas Plant Compressor 4096 Engine	1945	N/A	No	Existing	N/A
S-1469	Avon Wharf Firewater Pump Engine	1982	No	N/A	Existing	In-Use
S-1471	Landsend Firewater Pump Engine	1977	No	N/A	Existing	In-Use
S-1472	Tract 4 North Firewater Pump Engine	1989	No	N/A	Existing	In-Use
S-1487	Tank 38 Firewater Pump Engine	2003	No	N/A	Existing	In-Use
S-1488	Canal Firewater Pump Engine	2003	No	N/A	New	In-Use

<b>Engine Applicability/Category Summary</b>						
Applicability/Category Date:			7/11/2005	7/12/2006	12/19/2002 6/12/2006(<)	1/1/2005
Source	Description	Year Constructed	NSPS 60-III (CI)	NSPS 60-JJJ (SI)	MACT 63-ZZZZ	ATCM (CI)
S-1518	North Reservoir West Firewater Pump Engine	2007	Yes	N/A	New	New
S-1519	North Reservoir East Firewater Pump Engine	2007	Yes	N/A	New	New
S-1552	No 1 Pump Station Engine	2006	Yes	N/A	New	New
S-1557	Central Maint Building Standby Generator Engine	2014	Yes	N/A	New	New
S-1561	Avon Berth 1A Standby Generator Engine	2016	Yes	N/A	New	New
S-1562	Avon Berth 1A East Firewater Pump Engine	2016	Yes	N/A	New	New
S-1563	Avon Berth 1A West Firewater Pump Engine	2016	Yes	N/A	New	New
S-1572	No 4 Gas Plant Standby Generator Engine	2017	Yes	N/A	New	New

"<" is the applicability date for engines less than or equal to 500 HP.

40 CFR 63 Subpart ZZZZ requirements also depend on engine power, design and service. The following table summarizes the criteria important for Subpart ZZZZ applicability.

<b>Criteria for 40 CFR 63 Subpart ZZZZ Applicability</b>				
Source	Description	New/Existing	HP	Design/Service
S-57	Amorco Wharf Off-Shore Firewater Pump Engine	Existing	>500	CI, Emergency, Firewater Pump
S-58	Amorco Wharf Standby Generator Engine	New	<500	CI, Emergency, Not a Firewater Pump
S-952	No 1 Gas Plant Compressor 4023 Engine	Existing	<500	SI, 4SRB
S-953	No 1 Gas Plant Compressor 4024 Engine	Existing	<500	SI, 4SRB
S-954	No 1 Gas Plant Compressor 4025 Engine	Existing	<500	SI, 4SRB
S-955	No 4 Gas Plant Compressor 4064 Engine	Existing	>500	SI, 2SLB
S-956	No 4 Gas Plant Compressor 4065 Engine	Existing	>500	SI, 2SLB
S-957	No 4 Gas Plant Compressor 4066 Engine	Existing	>500	SI, 2SLB
S-958	No 4 Gas Plant Compressor 4067 Engine	Existing	>500	SI, 2SLB
S-959	No 4 Gas Plant Compressor 4068 Engine	Existing	>500	SI, 2SLB

Criteria for 40 CFR 63 Subpart ZZZZ Applicability				
Source	Description	New/Existing	HP	Design/Service
S-960	No 4 Gas Plant Compressor 4096 Engine	Existing	>500	SI, 2SLB
S-1469	Avon Wharf Firewater Pump Engine	Existing	<500	CI, Emergency, Firewater Pump
S-1471	Landsend Firewater Pump Engine	Existing	<500	CI, Emergency, Firewater Pump
S-1472	Tract 4 North Firewater Pump Engine	Existing	<500	CI, Emergency, Firewater Pump
S-1487	Tank 38 Firewater Pump Engine	Existing	<500	CI, Emergency, Firewater Pump
S-1488	Canal Firewater Pump Engine	New	>500	CI, Emergency, Firewater Pump
S-1518	North Reservoir West Firewater Pump Engine	New	<500	CI, Emergency, Firewater Pump
S-1519	North Reservoir East Firewater Pump Engine	New	<500	CI, Emergency, Firewater Pump
S-1552	No 1 Pump Station Engine	New	<500	CI, Emergency, Not a Firewater Pump
S-1557	Central Maint Building Standby Generator Engine	New	>500	CI, Emergency, Not a Firewater Pump
S-1561	Avon Berth 1A Standby Generator Engine	New	<500	CI, Emergency, Not a Firewater Pump
S-1562	Avon Berth 1A East Firewater Pump Engine	New	>500	CI, Emergency, Firewater Pump
S-1563	Avon Berth 1A West Firewater Pump Engine	New	>500	CI, Emergency, Firewater Pump
S-1572	No 4 Gas Plant Standby Generator Engine	New	>500	CI, Emergency, Not a Firewater Pump

CI=Compression Ignition; SI = Spark Ignition; 2SLB=2 Stroke Lean Burn; 4SRB=4 Stroke Rich Burn

The Spark Ignition (SI) engines are all continuous duty engines (i.e., not emergency standby engines) and were all constructed or reconstructed prior to the effective date of NSPS Subpart JJJJ. The ATCM does not apply to SI engines. There are two types of SI engines subject to MACT Subpart ZZZZ. The first type, S-952, S-953 and S-954, are 4-stroke rich burn (4SRB) engines less than 500 HP. The requirements for these engines are detailed in Tables IV-C.3.2 and VII-C.3.2. The second type, S-955 through S-960, are 2-stroke lean burn (2SLB) engines greater than 500 HP. These 2SLB engines are exempt from the requirements MACT Subpart ZZZZ [§63.6590 (b)(3)(i)]. The requirements for these engines are detailed in Tables IV-C.3.3 and VII-C.3.3.

All of the Compression Ignition (CI) engines at Tesoro are in emergency standby service. Most are in firewater pump service. One (S-1552) is in standby water pump service, but not in standby firewater pump service. Four engines are in emergency back-up generator service.

The Compression Ignition (CI) engines are first separated into the older engines in emergency firewater pump service. These were constructed or reconstructed before the applicability date of NSPS Subpart IIII, are "Existing" engines for MACT Subpart ZZZZ, and are "In-Use" engines for the ATCM. There are two types of engines in this category. The first type, S-1469, S-1471, S-1472 and S-1487, are engines that have power ratings less than or equal to 500 HP. The

requirements for these engines are detailed in Tables IV-C.3.4 and VII-C.3.4. The second type, S57, is an engine that has a power rating greater than 500 HP. Existing Emergency CI engines >500 HP are exempt from the requirements MACT Subpart ZZZZ [§63.6590 (b)(3)(iii)]. The requirements for this engine is detailed in Tables IV-C.3.1 and VII-C.3.1.

The Compression Ignition (CI) engines are next separated into the newer engines in emergency firewater pump service. These were constructed or reconstructed after the applicability date of NSPS Subpart IIII, are "New" engines for MACT Subpart ZZZZ, and are "New" engines for the ATCM. There are two types of engines in this category. The first type, S-1518 and S-1519, are engines that have power ratings less than or equal to 500 HP. The requirements for these engines are detailed in Tables IV-C.3.6 and VII-C.3.6. The second type, S-1562 and S-1563, are engines that have power ratings greater than 500 HP. New CI engines >500 HP are exempt from the requirements MACT Subpart ZZZZ [§63.6590 (b)(1)(i)], except for initial notification. New CI engines >500 HP are exempt from the requirements MACT Subpart ZZZZ [§63.6590 (b)(1)(i)], except for initial notification. The requirements for these engines are detailed in Tables IV-C.3.9 and VII-C.3.9. The ATCM was amended May 19, 2011. The old version allowed new fire pumps to comply with either the requirements of 93115.6(a)(3) or (a)(4). The amendment only allows compliance with 93115.6(a)(4).

There is one other category of engine in emergency firewater pump service. This category is when the date of construction for an engine > 500 HP falls between 12/19/2002 and 1/1/2005. This engine is not subject to NSPS Subpart IIII, but is New for MACT Subpart ZZZZ and In-Use for the ATCM. S-1488 is the only engine in this category. New CI engines >500 HP are exempt from the requirements MACT Subpart ZZZZ [§63.6590 (b)(1)(i)], except for initial notification. The requirements for this engine is detailed in Tables IV-C.3.5 and VII-C.3.5.

The last Compression Ignition (CI) engines category are the emergency engines that are not in firewater pump service. These engines were all constructed after the effective date of NSPS Subpart IIII and are "New" engines for MACT Subpart ZZZZ and the ATCM. There are two types of engines in this category. The first type, S-58, S-1552 and S-1561, are engines that have power ratings less than or equal to 500 HP. The requirements for these engines are detailed in Tables IV-C.3.7 and VII-C.3.7. The second type, S-1557 and S-1572, are engines that have power ratings greater than 500 HP. New CI engines >500 HP are exempt from the requirements MACT Subpart ZZZZ [§63.6590 (b)(1)(i)], except for initial notification. The requirements for these engines are detailed in Tables IV-C.3.8 and VII-C.3.8.

These permit tables are summarized as follows:

Permit Engine Table Summary						
Permit Table	NSPS IIII (CI)	NSPS JJJJ (SI)	MACT ZZZZ			ATCM (CI)
			New/Existing	Power	Design/Service	
C.3.1	No	N/A	Existing	>500 HP	CI, Firewater	In-Use
C.3.2	N/A	No	Existing	<500 HP	SI, 4SRB	N/A
C.3.3	N/A	No	Existing	>500 HP	SI, 2SLB	N/A
C.3.4	No	N/A	Existing	<500 HP	CI, Firewater	In-Use
C.3.5	No	N/A	New	>500 HP	CI, Firewater	In-Use
C.3.6	Yes	N/A	New	<500 HP	CI, Firewater	New

<b>Permit Engine Table Summary</b>						
<b>Permit Table</b>	<b>NSPS III (CI)</b>	<b>NSPS JJJJ (SI)</b>	<b>MACT ZZZZ</b>			<b>ATCM (CI)</b>
			<b>New/Existing</b>	<b>Power</b>	<b>Design/Service</b>	
C.3.7	Yes	N/A	New	<500 HP	CI, Not Firewater	New
C.3.8	Yes	N/A	New	>500 HP	CI, Not Firewater	New
C.3.9	Yes	N/A	New	>500 HP	CI, Firewater	New

CI=Compression Ignition; SI = Spark Ignition; 2SLB=2 Stroke Lean Burn; 4SRB=4 Stroke Rich Burn

The significant requirements for the engines are addressed below.

The Tesoro No 1 Gas Plant engines S-952, S-953 and S-954 are existing SI 4SRB engines less than 500 HP. The requirements are detailed in Tables IV-C.3.2 and VII-C.3.2. For existing RICE with HP < 500, §63.6602 requires compliance with Table 2c. Table 2c, Part 11 requires the formaldehyde emissions of an 4SRB engine between 100 and 500 HP to be 10.3 ppmvd or less at 15% O<sub>2</sub>.

The Tesoro No 4 Gas Plant engines S-955 through S-960 are existing SI 2SLB engines greater than 500 HP. These engines do not have to meet the requirements of Subpart ZZZZ or Subpart A, including the initial notification requirements, per §63.6590(b)(3)(i).

The remaining Tesoro engines are emergency CI RICE. For older engines not subject to NSPS Subpart III, there are three types of engines subject to MACT ZZZZ. For Existing engines equal to or less than 500 HP, §63.6602 requires compliance with Table 2c. Table 2c, Part 1 for emergency stationary CI RICE requires engine oil and filter changes, air cleaner, hose and belt inspections at specified intervals. For new firewater pump engines greater than 500 HP, the engines do not have to meet the requirements of Subpart ZZZZ, except the initial notification requirements of §63.6645(f), per §63.6590(b)(1)(i). For existing firewater pump engines greater than 500 HP, the engines do not have to meet the requirements of Subpart ZZZZ, including the initial notification requirements, per §63.6590(b)(3)(iii).

For newer engines subject to NSPS Subpart III, there are three requirements. 60.4205(a) requires Table 1 emission standards for emergency engines that are model years earlier than 2007 that are not fire pumps. 60.4205(b) requires 40 CFR 89.112 and 89.113 emission standards for emergency engines that are model years 2007 and later that are not fire pumps. 60.4205(c) requires Table 4 emission standards for emergency engines that are fire pumps. The MACT ZZZZ requirements for these engines subject to NSPS III are limited or none. For engines less than 500 HP, the NSPS overlap applies: MACT Subpart ZZZZ 63.6590(c)(6) exempts New engines from the requirements of Subpart ZZZZ, requiring compliance with NSPS Subpart III. For New fire pump engines over 500 HP, the engines do not have to meet the requirements of Subpart ZZZZ or Subpart A, except for the initial notification requirements of 63.6645(f), per §63.6590(b)(1)(i). For New engines that are over 500 HP that are not fire pumps, 63.6600(c) applies, and this states the engines do not need to comply with the MACT ZZZZ emission or operating limitation tables.

The ATCM (section 93115, Title 17, CA Code of Regulations) requirements only apply to CI engines and are primarily directed at Diesel PM emissions. The approach is to limit the non-

emergency operating hours of the engines. The non-emergency operating hour limits are dependent the PM emission factor, on whether the engine is In-use or New, and on whether the engine is a fire pump or not. New engine requirements are summarized in Table 1 of 93115.6(a)(3), limiting non-emergency operating hours from 100 hours/year (PM g/bhp-hr < 0.01) to 50 hours/year (PM g/bhp-hr < 0.15) (these operating hour limits can be further reduced if required to pass a toxic risk screen). Other emissions are required to meet the Off-Road CI Engine Certification Standards. Tesoro only operates In-Use Fire Pump engines. These In-Use engines are required to meet the non-emergency operational requirements of the NFPA 25 standard per 93115.3(n).

The following sources need an additional explanation.

S-58 Amorco Wharf Generator was inadvertently omitted from the Section C.3 tables. It was constructed in 2010, is subject to NSPS IIII (model year 2007 or later), is a New engine < 500 HP for MACT ZZZZ, and a New engine for the ATCM. Therefore, it was added to Tables IV-C.3.7 and VII-C.3.7.

S-57 Amorco Terminal Off-shore Firewater Pump was previously included in Table IV-C.3.1 for Firewater Pumps not subject to NSPS IIII, but subject to MACT ZZZZ as a New engine and the ATCM as an New engine. This applicability was based on the 5/1/2003 date the District Permit to Operate was granted. However, Tesoro records show that S-57 was constructed in 2001. This would make S-57 an Existing engine for MACT ZZZZ and an In-Use engine for the ATCM. Therefore, Table IV-C.3.1 has been revised to correct the requirements of S-57.

S-1487 Tank 38 Firewater Pump Engine was previously included in Table IV-C.3.5 for Firewater Pumps not subject to NSPS IIII, but subject to MACT ZZZZ as an New engine and the ATCM as an In-Use engine. However, S-1487 is < 500 HP and was constructed in 2003. For an engine < 500 HP, this would make S-1487 an Existing engine for MACT ZZZZ. Therefore S-1487 was moved to Table C.3.4

S-1557 Generator was previously included in Table IV-C.3.8 as a New engine < 500 HP for MACT ZZZZ. However, S-1557 is a 762 HP engine. Therefore, Table IV-C.3.8 was revised to apply to MACT ZZZZ engines > 500 HP.

### Changes to permit

The following substantive changes are being made to this section. Miscellaneous rule updates have not been included (e.g., the new date for Regulation 6, Rule 1 and the new language for Regulations 6-1-310 and 6-1-311).

Changes to Section IV				
Item	Source	Location	Change	Reason
1	All Refinery	Table IV-A.1	Deleted SIP 8-5-328.1.2.	Parent citation 8-5-328.1 covers both 8-5-328.1.1 and 8-5-328.1.2.
2	All Refinery	Table IV-A.1	Added 61.357(a)(4)	Correct omission.

<b>Changes to Section IV</b>				
<b>Item</b>	<b>Source</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
3	All Refinery	Table IV-A.1	Added 40 CFR 63.643, 644 and 646 for Miscellaneous Process Vents	Part of 07/13/2016 amendment.
4	All Refinery	Table IV-A.1	Added future effective date of 8/1/2018 for 63.643(c), 63.655(g)(13), and 63.655(i)(12)(i) through (v).	Extension approved by EPA July 31, 2017.
5	All Refinery	Table IV-A.1	Added 40 CFR 63.654, Heat Exchange System Requirements and renumbered the Reporting and Recordkeeping Requirements to 63.655.	Part of 06/20/2013 amendment.
6	All Refinery	Table IV-A.1	Added 40 CFR 63.660, Storage Vessel Provisions.	Part of 12/01/2015 amendment.
7	All Refinery	Table IV-A.1	Deleted Conditions 8077 and 25798	Requirements moved to Table IV-M.1
8	All Amorcó	Table IV-A.2	Renumbered the Reporting and Recordkeeping Requirements to 63.655.	Part of 06/20/2013 amendment.
9	All Amorcó	Table IV-A.2	Added 40 CFR 63.660, Storage Vessel Provisions.	Part of 12/01/2015 amendment.
10	All Amorcó	Table IV-A.2	Deleted Condition 8077	Requirements moved to Table IV-M.1
11	All	Table IV-A.3	Added table for Fenceline Monitoring requirements	Separate table requested by EPA in other refinery Title V renewals.
12	S802	Table IV-B.1	Added Regulation 6, Rule 5	New rule adopted December 16, 2015.
13	S802	Table IV-B.1	Added 40 CFR 63 Subpart UUU 63.1564(a)(5), (c)(5), and 63.1565(a)(5).	Part of 12/01/2015 or 7/13/2016 amendments.
14	S802	Table IV-B.1	Updated 40 CFR 63 Subpart UUU 63.1570.	Part of 12/01/2015 or 7/13/2016 amendments.
15	S802	Table IV-B.1	Added 40 CFR 63 Subpart UUU 63.1571(a)(5), (a)(6).	Part of 12/01/2015 or 7/13/2016 amendments.
16	S802	Table IV-B.1	Updated 40 CFR 63 Subpart UUU 63.1571(b), 63.1572(c) and 63.1572(d)	Part of 12/01/2015 or 7/13/2016 amendments.
17	S802	Table IV-B.1	Added future effective date of 8/1/2018 for 63.1564(a)(5) & (c)(5), 63.1565(a)(5), 63.1572(c), and 63.1572(d)	Extension approved by EPA July 31, 2017.



<b>Changes to Section IV</b>				
<b>Item</b>	<b>Source</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
18	S802	Table IV-B.1	Deleted Condition 8077	Requirements moved to Table IV-M.1. S802 footnoted in Table M.1 as inclusive through S-901, the CO Boiler.
19	S802	Table IV-B.1	Revised Condition 11433	Applications 28073/28104
20	S1004	Table IV-B.5	Updated 40 CFR 63 Subpart UUU 63.1566(a)(4)	Part of 07/13/2016 amendment.
21	S1004	Table IV-B.5	Updated 40 CFR 63 Subpart UUU 63.1567(b)(1) reference to Table 41	Correct item for colormetric tube is Item 3.
22	S1004	Table IV-B.5	Updated 40 CFR 63 Subpart UUU 63.1570.	Part of 12/01/2015 amendment.
23	S1004	Table IV-B.5	Updated 40 CFR 63 Subpart UUU 63.1571(b), 63.1572(c)&(d), 63.1575 and 63.1575.	Part of 12/01/2015 amendment.
24	S1004	Table IV-B.5	Added future effective date of 8/1/2018 for 63.1572(c)(1), and 63.1572(d)(1) and (2)	Extension approved by EPA July 31, 2017.
25	S1004	Table IV-B.5	Deleted Condition 8077	Requirements moved to Table IV-M.1. S1004 is not specifically listed in the Table M.1 source list because there are no specific S1004 requirements. Note that S1004 heaters S927 and S951 are included.
26	S1005	Table IV-B.6	Revised Condition 22070-1 to biennial source testing	Applications 23138/23139
27	S1020	Table IV-B.10	Updated 40 CFR 63 Subpart UUU 63.1566(a)(4)	Part of 07/13/2016 amendment.
28	S1020	Table IV-B.10	Updated 40 CFR 63 Subpart UUU 63.1570.	Part of 12/01/2015 amendment.
29	S1020	Table IV-B.10	Updated 40 CFR 63 Subpart UUU 63.1571(b), 63.1572(c)&(d), 63.1573 and 63.1575.	Part of 12/01/2015 amendment.
30	S1020	Table IV-B.10	Added future effective date of 8/1/2018 for 63.1572(c)(1), and 63.1572(d)(1) and (2)	Extension approved by EPA July 31, 2017.
31	S1020	Table IV-B.10	Revised Condition 25476, Part 2	Add limit and show product limit is total for S-1004 and S-1020
32	S1510	Table IV-B.11	Added 40 CFR 63 Subpart CC	Part of 12/01/2015 amendment.



<b>Changes to Section IV</b>				
<b>Item</b>	<b>Source</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
33	S901	Table IV-C.1.1	Added 9-10-307.	Part of the October 16, 2013 rule amendment.
34	S901	Table IV-C.1.1	Added 40 CFR 63 Subpart DDDDD applicability and exemption.	Initial rule 3/21/2011, last amended 11/20/2015
35	S901	Table IV-C.1.1	Deleted Condition 8077	Requirements moved to Table IV-M.1.
36	S901	Table IV-C.1.1	Revised Condition 11433	Applications 28073/28104
37	S904	Table IV-C.1.2	Added 40 CFR 63 Subpart DDDDD	Initial rule 3/21/2011, last amended 11/20/2015
38	S904	Table IV-C.1.2	Deleted Condition 8077	Requirements moved to Table IV-M.1.
39	S904	Table IV-C.1.2	Revised Condition 22590 Part 2	Applications 27054/27065
40	S1558 S1559	Table IV-C.1.3	Added these new sources to table.	Applications 27395/27396
41	S1550 S1551 S1553 S1558 S1559	Table IV-C.1.3	Added 40 CFR 63 Subpart DDDDD applicability and exemption.	Initial rule 3/21/2011, last amended 11/20/2015
42	S1550 S1551 S1553 S1558 S1559	Table IV-C.1.3	Deleted Condition 24491 Part 2	Applications 27395/27396
43	S854 S992 S1012 S1517 S1524	Table IV-C.2.1	Added 40 CFR 63 Subpart CC	Part of 12/01/2015 and 7/13/2016 amendments.
44	S943	Table IV-C.2.2	Added 40 CFR 63 Subpart CC	Part of 12/01/2015 and 7/13/2016 amendments.
45	S944 S945	Table IV-C.2.3	Added 40 CFR 63 Subpart CC	Part of 12/01/2015 and 7/13/2016 amendments.
46	S1013	Table IV-C.2.3	Added 40 CFR 63 Subpart CC	Part of 12/01/2015 and 7/13/2016 amendments.
47	S56	Table IV-C.3.1	Removed S56	Now owned by Tesoro Logistic Operations and included in E1200 Title V Permit.

<b>Changes to Section IV</b>				
<b>Item</b>	<b>Source</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
48	S57	Table IV-C.3.1	Corrected ATCM requirements, adding 93115.3(n) exemption for fire pumps.	Changed S57 from a New engine (based on when the permit was granted in 2003) to an In-Use engine (based on when the S57 construction commenced in 2001)
49	S57	Table IV-C.3.1	Updated and Corrected 40 CFR 63 Subpart ZZZZ requirements.	Part of 1/30/2013 amendments. Changed S57 from a New RICE (based on when the permit was granted in 2003) to an Existing RICE (based on when the S57 construction commenced in 2001)
50	S952 S953 S954	Table IV-C.3.2	Removed 40 CFR 63.6595(a)(1), 6595(c), 6612 6620, 6630, 6635, 6640, 6645 and 6650.	These requirements have been completed and there are no reports required.
51	S952 S953 S954	Table IV-C.3.2	Updated 40 CFR 63 Subpart ZZZZ requirements. Added Table 2C Part 11.	Correct omission and part of 1/30/2013 amendments.
52	S952 S953 S954	Table IV-C.3.2	Delete all parts of Condition 8077 except Part B8A.	Non-source specific requirements moved to Table IV-M.1.
53	S1469	Table IV-C.3.4	Removed source.	Applications 27990/27991
54	S1475 S1476	Table IV-C.3.4	Removed sources. Deleted Condition 18947.	Tesoro advised sources removed from site in letter dated 3/3/2017.
55	S1471 S1472	Table IV-C.3.4	Updated ATCM requirements, keeping 93115.5(b) Fuel Requirements but deleting 93115.5(b)(1) specifics.	The ATCM allows options for fuel other than CARB Diesel.
56	S1471 S1472	Table IV-C.3.4	Removed 40 CFR 63 Subpart ZZZZ 63.6595(a)(1), 6595(c), 6645, 6650 and Table 7.	These requirements have been completed and there are no reports required.
57	S1471 S1472	Table IV-C.3.4	Updated 60 CFR 63 Subpart ZZZZ requirements.	Part of 1/30/2013 amendments.
58	S1487	Table IV-C.3.4	Added source deleted from Table IV-C.3.5. Moved Condition 20672 Parts A5, A6 and A8 from Table IV-C.3.5.	S1487 is also an existing RICE < 500 HP
59	S1487	Table IV-C.3.5	Removed source and Condition 20672 Parts A5, A6 and A8 (moved to Table IV-C.3.4)	Correction. S1487 is also an existing RICE < 500 HP Table IV-C.3.5 is for New engines > 500 HP

<b>Changes to Section IV</b>				
<b>Item</b>	<b>Source</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
60	S1488	Table IV-C.3.5	Updated ATCM requirements, keeping 93115.5(b) Fuel Requirements but deleting 93115.5(b)(1) specifics.	The ATCM allows options for fuel other than CARB Diesel.
61	S1488	Table IV-C.3.5	Deleted ATCM 93115.6(b)(3) since exempt per 92115.3(n)	In-Use Fire Pumps exempt per 92115.3(n)
62	S1488	Table IV-C.3.5	Deleted 63.6645	Initial notification completed.
63	S1518 S1519	Table IV-C.3.6	Updated ATCM requirements, keeping 93115.5(a) Fuel Requirements but deleting 93115.5(a)(1) specifics.	The ATCM allows options for fuel other than CARB Diesel.
64	S1518 S1519	Table IV-C.3.6	Changed ATCM requirements from 93115.6(a)(3) to 93115.6(a)(4)	Part of 5/19/2011 amendment
65	S1518 S1519	Table IV-C.3.6	Updated 40 CFR 60 Subpart III. Removed 4200(a)(2). Added 4200(a)(4).	Part of 6/28/2011, 1/30/2013 and 7/7/2016 amendments, and removed parts not applicable or past due. Even though the engines were not permitted until 9/12/2006, they were manufactured as certified firewater pumps before 7/1/2006.
66	S58	Table IV-C.3.7	Added Source	Correct Omission
67	S1561	Table IV-C.3.7	Added Source	Applications 27990/27991
68	S1552 S58 S1561	Table IV-C.3.7	Corrected ATCM heading and updated requirements	These engines are not fire pumps. Part of 5/19/2011 amendment.
69	S1552 S58 S1561	Table IV-C.3.7	Updated ATCM requirements, keeping 93115.5(a) Fuel Requirements but deleting 93115.5(a)(1) specifics.	The ATCM allows options for fuel other than CARB Diesel.
70	S1552 S58 S1561	Table IV-C.3.7	Updated 40 CFR 60 Subpart III	Part of 6/28/2011, 1/30/2013 and 7/7/2016 amendments, and removed parts not applicable or past due.
71	S1572	Table IV-C.3.8	Added Source	Applications 28553/28549
72	S1557 S1572	Table IV-C.3.8	Corrected ATCM heading and updated requirements	These engines are not fire pumps. Part of 5/19/2011 amendment.
73	S1557 S1572	Table IV-C.3.8	Updated ATCM requirements, keeping 93115.5(a) Fuel Requirements but deleting 93115.5(a)(1) specifics.	The ATCM allows options for fuel other than CARB Diesel.

<b>Changes to Section IV</b>				
<b>Item</b>	<b>Source</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
74	S1557 S1572	Table IV-C.3.8	Updated 40 CFR 60 Subpart III.	Part of 6/28/2011, 1/30/2013 and 7/7/2016 amendments, and removed parts not applicable or past due.
75	S1557 S1572	Table IV-C.3.8	Updated 40 CFR 63 Subpart ZZZZ.	Part of 1/30/2013 amendments.
76	S1562 S1563	Table IV-C.3.9	Added table for new sources	Applications 27990/27991
77	S908 S909 S912 S913 S915 S916 S920 S921 S922 S928- S935 S937	Table IV-C.4.2	Added 40 CFR 63 Subpart DDDDD	Initial rule 3/21/2011, last amended 11/20/2015
78	S908 S909 S912 S913 S915 S916 S920 S921 S922 S928- S935 S937	Table IV-C.4.2	Deleted Condition 8077 except parts B4B, B4C, B4D, B7A, B7C, B7D, C3 & C4	Moved to new Table IV-M.1
79	S908 S909 S912 S913 S915 S916 S920 S921 S922 S928- S935 S937	Table IV-C.4.2	Deleted Condition 8077 Part B7C.	Applications 29278/29274

<b>Changes to Section IV</b>				
<b>Item</b>	<b>Source</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
80	S917 S919 S951 S973 S974	Table IV-C.4.3	Added 40 CFR 63 Subpart DDDDD	Initial rule 3/21/2011, last amended 11/20/2015
81	S973	Table IV-C.4.3	Updated Condition 8077-A2A to include S-973	Applications 27309/27310
82	S917 S919 S951 S973 S974	Table IV-C.4.3	Deleted Condition 8077 except parts A2A, A2B, B4A, B4B, B4D, B7A, B7B	Moved to new Table IV-M.1
83	S950	Table IV-C.4.4	Added 40 CFR 63 Subpart DDDDD	Initial rule 3/21/2011, last amended 11/20/2015
84	S950	Table IV-C.4.4	Deleted Condition 8077 except parts B4A, B4B, B4D, B7	Moved to new Table IV-M.1
85	S1412	Table IV-C.4.5	Added 40 CFR 63 Subpart DDDDD	Initial rule 3/21/2011, last amended 11/20/2015
86	S1106 S1470	Table IV-C.4.6	Added 40 CFR 63 Subpart DDDDD	Initial rule 3/21/2011, last amended 11/20/2015
87	S1511 S1512	Table IV-C.4.7	Added 40 CFR 63 Subpart DDDDD	Initial rule 3/21/2011, last amended 11/20/2015
88	S971 S972	Table IV-C.4.8	Updated 40 CFR 60 Subpart Ja	Amended 12/1/2015 and 7/13/2016
89	S971 S972	Table IV-C.4.8	Added 40 CFR 63 Subpart DDDDD	Initial rule 3/21/2011, last amended 11/20/2015
90	S971 S972	Table IV-C.4.8	Deleted Condition 8077 except parts B4A, B7A	Moved to new Table IV-M.1
91	S971 S972	Table IV-C.4.8	Added Condition 18372 Part 3	Correct omission.
92	S963	Table IV-C.5.1	Deleted Table	Applications 28445/28446
93	S55	Table IV-D.1	Updated requirements of 8-44 removing requirements for vessel owners.	1/16/18 direction from Legal Division for all refinery Title V permits.
94	S55	Table IV-D.1	Updated 40 CFR 63 Subpart CC	Part of 12/01/2015 and 7/13/2016 amendments.
95	S55	Table IV-D.1	Deleted Condition 8077	Moved to new Table IV-M.1
96	S100	Table IV-D.2	Deleted Table	Applications 27990/27991
97	S108	Table IV-D.4	Deleted Table	Applications 27990/27991
98	S1025	Table IV-D.7	Added Condition 26033	Applications 26198/26199
99	S1560	Table IV-D.11	Added Table	Applications 27990/27991

<b>Changes to Section IV</b>				
<b>Item</b>	<b>Source</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
100	S846 S975 S976 S977 S978 S979 S980 S981 S982 S983 S985 S987 S988	Table IV-E.4	Added Regulation 1 and Regulation 8, Rule 2	12/16/2015 Rule Amendment
101	S846 S975 S976 S977 S978 S979 S980 S981 S982 S983 S985 S987 S988	Table IV-E.4	Added Regulation 11 Rule 10 Hexavalent Chromium Emissions from All Cooling Towers and Total Hydrocarbon Emissions from Petroleum Refinery Cooling Towers	12/16/2015 Rule Amendment
102	S846 S975 S976 S977 S978 S979 S980 S981 S982 S983 S985 S987 S988	Table IV-E.4	Added 40 CFR 63 Subpart CC requirements.	Part of 12/01/2015 and 7/13/2016 amendments.
103	S1549	Table IV-F.1	Added Condition 24649-1a	Applications 29278/29274
104	S1564	Table IV-F.1	Added new source	Applications 27990/27991
104a	S1508 S1509	Table IV-F.1	Removed sources from table	Applications 27990/27991

<b>Changes to Section IV</b>				
<b>Item</b>	<b>Source</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
105	S137 S642	Table IV-F.1 & F.2	Changed applicability to BWON 40 CFR 61 Subpart FF group	Correct error. Both of these tanks are recovered oil tanks in the same service as S137 and S896, subject to BWON.
106	S629	Table IV-F.2	Deleted source from Group 100	Source demolished.
107	S318, S367	Table IV-F.2	Deleted source from Group 401C	Sources demolished.
108	S315	Table IV-F.2	Deleted source from Group 301B	Source demolished.
109	S1508, S1509	Table IV-F.2	Deleted sources from Group 402A	Applications 27990/27991
110	S1564	Table IV-F.2	Added new source to Group 402A	Applications 27990/27991
111	Tanks	Table IV-F.3	Removed Regulation 11, Rule 12, 40 CFR 61 Subpart FF by reference.	The detailed requirements of 40 CFR 61 Subpart FF are specified elsewhere in this table.
112	Tanks	Table IV-F.3	Updated CC 40 CFR 63.640(n)(1)	Part of 12/01/2015 or 7/13/2016 amendments.
113	Tanks	Table IV-F.3	Updated CC 40 CFR 63.646, Changed Reporting/Records rows from 63.654 to 63.655, and added 63.660.	Part of 12/01/2015 or 7/13/2016 amendments.
114	Tanks	Table IV-F.3	Added 61.343(b) and 61.356(f)(1)	Correct omission.
115	Tanks	Table IV-F.3	Deleted 61.354(c)	Correction. For Groups 401 B&D, sources are vented to fuel gas and are exempt from 61.354(c) per 61.340(d). For Group 404, the sources are abated by carbon regenerated offsite and 61.354(d) is applicable.
116	Tanks	Table IV-F.3	Changed 61.356(f)(2) to (f)(3)	Carbon canister documentation is completed using engineering calculations, not a performance test
117	Drains	Table IV-G.2	Updated CC 40 CFR 63.640(o)	Part of 7/13/2016 amendment.
118	S513	Table IV-G.3	Table deleted	S-513 demolished
119	S532 S1484	Table IV-G.4	Removed Regulation 11, Rule 12, 40 CFR 61 Subpart FF by reference.	The detailed requirements of 40 CFR 61 Subpart FF are specified elsewhere in this table.

<b>Changes to Section IV</b>				
<b>Item</b>	<b>Source</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
120	S532 S1484	Table IV-G.4	Deleted 61.349, and 61.356(j).	Correction. S532 and S1484 are abated by sending vapors to the fuel gas system and is exempt from these requirements per 61.340(d).
121	S532 S1484	Table IV-G.4	Updated CC 40 CFR 63 changing Reporting/Records rows from 63.654 to 63.655	Part of 12/01/2015 or 7/13/2016 amendments.
122	S606 S607	Table IV-G.5	Removed Regulation 11, Rule 12, 40 CFR 61 Subpart FF by reference.	The detailed requirements of 40 CFR 61 Subpart FF are specified elsewhere in this table.
123	S606 S607	Table IV-G.5	Updated CC 40 CFR 63 changing Reporting/Records rows from 63.654 to 63.655	Part of 12/01/2015 or 7/13/2016 amendments.
124	S699	Table IV-G.6	Removed Regulation 11, Rule 12, 40 CFR 61 Subpart FF by reference.	The detailed requirements of 40 CFR 61 Subpart FF are specified elsewhere in this table.
125	S700	Table IV-G.7	Removed Regulation 11, Rule 12, 40 CFR 61 Subpart FF by reference.	The detailed requirements of 40 CFR 61 Subpart FF are specified elsewhere in this table.
126	S819	Table IV-G.8	Removed Regulation 10, Rule 69, 40CFR60 Subpart QQQ and Regulation 11, Rule 12, 40CFR61 Subpart FF, both incorporated by reference.	The detailed requirements of 40 CFR 60 Subpart QQQ and 40 CFR 61 Subpart FF are specified elsewhere in this table.
127	S819	Table IV-G.8	Removed 63.640(o)(1)	S819 only handles only Group 2 wastewater streams and 63.640(o)(1) addresses Group 1 wastewater streams.
128	S1401	Table IV-H.2	Updated 40 CFR 63 Subpart UUU 63.1568, 63.1570, 63.1571, 63.1572 and 63.1575.	Part of 12/01/2015 or 7/13/2016 amendments.
129	S1401	Table IV-H.2	Added future effective date of 8/1/2018 for 63.1568(a)(4), 63.1572(c), and 63.1572(d)	Extension approved by EPA July 31, 2017.
130	S1411	Table IV-H.5	Added Condition 26266	Applications 27564/27565
131	S1571	Table IV-H.8	Added Table	Applications 28336/28346
132	N/A	Table IV-J.0	Added rows for Groundwater Remediation and Contaminated Soil Remediation	Clarification that the equipment associated with these operations are part of the 8-18 definition of a Petroleum Refinery.



<b>Changes to Section IV</b>				
<b>Item</b>	<b>Source</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
133	S1009	Table IV-J.0	Added VV/GGG to Area 4 Alkylation Plant	Correction. This plant was modified in 1995 via Application 10912.
134	Equipmt Leaks	Table IV-J.1	Updated CC 40 CFR 63 changing Reporting/Records rows from 63.654 to 63.655	Part of 12/01/2015 or 7/13/2016 amendments.
135	S1543 S1544 S1545 S1546 S1547 S1548	Table IV-J.5	Deleted Table.	Cold Cleaners no longer in service and deleted from Section II.
135	A39	Table IV-K.1	Updated CC 40 CFR 63.640(o)(1)	Part of 7/13/2016 amendment
137	Various	Table IV-M.1	Added Table for all requirements of the Refinery Emissions Cap	Added to eliminate repetitive citations in each source table.

## V. Schedule of Compliance

A schedule of compliance is required in all Title V 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 Tesoro Refining & Marketing Company LLC submitted a signed Certification Statement form dated December 17, 2015. On this form, the responsible official certified that the following statements are true:

Based on information and belief formed after reasonable inquiry, the source(s) identified in the Applicable Requirements and Compliance Summary form that is(are) in compliance will continue to comply with the applicable requirement(s);

Based on information and belief formed after reasonable inquiry, the source(s) identified in the

Applicable Requirements and Compliance Summary form will comply with future-effective applicable requirement(s), on a timely basis.

Regulation 2-6-426.2 requires that a new Certification Statement be submitted on every anniversary of the application date until the permit has been issued. Tesoro has been requested to provide the current Certification Statement.

Changes to permit:

No change is being made to this section.

## **VI. Permit Conditions**

During the Title V permit development, the District has reviewed the existing permit conditions, deleted the obsolete conditions, and, as appropriate, revised the conditions for clarity and enforceability. Each permit condition is identified with a unique numerical identifier, up to five digits.

When necessary to meet Title V requirements, additional monitoring, recordkeeping, or reporting requirements have been added to the permit.

All 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.

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.

The District has reviewed and, where appropriate, revised or added new annual and daily throughput limits on sources to help ensure compliance with District rules addressing preconstruction review. The applicability of preconstruction review depends on whether a source has been “modified” as defined in District Rule 2-1-234. Whether there is a modified source depends in part on whether there has been an “increase” in the “potential to emit” of a source. 2-1-234 defines what is considered an increase in the potential to emit of a source.

Sources that were modified or constructed since the District began issuing new source review permits will have permits that contain throughput limits, and these limits are reflected in the Title V permit. These limits have previously undergone District review, and are the legally binding “potential to emit” of the source for the purposes of 2-1-234.1.1. By contrast, for older sources that have never been through preconstruction review (commonly referred to as “grandfathered” sources), an “increase” in “potential to emit” is addressed in 2-1-234.1.2. A grandfathered source is not subject to preconstruction review unless it undergoes a change that results in an increase in its potential to emit as defined in 2-1-234.1.2. The emissions increase shall be

calculated as the difference between: (i) the source's potential to emit after the change; and (ii) the source's adjusted baseline emissions before the change, calculated in accordance with Section 2-2-603. However, if the throughput capacity of a grandfathered source is limited by upstream or downstream equipment (i.e., is "bottlenecked") or for any source that cannot physically operate to the full extent of the source's potential to emit, then the relaxing of that limitation ("debottlenecking") is considered a modification as described in 2-1-234.1.2. In the case of a source that has undergone New Source Review and is subject to a limit on its potential to emit that it cannot physically attain, then any physical change, change in method of operation, change in throughput or production, or other similar change at the source that allows it to increase its potential to emit beyond this physical limit is also considered a modification.

The District has added throughput limits to the Title V permit for grandfathered sources. As discussed above, these limits were added so that the District could determine whether an increase in emission levels has occurred. The purpose of these limits is to facilitate implementation of the District's preconstruction review program. If these limits are exceeded, the facility would be expected to report the exceedence, and the District would treat the reported exceedence as presumptively establishing the occurrence of a modification. The facility would then be expected to apply for a preconstruction permit addressing the modification and the District would consider whether an enforcement action was appropriate.

It is important to note the presumptive nature of throughput limits for grandfathered sources that are created in the Title V permit. These limits are generally based upon the District's review of information provided by the facility regarding the design capacity or highest documented capacity of the grandfathered source. To verify whether these limits reflect the true design, documented, or "bottlenecked" capacity (pursuant to 2-1-234.1.2) of each source is beyond the resource abilities of the District in this Title V process. Moreover, the District cannot be completely confident that the facility has had time or resources necessary to provide the most accurate information available in this regard. Creating throughput limits in the Title V permit for grandfathered sources is not required by either Part 70 or the District's Major Facility Review rules. Despite the lack of such a requirement, and despite the resource and information challenges presented in the Title V process, the District believes that writing presumptive limits for grandfathered sources into the Title V permit will provide a measure of predictability regarding the future applicability of the preconstruction review program, and that this increased predictability is universally beneficial.

There are some cases where the stated throughput limit of a grandfathered source has been determined to be incorrect. For each of these cases, Appendix A of this Statement of Basis is reserved for justifications of any grandfathered throughput limit changes.

It follows from the presumptive nature of these throughput limits for grandfathered sources that exceedence of these limits is not per se a violation of the permit. *Failure to report an exceedence would be a permit violation.* In this sense, the throughput limits function as monitoring levels, and are imposed pursuant to the District's authority to require monitoring that provides a reasonable assurance of compliance. If an exceedence occurs, the facility would have an opportunity to demonstrate that the throughput limit in fact did not reflect the appropriate limit for purposes of 2-1-234.1.2. If the facility can demonstrate this, no enforcement action would follow, and the permit would be revised at the next opportunity. It also follows that compliance with these limits is not a "safe harbor" for the facility. If evidence clearly shows that

a source has undergone a “modification” as defined in 2-1-234.1.2, the District would consider that a preconstruction review-triggering event, notwithstanding compliance with the throughput limit in the Title V permit. In other words, the protection afforded the facility by complying with the throughput limit in the Title V permit is only as strong as the information on which it was based. There is no Title V “permit shield” associated with throughput limits for grandfathered sources, as they are being proposed. A shield may be provided if the District determines with certainty that a particular limit is appropriate with respect to Regulation 2-1-234.1.2.

Conditions that are obsolete or that have no regulatory basis have been deleted from the permit.

The regulatory basis is listed following each condition. The regulatory basis may be a rule or regulation. The District is also using 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 or Toxics:** 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.

**Changes to permit:**

The following changes have been made to the permit:

<b>Changes to Section VI – Permit Conditions</b>			
<b>Item</b>	<b>Condition</b>	<b>Change</b>	<b>Reason</b>
1	878	Deleted Condition for S100	Applications 27990/27991
2	8077 Source List	Removed S1421.	Correction. S1421 was permitted in 1995 NSR Application 11395. Emission increases were fully offset separate from the refinery emissions cap.
3	8077 Source List	Removed S963	Applications 28445/28446
4	8077-A2A	Increased startup and shutdown durations and emissions for S973 and S974	Applications 27309/27310
5	8077-B2A and B2B	Reduced emission limits to reflect Regulation 9, Rule 10 reductions and for the removal of S963	Applications 28445/28446

<b>Changes to Section VI – Permit Conditions</b>			
<b>Item</b>	<b>Condition</b>	<b>Change</b>	<b>Reason</b>
6	8077	Updated Parts A10, A13 and A14 to clarify that these completed conditions are deleted.	Applications 29278/29274
7	8077	Deleted Part A17 since Authority to Construct was executed and Permit to Operate was granted.	Applications 29278/29274
8	8077	Deleted Part B6B.	Applications 29278/29274
9	8077	Revised the group limit of Part B7B to the original limit of 159MM Btu/hr.	Applications 29278/29274
10	8077	Deleted Part B7C and reference to it in B4C.	Applications 29278/29274
11	8077	Deleted S919 since a NOx CEM was installed.	Applications 29278/29274
12	8077	Deleted completed Parts B8B, B12A and B12B.	Applications 29278/29274
13	8077	Deleted Part B9Bii.	Applications 29278/29274
14	8077	Deleted Part B12I.	Applications 29278/29274
15	11433	Revised Introduction, Parts 7, 8, 9, 10 and 12; updated the bases for Parts 11, 13, 14 and 16; Deleted Part 15 and added Part 17.	Applications 28073/28104
16	13605	Revised Part 17B to allow 60 days for source test report submittal.	Applications 29278/29274
16a	16516	Revised condition.	Updated to current language of this standard GDF condition.
17	16685	Revised Basis for Part 1.	Updated to be consistent with the Permit to Operate condition
18	17322	Revised Part 1 firing rate for S-904	Applications 27054/27065
19	18372	Revised NOx Box Part 31A for S-920	Applications 26422/26423
19a	18539	Revised Part 4 to allow 60 days for source test report submittal.	Applications 29278/29274
20	18947	Deleted Condition for S-1475 and S-1476 Emergency Diesel Firewater Pumps.	Tesoro advised S-1475 and S-1476 removed from site in letter dated 3/3/2017.
20a	19199	Revised Parts H12 and H13 to allow 60 days for source test report submittal.	Applications 29278/29274
21	19528	Deleted Part 14a for A-9	Applications 27030/27031
22	19528	Revised Part 21 for S963 steam injection rate and averaging period	Applications 27791/27792
23	19528	Deleted Parts 19, 21, 22 and 23 for S963	Applications 28445/28446

<b>Changes to Section VI – Permit Conditions</b>			
<b>Item</b>	<b>Condition</b>	<b>Change</b>	<b>Reason</b>
24	20099	Revised Part 5 to allow 60 days for source test report submittal.	Applications 29278/29274
25	21100	Revised Part 4 to allow 60 days for source test report submittal.	Applications 29278/29274
26	21849	Updated description of S-613 and revised Part 11a for S-1025 abatement	Applications 29278/29274
27	22070	Revised Condition 22070-1 for S-1005 source testing every two years	Applications 23138/23139
28	22070	Revised Part 1 to allow 60 days for source test report submittal.	Applications 29278/29274
28a	22150	Revised Part 2 to allow 60 days for source test report submittal.	Applications 29278/29274
29	22590	Revise S904 firing rate	Applications 27054/27065
30	22851	Removed S1475 and S1476	Tesoro advised sources removed from site in letter dated 3/3/2017.
31	23129	Revised Part 53 for S-1517	Applications 27030/27031
32	23129	Revised Part 26 to allow 60 days for source test report submittal.	Applications 29278/29274
33	23486	Deleted Condition for S1508 and S1509	Applications 27990/27991
34	23811	Added S1561	Applications 27990/27991
35	23811	Added S1562	Applications 28553/28549
36	24491	Added S1558 and S1559, deleted Parts 2 and 11d, and revised Parts 4, 6 and 10	Applications 27395/27396
37	24649	Added Part 1a and revised Part 2 to allow flexibility consistent with the standard storage tank conditions in the Permit Handbook.	Applications 29278/29274
38	26033	Added Condition for S1025	Applications 26198/26199
39	26266	Added Condition for S1411	Applications 27564/27565
40	26406	Added Condition for S1560	Applications 27990/27991
41	26407	Added Condition for S1562, S1563	Applications 27990/27991
42	26408	Added Condition for S-1564	Applications 27990/27991
43	17071, 24010, 21971, 22448, 24238	Added Conditions for Contractor Equipment	Consistent with equipment listed in Table II-E.

## VII. Applicable Limits and Compliance Monitoring Requirements

This section of the permit is a summary of numerical limits and related monitoring requirements for each source. The summary includes a citation for each monitoring requirement, frequency of monitoring, and 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.

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.

### Changes to permit:

Changes to Section VII				
Item	Source	Location	Change	Reason
1	All Refinery	Table VII-A.1	Deleted three POC rows for 40 CFR 61.343	These tank requirements are included in Table VII-F.3 (61.343(d) was added.)
2	All Refinery	Table VII-A.1	Deleted four VOC rows for 8-5-328.1 and SIP 8-5-328.1.2	These tank requirements are included in Table VII-F.3
3	All Refinery	Table VII-A.1	Added VOC/HAP rows for Miscellaneous Process Vent requirements 63.643	Part of MACT CC 07/13/2016 amendment.
4	All Refinery	Table VII-A.1	Added VOC rows for Heat Exchange System requirements 63.654. Renumbered former 63.654 to 63.655.	Part of MACT CC 06/20/2013 amendment.

<b>Changes to Section VII</b>				
<b>Item</b>	<b>Source</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
5	All Refinery	Table VII-A.1	Deleted Condition 8077	Requirements moved to Table IV-M.1
6	All Amorco	Table VII-A.2	Deleted three POC rows for 40 CFR 61.343	These tank requirements are included in Table VII-F.3 (61.343(d) was added.)
7	All Amorco	Table VII-A.2	Deleted Condition 8077	Requirements moved to Table IV-M.1
8	All	Table VII-A.3	Added table for Fenceline Monitoring requirements	Separate table requested by EPA in other refinery Title V renewals.
9	S802	Table VII-B.1	Added row for 6-5 Ammonia NH3	New rule adopted December 16, 2015.
10	S802	Table VII-B.1	Revised and added Condition 11433 Limits	Applications 28073/28104
11	S802	Table VII-B.1	Added SO2 limit for 9-1-310.1	Correct Omission.
12	S1510	Table VII-B.11	Added row for 40 CFR 63.657 temperature/pressure monitoring	Part of 12/01/2015 amendment.
13	S901	Table VII-C.1.1	Revised and added Condition 11433 Limits	Applications 28073/28104
14	S901	Table VII-C.1.1	Added/Revised NOx limits for 9-10-307.	Part of the October 16, 2013 rule amendment.
15	S904	Table VII-C.1.2	Revised table header	Consistency with Table IV-C.1.2
16	S904	Table VII-C.1.2	Changed Fuel Flow Limit	Applications 27054/27065
17	S1558 S1559	Table VII-C.1.3	Added these new sources to table.	Applications 27395/27396
18	S1550 S1551 S1553 S1558 S1559	Table VII-C.1.3	Deleted On Site Residence Time limit Condition 24491 Part 2	Applications 27395/27396
19	S1550 S1551 S1553 S1558 S1559	Table VII-C.1.3	Revised Unabated Operation Limit, NOx limits, and added combined firing rate limit	Applications 27395/27396
20	S854 S992 S1012 S1517 S1524	Table VII-C.2.1	Added requirements for MACT CC 63.670	Part of 12/01/2015 and 7/13/2016 amendments.



<b>Changes to Section VII</b>				
<b>Item</b>	<b>Source</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
21	S1517	Table VII-C.2.1	Revised Throughput Limit Condition 23129 Part 53	Applications 27030/27031
22	S943	Table VII-C.2.2	Added requirements for MACT CC 63.670	Part of 12/01/2015 and 7/13/2016 amendments.
23	S56	Table VII-C.3.1	Removed S56	Now owned by Tesoro Logistic Operations and included in E1200 Title V Permit.
24	S57	Table VII-C.3.1	Updated ATCM requirements	Changed S57 from a New engine (based on when the permit was granted in 2003) to an In-Use engine (based on when the S57 construction commenced in 2001)
25	S952 S953 S954	Table VII-C.3.2	Added 40 CFR 63 Subpart ZZZZ formaldehyde limit	Correct omission and part of 1/30/2013 amendments.
26	S1469, S1475, S1476, S1487	Table VII-C.3.4	Deleted source Deleted source Deleted source Added source	See changes to Table IV-C.3.4
27	S1471 S1472	Table VII-C.3.4	Updated 40 CFR 63 Subpart ZZZZ requirements.	Part of 1/30/2013 amendments.
28	S1487	Table VII-C.3.4	Moved Condition 20672 Parts A5, A6 and A8 from Table IV-C.3.5.	S1487 is also an existing RICE < 500 HP
29	S1487	Table VII-C.3.5	Removed source and limits. Condition 20672 Parts A5, A6 and A8 moved to Table IV-C.3.4	Correction. S1487 is also an existing RICE < 500 HP Table IV-C.3.5 is for New engines > 500 HP
30	S1518 S1519	Table VII-C.3.6	Updated ATCM and 40 CFR 60 Subpart III requirements	Part or rule amendments. See Table IV-C.3.6 changes for details.
31	S58	Table VII-C.3.7	Added Source	Correct Omission
32	S1561	Table VII-C.3.7	Added Source	Applications 27990/27991
33	S58 S1552 S1561	Table VII-C.3.7	Updated 40 CFR 60 Subpart III	Part of 6/28/2011, 1/30/2013 and 7/7/2016 amendments.
34	S1572	Table VII-C.3.8	Added Source	Applications 28553/28549
35	S1562 S1563	Table VII-C.3.9	Added table for new sources	Applications 27990/27991

<b>Changes to Section VII</b>				
<b>Item</b>	<b>Source</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
35a	Heaters	Table VII-C.4.1, C.4.2, C.4.3, C.4.4, C.4.5, C.4.6, C.4.8	Updated NSPS H2S limit from 160 ppmv to 162 ppmv	Tesoro 8/3/2018 Comment # 15
35b	Heaters	Table VII C.4.2, C.4.3, C.4.4, C.4.8	Added operating day averaging period to CO limit.	Correct omission. Tesoro 8/3/2018 Comment # 39
36	S973 S974	Table VII-C.4.3	Added Condition 8077-A2A NOx emissions limits	Applications 27309/27310
37	S973 S974	Table VII-C.4.3	Revised S973/S974 group firing rate limit to 159MM Btu/hr	Applications 28278/28274
38	S971 S972	Table VII-C.4.8	Added Condition 18372 Part 3 for firing rate limit	Correct omission.
39	S963	Table VII-C.5.1	Revised steam injection rate and added averaging period	Applications 27791/27792
40	S963	Table VII-C.5.1	Deleted Table	Applications 28445/28446
41	S55	Table VII-D.2	Deleted vessel owner requirements of 8-44	1/16/18 direction from Legal Division for all refinery Title V permits.
42	S100	Table VII-D.2	Deleted Table	Applications 27990/27991
43	S108	Table VII-D.4	Deleted Table	Applications 27990/27991
44	S1025	Table VII-D.7	Added Condition 26033	Applications 26198/26199
45	S1560	Table VII-D.11	Added Table	Applications 27990/27991
46	S659 S660	Table VII-E.2	Deleted Table. Sources demolished.	Applications 27030/27031
47	S846 S975 S976 S977 S978 S979 S980 S981 S982 S983 S985 S987 S988	Table VII-E.4	Added VOC requirements from Regulation 11, Rule 10 and 40 CFR 63 Subpart CC.	12/16/2015 Rule Amendment  Part of 12/01/2015 and 7/13/2016 RSR amendments.
48	All	Table VII-F.3	Changed VOC SIP 8-5-328.1.2 to 8-5-328.1	Consistent with the change in Table IV-F.3
49	All	Table VII-F.3	Deleted HAP 63.646(a) & (f) and added 63.660	Part of 12/01/2015 or 7/13/2016 amendments consistent with the change in Table IV-F.3.

<b>Changes to Section VII</b>				
<b>Item</b>	<b>Source</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
50	All	Table VII-F.3	Added VOC 61.343(d)	Correct omission
51	S1564	Table VII-F.3	Added throughput Condition 26408	Applications 27990/27991
52	S1508	Table VII-F.3	Deleted TVP Limit Condition 23486	Applications 27990/27991
53	S1508 S1509	Table VII-F.3	Deleted Throughput Limit Condition 23486	Applications 27990/27991
54	Tank Groups 401B&D and 404	Table VII-F.3	Added VOC row for 40 CFR 61 FF 61.343(d)	This tank requirement is transferred from Table VII-A.1.
55	S-513	Table VII-G.3	Table deleted	S-513 demolished
56	S532 S1484	Table VII-G.4	Deleted POC 61.349	Correction. S532 and S1484 are abated by sending vapors to the fuel gas system and is exempt from these requirements per 61.340(d).
57	S1411	Table VII-H.5	Added Condition 26266 limits for NOx, CO, PM10, POC, SO2 and SAM	Applications 27564/27565
58	S1571	Table VII-H.8	Added Table	Applications 28336/28346
59	S1543 S1544 S1545 S1546 S1547 S1548	Table VII-J.5	Deleted Table.	Cold Cleaners no longer in service and deleted from Section II.
60	Various	Table VII-M.1	Added Table for all requirements of the Refinery Emissions Cap. Updated limits consistent with Section VI.	Added to eliminate repetitive citations in each source table.

### **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” as defined by Regulation 2-6-202.

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

**Changes to permit:**

<b>Changes to Section VIII</b>				
<b>Item</b>	<b>Source</b>	<b>Location</b>	<b>Change</b>	<b>Reason</b>
1	All Refinery	Table VIII	Added Test Methods for Regulation 8, Rule 53	Regulation 8, Rule 53 adopted in 2012.
2	S971 S972	Table VIII	Added Test Methods for NSPS Subpart Ja.	Sources subject to Subpart Ja.
3	All Refinery	Table VIII	Updated Regulation 6 and 8-5 citations	Rule Amendments
4	All Refinery	Table VIII	Added 40 CFR 63 Subpart CC citations	Correct Omissions

**IX. Permit Shield:**

The District rules allow two types of permit shields. The permit shield types are defined as follows: (1) A provision in a major facility review permit explaining that specific federally enforceable regulations and standards do not apply to a source or group of sources, or (2) A provision in a major facility review permit explaining that specific federally enforceable applicable requirements for monitoring, recordkeeping and/or reporting 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 Title V permits. The District's program does not allow other types of streamlining in Title V permits.

This facility has the second type of permit shield, identical to the last permit renewal.

Changes to permit:

There were no changes to this section.

**X. Revision History**

This section will add the Renewed Permit with a summary of the applications included.

**XI. Glossary**

Changes to permit:

There were no changes to this section.

**D. Alternate Operating Scenarios:**

No alternate operating scenario has been requested for this facility.

**E. Compliance Status:**

The responsible official for Tesoro Refining & Marketing Company LLC submitted a signed Certification Statement form dated December 17, 2015. On this form, the responsible official certified that the following statements are true:

Based on information and belief formed after reasonable inquiry, the source(s) identified in the Applicable Requirements and Compliance Summary form that is(are) in compliance will continue to comply with the applicable requirement(s);

Based on information and belief formed after reasonable inquiry, the source(s) identified in the

Applicable Requirements and Compliance Summary form will comply with future-effective applicable requirement(s), 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.

Regulation 2-6-426.2 requires that a new Certification Statement be submitted on every anniversary of the application date until the permit has been issued. Tesoro has been requested to provide the current Certification Statement.

**F. Differences between the Application and the Proposed Permit:**

The Title V permit renewal application was originally submitted on December 22, 2015 and assigned Application Number 27668. This version is the basis for constructing the proposed Title V permit. Revisions were made to the Application 27668 as a result of changes at the facility that were made pursuant to the Permit Applications listed in Section C.IV of this Statement of Basis and Section X of the permit.

H:\Engineering\TITLE V Permit Appls\1 ALL T5 Application Files here\B2758 - B2759\Renewal2 - 27668\B2758-SOB-27668 Renewal 2 draft 6-12-2018.doc

# Appendices

**APPENDIX A – JUSTIFICATION FOR CHANGES IN GRANDFATHERED SOURCE  
THROUGHPUT LIMITS**

**S-830, S-977 and S-980**

Application 25718 addressed grandfathered limit corrections for S-830, S-977 and S-980. See the application evaluation included in Appendix D for details.

**No Additional Changes Applicable for this Permit Renewal**



**APPENDIX B – APPLICABILITY DETERMINATIONS**

**40 CFR 63 Subpart DDDDD, 40 CFR 64 CAM and Engine Applicability Determinations**

included in Section C.IV of this Statement of Basis.

**No Other Determinations Applicable for this Permit Renewal**



## **APPENDIX C – DETAILED CAM EVALUATION**

Permit Evaluation and Statement of Basis, Renewed Permit: Site B5728 & B5729, Tesoro Refining and Marketing Company  
Golden Eagle Refinery, 150 Solano Way and 1750 Marina Vista Way, Martinez, CA 94553

Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/ Comments
S97 - FCCU Catalyst Fines Hopper	3	Catalytic Cracker Fines Baghouse (Blinded and OOS)	S97	Particulate Matter	Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301	N/A	Yes - COMS	64.2(1)(b)(vi)	N/A	N/A	No	No	Exempt based upon continuous compliance demonstration using COMS. Measurement of opacity may be correlated directly with PM emissions.
			S97		0.15 grain per dscf	BAAQMD 6-1-310 SIP 6-310								
			S97		Particulates <= 4.10 P0.67 lbs/hr (P=process weight, lb/hr)	BAAQMD 6-1-311 SIP 6-311								
	4	Catalytic Cracker Fines Cyclone and Baghouse (Blinded and OOS)	S97, S98, S99		Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301								
			S97, S98, S99		0.15 grain per dscf	BAAQMD 6-1-310 SIP 6-310								
			S97, S98, S99		Particulates <= 4.10 P0.67 lbs/hr (P=process weight, lb/hr)	BAAQMD 6-1-311 SIP 6-311								
	30	FCCU Electrostatic Precipitator, Two Stage Electrostatic Precipitator	S97, S98, S99, S802, S901,		Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301								
			S97, S98, S99, S802, S901,		Ringelmann 2 or 40% Opacity	BAAQMD 6-1-304 SIP 6-304								

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
	3	Catalytic Cracker Fines Baghouse (Blinded and OOS)	S97	N/A	Visible particles on real property of another	BAAQMD 6-1-305 SIP 6-305	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
	4	Catalytic Cracker Fines Cyclone and Baghouse (Blinded and OOS)	S97, S98, S99	N/A	Visible particles on real property of another	BAAQMD 6-1-305 SIP 6-305	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
	30	FCCU Electrostatic Precipitator, Two Stage Electrostatic Precipitator	S97, S98, S99, S802, S901,	N/A	Visible particles on real property of another	BAAQMD 6-1-305 SIP 6-305	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
S98 - FCCU East Catalyst Hopper	4	Catalytic Cracker Fines Cyclone and Baghouse (Blinded and OOS)	S97, S98, S99	Particulate Matter	Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301	N/A	Yes - COMS	64.2(1)(b)(vi)	N/A	N/A	No	No	Exempt based upon continuous compliance demonstration using COMS. Measurement of opacity may be correlated directly with PM emissions.
			S97, S98, S99		0.15 grain per dscf	BAAQMD 6-1-310 SIP 6-310								
			S97, S98, S99		Particulates <= 4.10 P0.67 lbs/hr (P=process weight, lb/hr)	BAAQMD 6-1-311 SIP 6-311								
	S97, S98, S99, S802, S901,	Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301											
		S97, S98, S99, S802, S901,	Ringelmann 2 or 40% Opacity		BAAQMD 6-1-304 SIP 6-304									
30	FCCU Electrostatic Precipitator, Two Stage Electrostatic Precipitator	S97, S98, S99, S802, S901,												

Permit Evaluation and Statement of Basis, Renewed Permit: Site B5728 & B5729, Tesoro Refining and Marketing Company  
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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>			
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments	
	4	Catalytic Cracker Fines Cyclone and Baghouse (Blinded and OOS)	S97, S98, S99	N/A	Visible particles on real property of another	BAAQMD 6-1-305 SIP 6-305	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.	
	30	FCCU Electrostatic Precipitator, Two Stage Electrostatic Precipitator	S97, S98, S99, S802, S901,	N/A	Visible particles on real property of another	BAAQMD 6-1-305 SIP 6-305	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.	
S99 - FCCU West Catalyst Hopper	4	Catalytic Cracker Fines Cyclone and Baghouse (Blinded and OOS)	S97, S98, S99	Particulate Matter	Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301	N/A	Yes - COMS	64.2(1)(b)(vi)	N/A	N/A	No	No	Exempt based upon continuous compliance demonstration using COMS. Measurement of opacity may be correlated directly with PM emissions.	
			S97, S98, S99		0.15 grain per dscf	BAAQMD 6-1-310 SIP 6-310									
			S97, S98, S99		Particulates <= 4.10 P0.67 lbs/hr (P=process weight, lb/hr)	BAAQMD 6-1-311 SIP 6-311									
	S97, S98, S99, S802, S901,	30	FCCU Electrostatic Precipitator, Two Stage Electrostatic Precipitator		S97, S98, S99	Ringelmann No. 1 < 3 min/hr									BAAQMD 6-1-301 SIP 6-301
					S97, S98, S99, S802, S901,	Ringelmann 2 or 40% Opacity									BAAQMD 6-1-304 SIP 6-304
4	Catalytic Cracker Fines Cyclone and Baghouse (Blinded and OOS)	S97, S98, S99	N/A	Visible particles on real property of another	BAAQMD 6-1-305 SIP 6-305	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.		

Permit Evaluation and Statement of Basis, Renewed Permit: Site B5728 & B5729, Tesoro Refining and Marketing Company  
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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
	30	FCCU Electrostatic Precipitator, Two Stage Electrostatic Precipitator	S97, S98, S99, S802, S901,	N/A	Visible particles on real property of another	BAAQMD 6-1-305 SIP 6-305	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
S100 – Avon Wharf Loading Berth No. 1	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System, Compress/Condense/Absorb	S100, S126, S127, S134, S137, S318, S323, S327, S367, S432, S513, S532, S603, S613, S699, S714, S819, S1025, S1484, S1496, , S32103	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.

Permit Evaluation and Statement of Basis, Renewed Permit: Site B5728 & B5729, Tesoro Refining and Marketing Company  
Golden Eagle Refinery, 150 Solano Way and 1750 Marina Vista Way, Martinez, CA 94553

Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
S126 - LPG Truck Loading Rack	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System, Compress/Condense/Absorb	S100, S126, S127, S134, S137, S318, S323, S327, S367, S432, S513, S532, S603, S613, S699, S714, S819, S1025, S1484, S1496, , S32103	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.



Permit Evaluation and Statement of Basis, Renewed Permit: Site B5728 & B5729, Tesoro Refining and Marketing Company  
Golden Eagle Refinery, 150 Solano Way and 1750 Marina Vista Way, Martinez, CA 94553

Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
S127 - LPG Tank Car Loading Rack	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System, Compress/Condense/Absorb	S100, S126, S127, S134, S137, S318, S323, S327, S367, S432, S513, S532, S603, S613, S699, S714, S819, S1025, S1484, S1496, , S32103	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.

Permit Evaluation and Statement of Basis, Renewed Permit: Site B5728 & B5729, Tesoro Refining and Marketing Company  
Golden Eagle Refinery, 150 Solano Way and 1750 Marina Vista Way, Martinez, CA 94553

Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/ Comments
S134 - Tank A-134;	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System, Compress/Condense/Absorb	S100, S126, S127, S134, S137, S318, S323, S327, S367, S432, S513, S532, S603, S613, S699, S714, S819, S1025, S1484, S1496, , S32103	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S134, S137, S318, S323, S327, S367, S432, S603, S714, S1496,	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306	NSPS Kb - Original Apr. 8, 1987 Last Modified Oct. 8, 1997	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this

Permit Evaluation and Statement of Basis, Renewed Permit: Site B5728 & B5729, Tesoro Refining and Marketing Company  
Golden Eagle Refinery, 150 Solano Way and 1750 Marina Vista Way, Martinez, CA 94553

Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>			
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments	
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S134		VOC: 98.5% control	BAAQMD Condition #20923, part 3									PSEU is not subject to CAM.
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S134, S137, S318, S323, S327, S367, S656, S658, S1496,		VOC: 95% control	40 CFR 60.112b(a)(3) (ii)									
S137 - Tank A-137	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System, Compress/Condense/Absorb	S100, S126, S127, S134, S137, S318, S323, S327, S367, S432, S513, S532, S603, S613, S699, S714, S819, S1025, S1484, S1496, , S32103	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.	

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S134, S137, S318, S323, S327, S367, S432, S603, S714, S1496,	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306	NSPS Kb - Original Apr. 8, 1987 Last Modified Oct. 8, 1997	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S134, S137, S318, S323, S327, S367, S656, S658, S1496,		VOC: 95% control	40 CFR 60.112b(a)(3)(ii)								

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
S323 - Tank A-323;	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System, Compress/Condense/Absorb	S100, S126, S127, S134, S137, S318, S323, S327, S367, S432, S513, S532, S603, S613, S699, S714, S819, S1025, S1484, S1496, , S32103	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S134, S137, S318, S323, S327, S367, S432, S603, S714, S1496,	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306	NSPS Kb - Original Apr. 8, 1987 Last Modified Oct. 8, 1997	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>			
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments	
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S134, S137, S318, S323, S327, S367, S656, S658, S1496,		VOC: 95% control	40 CFR 60.112b(a)(3) (ii)									PSEU is not subject to CAM.
	14	Vapor Recovery System , to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S323		VOC: 99.5% abatement	BAAQMD Condition # 13605, part 3									
S327 - Tank A-327	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System, Compress/Condense/Absorb	S100, S126, S127, S134, S137, S318, S323, S327, S367, S432, S513, S532, S603, S613,S699, S714, S819, S1025, S1484, S1496, , S32103	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No		A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S134, S137, S318, S323, S327, S367, S432, S603, S714, S1496,	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306	NSPS Kb - Original Apr. 8, 1987 Last Modified Oct. 8, 1997	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S134, S137, S318, S323, S327, S367, S656, S658, S1496,		VOC: 95% control	40 CFR 60.112b(a)(3)(ii)								

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
S432 - Tank A-432	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System, Compress/Condense/Absorb	S100, S126, S127, S134, S137, S318, S323, S327, S367, S432, S513, S532, S603, S613, S699, S714, S819, S1025, S1484, S1496, , S32103	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S134, S137, S318, S323, S327, S367, S432, S603, S714, S1496,	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306	N/A	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.



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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
S529 - Tank A-529	12	Vapor Recovery at Foul Water Strippers, Compress/Condense/Absorb	S529, S530, S656, S658, S815, S816, S817	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
	12	Vapor Recovery at Foul Water Strippers, Compress/Condense/Absorb	S529, S530, S656, S658	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306	N/A	No	No	N/A	N/A	No	No	A-12 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
	12	Vapor Recovery at Foul Water Strippers, Compress/Condense/Absorb	S529, S530, S656, S658, S815, S816, S817		VOC: 95% control	Condition 10696, Part 1								
S530 - Tank A-530	12	Vapor Recovery at Foul Water Strippers, Compress/Condense/Absorb	S529, S530, S656, S658, S815, S816, S817	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
	12	Vapor Recovery at Foul Water Strippers, Compress/Condense/Absorb	S529, S530, S656, S658	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306	N/A	No	No	N/A	N/A	No	No	A-12 meets the definition of "inherent process equipment" and

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
	12	Vapor Recovery at Foul Water Strippers, Compress/Condense/Absorb	S529, S530, S656, S658, S815, S816, S817		VOC: 95% control	Condition 10696, Part 1								thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
S532 - Oil Water Separator, (Tank 532 modified as OWS) #50 Crude Unit Desalter Skim Tank	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System, Compress/Condense/Absorb	S100, S126, S127, S134, S137, S318, S323, S327, S367, S432, S513, S532, S603, S613, S699, S714, S819, S1025, S1484, S1496, S32103	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S532, S1484	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-8-301.3 SIP 8-8-301.3	N/A	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
S603 - Tank A-603	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System, Compress/Condense/Absorb	S100, S126, S127, S134, S137, S318, S323, S327, S367, S432, S513, S532, S603, S613, S699, S714, S819, S1025, S1484, S1496, , S32103	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S134, S137, S318, S323, S327, S367, S432, S603, S714, S1496,	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306	N/A	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
S606 - 50 Unit Wastewater Air Stripper A [Brine Stripper]	S950	50 Unit Crude Heater (F50) Refinery Fuel Gas, Natural Gas	S606, S607	Volatile Organic Compounds	NMHC: 20 ppm (calculated as methane) 1 hour rolling average	BAAQMD Condition #7410, Part 1	N/A	Yes - Temperature Monitoring	64.2(1)(b)(vi)	N/A	N/A	No	No	
	S950	50 Unit Crude Heater (F50) Refinery Fuel Gas, Natural Gas	S606, S607	Hydrogen Sulfide	H2S < 1 ppm (1 hour rolling average)	BAAQMD Condition #7410, Part 1	N/A	Yes - Temperature Monitoring	64.2(1)(b)(vi)	N/A	N/A	No	No	
S607 - 50 Unit Wastewater Air Stripper B [Brine Stripper]	S950	50 Unit Crude Heater (F50) Refinery Fuel Gas, Natural Gas	S606, S607	Volatile Organic Compounds	NMHC: 20 ppm (calculated as methane) 1 hour rolling average	BAAQMD Condition #7410, Part 1	N/A	Yes - Temperature Monitoring	64.2(1)(b)(vi)	N/A	N/A	No	No	
	S950	50 Unit Crude Heater (F50) Refinery Fuel Gas, Natural Gas	S606, S607	Hydrogen Sulfide	H2S < 1 ppm (1 hour rolling average)	BAAQMD Condition #7410, Part 1	N/A	Yes - Temperature Monitoring	64.2(1)(b)(vi)	N/A	N/A	No	No	

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/ Comments
S613 - Tank A-613	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System, Compress/Condense/Absorb	S100, S126, S127, S134, S137, S318, S323, S327, S367, S432, S513, S532, S603, S613, S699, S714, S819, S1025, S1484, S1496, , S32103	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
S656 - Tank A-846	12	Vapor Recovery at Foul Water Strippers, Compress/Condense/Absorb	S529, S530, S656, S658, S815, S816, S817	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
	12	Vapor Recovery at Foul Water Strippers, Compress/Condense/Absorb	S529, S530, S656, S658	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306	NSPS Kb - Original Apr. 8, 1987	No	No	N/A	N/A	No	No	A-14/A-12 meet the definition of "inherent process equipment" and

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
	12	Vapor Recovery at Foul Water Strippers, Compress/Condense/Absorb	S529, S530, S656, S658, S815, S816, S817		VOC: 95% control	Condition 10696, Part 1	Last Modified Oct. 8, 1997							thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S134, S137, S318, S323, S327, S367, S656, S658, S1496,		VOC: 95% control	40 CFR 60.112b(a)(3) (ii)								
S658 - Tank A-847	12	Vapor Recovery at Foul Water Strippers, Compress/Condense/Absorb	S529, S530, S656, S658, S815, S816, S817	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	A-12 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
	12	Vapor Recovery at Foul Water Strippers, Compress/Condense/Absorb	S529, S530, S656, S658	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306	NSPS Kb - Original Apr. 8, 1987	No	No	N/A	N/A	No	No	A-14/A-12 meet the definition of "inherent process equipment" and

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
	12	Vapor Recovery at Foul Water Strippers, Compress/Condense/Absorb	S529, S530, S656, S658, S815, S816, S817		VOC: 95% control	Condition 10696, Part 1	Last Modified Oct. 8, 1997							thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S134, S137, S318, S323, S327, S367, S656, S658, S1496,		VOC: 95% control	40 CFR 60.112b(a)(3) (ii)								
S691 - Tank A-691	21	Butane Tank Vapor Recovery System	S691	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306	N/A	No	No	N/A	N/A	No	No	A-21 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. S943 is used during non-routine operations (e.g. malfunctions). Therefore, this PSEU is not subject to CAM.
	S943	Butane Tank S691 Safety Flare	Backup abatement for A21, which abates S691		VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306								

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
S699 - Tank A-699;	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System, Compress/Condense/Absorb	S100, S126, S127, S134, S137, S318, S323, S327, S367, S432, S513, S532, S603, S613, S699, S714, S819, S1025, S1484, S1496, , S32103	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S699	Volatile Organic Compounds	VOC: 70% control	BAAQMD 8-8-305.2 SIP 8-8-305.2	N/A	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.



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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
S714 - Tank A-714;	714	Caustic Scrubber	S714	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System, Compress/Condense/Absorb	S100, S126, S127, S134, S137, S318, S323, S327, S367, S432, S513, S532, S603, S613, S699, S714, S819, S1025, S1484, S1496, , S32103	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S134, S137, S318, S323, S327, S367, S432, S603, S714, S1496,	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306	N/A	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
S795 - #3 Reformer V-307	796	Vapor Balance System, No. 3 Reformer Perc Tank	S795	N/A	Abatement required during all loading operations	BAAQMD Condition # 5711, part 3	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
S802 - FCCU Fluid Catalytic Cracker Regenerator	30	FCCU Electrostatic Precipitator, Two Stage Electrostatic Precipitator	S802, S901	Particulate Matter	PM/PM-10 mass emission limit for S802 and S901 combined at 151.5 tons/yr	BAAQMD Condition #11433, Part 1	NSPS J - pre-1990 MACT UUU - Apr. 11, 2002	Yes - COMS	64.2(1)(b)(vi)	N/A	N/A	No	No	Exempt based upon continuous compliance demonstration using COMS. Measurement of opacity may be correlated directly with PM emissions.
			S97, S98, S99, S802, S901,		Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301								
			S802		Less than 20% opacity except for 3 minutes in any hour	BAAQMD 1-520.5, 6-1-302 SIP 6-302 Condition 11433, Part 2B								
			S97, S98, S99, S802, S901,		Ringelmann 2 or 40% Opacity	BAAQMD 6-1-304 SIP 6-304								

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
			S802		Less than 30% opacity except for one 6 minute average opacity reading per hour	40 CFR 60.102(a)(2); 40 CFR 63.1564(a)(2)								
			S802		PM: 1 lb/ton regenerator coke burn off	BAAQMD Condition 11433, Part 10; 40 CFR 60.102(a)(1); 40 CFR 63.1564(a)(1)								
	30	No. 3 HDS Selective Catalytic Reduction (SCR) Unit	S97, S98, S99, S802, S901,	N/A	Visible particles on real property of another	BAAQMD 6-1-305 SIP 6-305	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
S815 - No. 1 Feed Prep Unit	12	Vapor Recovery at Foul Water Strippers, Compress/Condense/Absorb	S529, S530, S656, S658, S815, S816, S817	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	A-12 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
	12	Vapor Recovery at Foul Water Strippers, Compress/Condense/Absorb	S529, S530, S656, S658, S815, S816, S817	Volatile Organic Compounds	VOC: 95% control	Condition 10696, Part 1	N/A	No	No	N/A	N/A	No	No	A-12 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
S816 - No. 2 Feed Prep Unit	12	Vapor Recovery at Foul Water Strippers, Compress/Condense/Absorb	S529, S530, S656, S658, S815, S816, S817	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	A-12 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
	12	Vapor Recovery at Foul Water Strippers, Compress/Condense/Absorb	S529, S530, S656, S658, S815, S816, S817	Volatile Organic Compounds	VOC: 95% control	Condition 10696, Part 1	N/A	No	No	N/A	N/A	No	No	A-12 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
S817 - No. 3 Crude Unit	12	Vapor Recovery at Foul Water Strippers, Compress/Condense/Absorb	S529, S530, S656, S658, S815, S816, S817	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	A-12 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
	12	Vapor Recovery at Foul Water Strippers, Compress/Condense/Absorb	S529, S530, S656, S658, S815, S816, S817	Volatile Organic Compounds	VOC: 95% control	Condition 10696, Part 1	N/A	No	No	N/A	N/A	No	No	A-12 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
S819 - API Oil-Water Separator/Dissolved Nitrogen Flotation System;	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System, Compress/Condense/Absorb	S100, S126, S127, S134, S137, S318, S323, S327, S367, S432, S513, S532, S603, S613, S699, S714, S819, S1025, S1484, S1496, , S32103	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S819	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-8-302.3 SIP 8-8-302.3	N/A	Yes - CEMS (temperature monitoring)	64.2(1)(b)(vi)	N/A	N/A	No	No	
	39	Thermal Oxidizer, Direct Flame Afterburner	S819		95% control	BAAQMD 8-8-302.3 SIP 8-8-302.3								
	39	Thermal Oxidizer, Direct Flame Afterburner	S819, S1026		NMHC: 10 ppmv, calculated as methane (rolling one-hour average)	BAAQMD Condition # 7406, part B5A								

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
	39	Thermal Oxidizer, Direct Flame Afterburner	S819, S1026	Hydrogen Sulfide	H2S: 1 ppm	BAAQMD Condition # 7406, part B7	N/A	Yes - CEMS (temperature monitoring)	64.2(1)(b)(vi)	N/A	N/A	No	No	
S825 - DEA Regenerator	S1013	Ammonia Plant Flare	S825, S851, S856, A1401, A1402	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
S851 - Ammonia Recovery Unit	S1013	Ammonia Plant Flare	S825, S851, S856, A1401, A1402	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
S854 East Air Flare	S854	East Air Flare	See Note 1 for Table II-A1	Volatile Organic Compounds	Typically 98% destruction efficiency	See Table IV-C.2.1	Pilot = N/A Process vents connected to flare: Subject to MACT CC MPV emission limit. MACT CC proposed in 1995.	No - assumes CD provisions not yet applicable for flare monitoring.	Process Vents: 64.2(1)(b)(i)	N/A	N/A	No	No	Evaluated the flare as an EU considering only the pilot combustion emissions generated by the flare itself, which has no control device. The process vents routed to the flare are considered separate Eus.
S856 - Spare DEA Stripper	S1013	Ammonia Plant Flare	S825, S851, S856, A1401, A1402	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/ Comments
S901 - No. 7 Boiler	30	FCCU Electrostatic Precipitator, Two Stage Electrostatic Precipitator	S802, S901	Particulate Matter	PM/PM-10 mass emission limit for S802 and S901 combined at 151.5 tons/yr	BAAQMD Condition #11433, Part 1	N/A	Yes - COMS	64.2(1)(b)(vi)	N/A	N/A	No	No	Exempt based upon continuous compliance demonstration using COMS. Measurement of opacity may be correlated directly with PM emissions.
			S97, S98, S99, S802, S901,	Particulate Matter	Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301								
			S97, S98, S99, S802, S901,	Particulate Matter	Ringelmann 2 or 40% Opacity	BAAQMD 6-1-304 SIP 6-304								
			S901	Particulate Matter	0.15 grain per dscf	BAAQMD 6-1-310; 6-1-310.3 SIP 6-310; 6-310.3								
			S97, S98, S99, S802, S901,	N/A	Visible particles on real property of another	BAAQMD 6-1-305 SIP 6-305	N/A	No	No	N/A	N/A	No	No	
S904 - No. 6 Boiler	904	No. 6 Boiler Selective Catalytic Reduction (SCR) System	S904	Oxides of Nitrogen	Comply with 0.033 lb NOx/MMBTU (Facility Limit)	Condition 17322, Part 2	N/A	No	No	N/A	N/A	No	No	CAM applies to limits which apply to individual PSEUs. This limit applies to a group of emission units. 62 FR 54916



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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
S908 - No. 3 Crude Heater (F8)	908	No. 3 Crude, F-8 Selective Catalytic Reduction (SCR) System	S908	Oxides of Nitrogen	NOx: 10 ppmv corrected to 3% oxygen, 3 hour average	BAAQMD Condition # 8077, Part B7A	N/A	Yes - CEMS	64.2(1)(b)(vi)	N/A	N/A	No	No	Exempt based upon continuous compliance demonstration using CEMS.
S922 Emergency Flare	S992	Emergency Flare	See Note 1 for Table II-A1	Volatile Organic Compounds	Typically 98% destruction efficiency	See Table IV-C.2.1	Pilot = N/A Process vents connected to flare: Subject to MACT CC MPV emission limit. MACT CC proposed in 1995.	No - assumes CD provisions not yet applicable for flare monitoring.	Process Vents: 64.2(1)(b)(i)	N/A	N/A	No	No	Evaluated the flare as an EU considering only the pilot combustion emissions generated by the flare itself, which has no control device. The process vents routed to the flare are considered separate Eus.
S927 - No. 2 Reformer Heat/Reheating (F27)	1431	Selective Catalytic Reduction (SCR) System, Technip with Hitachi Catalyst or equivalent	S927	Oxides of Nitrogen	Comply with 0.033 lb NOx/MMBTU (Facility Limit)	BAAQMD Condition 18372, part 18BAAQMD9-10-301(Facility Limit)	N/A	No	No	N/A	N/A	No	No	CAM applies to limits which apply to individual PSEUs. This limit applies to a group of emission units. 62 FR 54916

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
S944 North Steam Flare	S944	North Steam Flare	See Note 1 for Table II-A1	Volatile Organic Compounds	Typically 98% destruction efficiency	See Table IV-C.2.3	Pilot = N/A Process vents connected to flare: Subject to MACT CC MPV emission limit. MACT CC proposed in 1995.	No - assumes CD provisions not yet applicable for flare monitoring.	Process Vents: 64.2(1)(b)(i)	N/A	N/A	No	No	Evaluated the flare as an EU considering only the pilot combustion emissions generated by the flare itself, which has no control device. The process vents routed to the flare are considered separate Eus.
S945 South Steam Flare	S945	South Steam Flare	See Note 1 for Table II-A1	Volatile Organic Compounds	Typically 98% destruction efficiency	See Table IV-C.2.3	Pilot = N/A Process vents connected to flare: Subject to MACT CC MPV emission limit. MACT CC proposed in 1995.	No - assumes CD provisions not yet applicable for flare monitoring.	Process Vents: 64.2(1)(b)(i)	N/A	N/A	No	No	Evaluated the flare as an EU considering only the pilot combustion emissions generated by the flare itself, which has no control device. The process vents routed to the flare are considered separate Eus.

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/ Comments
S950 - 50 Unit Crude Heater (F50)	1432	Selective Catalytic Reduction (SCR) System, Technip with Hitachi Catalyst or equivalent	S950	Oxides of Nitrogen	Comply with 0.033 lb NOx/MMBTU (Facility Limit)	BAAQMD Condition 18372, part 19 BAAQMD 9-10-301 (Facility Limit)	N/A	No	No	N/A	N/A	No	No	CAM applies to limits which apply to individual PSEUs. This limit applies to a group of emission units. 62 FR 54916
S952 - Internal Combustion Engine No. 1 Gas Plant Vapor Compressor No. 4023	952	Non-Selective Catalytic Reduction (NSCR) System	S952	Oxides of Nitrogen	NOx: 56 ppmv corrected to 15% oxygen	SIP 9-8-301.1	N/A	No - quarterly monitoring only with portable analyzer.	No	29.83	N/A	No	No	Uncontrolled emissions < 100 tpy.
					NOx: 25 ppmv corrected to 15% oxygen	BAAQMD 9-8-301.1								
S953 - Internal Combustion Engine No. 1 Gas Plant Vapor Compressor No. 4024	953	Non-Selective Catalytic Reduction (NSCR) System	S953	Carbon Monoxide	CO: 2000 ppmv corrected to 15% oxygen	BAAQMD 9-8-301.3	N/A	No - quarterly monitoring only with portable analyzer.	No	48.88	N/A	No	No	Uncontrolled emissions < 100 tpy.
					NOx: 56 ppmv corrected to 15% oxygen	SIP 9-8-301.1								
S953 - Internal Combustion Engine No. 1 Gas Plant Vapor Compressor No. 4024	953	Non-Selective Catalytic Reduction (NSCR) System	S953	Oxides of Nitrogen	NOx: 56 ppmv corrected to 15% oxygen	SIP 9-8-301.1	N/A	No - quarterly monitoring only with portable analyzer.	No	29.83	N/A	No	No	Uncontrolled emissions < 100 tpy.
					NOx: 25 ppmv corrected to 15% oxygen	BAAQMD 9-8-301.1								
S953 - Internal Combustion Engine No. 1 Gas Plant Vapor Compressor No. 4024	953	Non-Selective Catalytic Reduction (NSCR) System	S953	Carbon Monoxide	CO: 2000 ppmv corrected to 15% oxygen	BAAQMD 9-8-301.3	N/A	No - quarterly monitoring only with portable analyzer.	No	48.88	N/A	No	No	Uncontrolled emissions < 100 tpy.
					NOx: 56 ppmv corrected to 15% oxygen	SIP 9-8-301.1								

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/ Comments
S954 - Internal Combustion Engine No. 1 Gas Plant Vapor Compressor No. 4025	954	Non-Selective Catalytic Reduction (NSCR) System	S954	Oxides of Nitrogen	NOx: 56 ppmv corrected to 15% oxygen	SIP 9-8-301.1	N/A	No - quarterly monitoring only with portable analyzer.	No	29.83	N/A	No	No	Uncontrolled emissions < 100 tpy.
					NOx: 25 ppmv corrected to 15% oxygen	BAAQMD 9-8-301.1								
				Carbon Monoxide	CO: 2000 ppmv corrected to 15% oxygen	BAAQMD 9-8-301.3	N/A	No - quarterly monitoring only with portable analyzer.	No	48.88	N/A	No	No	Uncontrolled emissions < 100 tpy.
S955 - Internal Combustion Engine No. 4 Gas Plant Vapor Compressor No. 4064	955	Selective Catalytic Reduction (SCR) System	S955	Oxides of Nitrogen	NOx: 140 ppmv corrected to 15% oxygen	SIP 9-8-301.2	N/A	No - quarterly monitoring only with portable analyzer.	No	97.77	N/A	No	No	Uncontrolled emissions < 100 tpy.
					NOx: 65 ppmv corrected to 15% oxygen	BAAQMD 9-8-301.2								
S956 - Internal Combustion Engine No. 4 Gas Plant Vapor Compressor No. 4065	956	Selective Catalytic Reduction (SCR) System	S956	Oxides of Nitrogen	NOx: 140 ppmv corrected to 15% oxygen	SIP 9-8-301.2	N/A	No - quarterly monitoring only with portable analyzer.	No	97.77	N/A	No	No	Uncontrolled emissions < 100 tpy.
					NOx: 65 ppmv corrected to 15% oxygen	BAAQMD 9-8-301.2								
S957 - Internal Combustion Engine No. 4 Gas Plant Vapor Compressor No. 4066	957	Selective Catalytic Reduction (SCR) System	S957	Oxides of Nitrogen	NOx: 140 ppmv corrected to 15% oxygen	SIP 9-8-301.2	N/A	No - quarterly monitoring only with portable analyzer.	No	97.77	N/A	No	No	Uncontrolled emissions < 100 tpy.
					NOx: 65 ppmv corrected to 15% oxygen	BAAQMD 9-8-301.2								
S958 - Internal Combustion Engine No. 4 Gas	958	Selective Catalytic Reduction (SCR) System	S958	Oxides of Nitrogen	NOx: 140 ppmv corrected to 15% oxygen	SIP 9-8-301.2	N/A	No - quarterly monitoring	No	97.77	N/A	No	No	Uncontrolled emissions < 100 tpy.

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/ Comments
Plant Vapor Compressor No. 4067					NOx: 65 ppmv corrected to 15% oxygen	BAAQMD 9-8-301.2		only with portable analyzer.						
S959 - Internal Combustion Engine No. 4 Gas Plant Vapor Compressor No. 4068	959	Selective Catalytic Reduction (SCR) System	S959	Oxides of Nitrogen	NOx: 140 ppmv corrected to 15% oxygen	SIP 9-8-301.2	N/A	No - quarterly monitoring only with portable analyzer.	No	97.77	N/A	No	No	Uncontrolled emissions < 100 tpy.
					NOx: 65 ppmv corrected to 15% oxygen	BAAQMD 9-8-301.2								
S960 - Internal Combustion Engine No. 4 Gas Plant Vapor Compressor No. 4096	960	Selective Catalytic Reduction (SCR) System	S960	Oxides of Nitrogen	NOx: 140 ppmv corrected to 15% oxygen	SIP 9-8-301.2	N/A	No - quarterly monitoring only with portable analyzer.	No	73.59	N/A	No	No	Uncontrolled emissions < 100 tpy.
					NOx: 65 ppmv corrected to 15% oxygen	BAAQMD 9-8-301.2								
S963 - Gas Turbine 177 [Alkylation Plant]	963	Steam Injection System, Alkylation Plant Turbine	S963	Oxides of Nitrogen	NOx: 42 ppmvd corrected to 15% oxygen	BAAQMD 9-9-301.2 [Based on turbine heat input rating]	N/A	No	No	158.38	64.34	Yes	No	<b><u>No longer in service.</u></b>
S971 - No. 3 Reformer UOP Furnace (F53)	1433	Selective Catalytic Reduction (SCR) System, Technip with Hitachi Catalyst or equivalent	S971	Oxides of Nitrogen	Comply with 0.033 lb NOx/MMBTU (Facility Limit)	BAAQMD Condition 18372, parts 20 and 21 BAAQMD 9-10-301 (Facility Limit)	NSPS Ja - June 24, 2008	Yes - CEMS	64.2(1)(b)(i), 64.2(1)(b)(vi)	N/A	N/A	No	No	Exempt based upon continuous compliance demonstration using CEMS.  Note: Abated S-971 combined with unabated S-972 exhaust gas prior to monitoring
	1433	Selective Catalytic Reduction (SCR) System, Technip with Hitachi Catalyst or equivalent	S971		NOx: 75 ppmvd corrected to 3% O2, 8 hour average	BAAQMD Condition # 8077, Part B7A								

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
	1433	Selective Catalytic Reduction (SCR) System, Technip with Hitachi Catalyst or equivalent			NOx: 166 lbs per calendar day NOx: 30.353 tons per rolling consecutive 12-month period.	BAAQMD Condition # 25476, Part 10								
S973 - No. 3 HDS Recycle Gas Heater (F55)	31	No. 3 HDS Selective Catalytic Reduction (SCR) Unit	S973, S974	Oxides of Nitrogen	NOx: 146 lb/rolling 24 hours; combined limit for S973 and S974 during S974 SU or SD	BAAQMD Condition #8077, part B2A	N/A	Yes - CEMS	64.2(1)(b)(vi)	N/A	N/A	No	No	Exempt based upon continuous compliance demonstration using CEMS.
					NOx: 876 lb/rolling 12 months; combined limit for S973 and S974 during S974 SU or SD	BAAQMD Condition #8077, part B2A								
					NOx: 40 ppmv, dry, corrected to 3% oxygen, 8 hour average	BAAQMD Condition #8077, part B7A								
				N/A	A31 Inlet Temperature: 530 F	BAAQMD Condition #8077, part B2B	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
S974 - No. 3 HDS Fract Feed Heater (F56)	31	No. 3 HDS Selective Catalytic Reduction (SCR) Unit	S974	Oxides of Nitrogen	NOx: 146 lb/rolling 24 hours; limit for S974 SU or SD	BAAQMD Condition #8077, part B2A	N/A	Yes - CEMS	64.2(1)(b)(vi)	N/A	N/A	No	No	Exempt based upon continuous compliance demonstration using CEMS.
					NOx: 876 lb/rolling 12 months	BAAQMD Condition #8077, part B2A								
			S973, S974		NOx: 146 lb/rolling 24 hours; combined limit for S973 and S974 during S974 SU or SD	BAAQMD Condition #8077, part B2A								
					NOx: 876 lb/rolling 12 months; combined limit for S973 and S974 during S974 SU or SD	BAAQMD Condition #8077, part B2A								

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
					NOx: 40 ppmv, dry, corrected to 3% oxygen, 8 hour average	BAAQMD Condition #8077, part B7A								
				N/A	A31 Inlet Temperature: 530 F	BAAQMD Condition #8077, part B2B	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
S990 - Rich DEA Tank 749	1525	SRU Stack Incinerator	S990, S1416, S1418	Particulate Matter	Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301	N/A	No	No	0	0	No	No	Assumed particulate emissions are negligible.
	1525	SRU Stack Incinerator	S990, S1416, S1418	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
	1526	Packed Bed Scrubber (Lean DEA), Rich DEA Tank A-749	S990	N/A	nuisance odors	BAAQMD 1-301								
S1012 West Air Flare	S1012	West Air Flare	See Note 1 for Table II-A1	Volatile Organic Compounds	Typically 98% destruction efficiency	See Table IV-C.2.1	Pilot = N/A Process vents connected to flare: Subject to MACT CC MPV emission limit. MACT CC proposed in 1995.	No - assumes CD provisions not yet applicable for flare monitoring.	Process Vents: 64.2(1)(b)(i)	N/A	N/A	No	No	Evaluated the flare as an EU considering only the pilot combustion emissions generated by the flare itself, which has no control device. The process vents routed to the flare are considered separate Eus.

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
S1025 - Bulk Plant; Bottom Loading Facilities, Gasoline, Naphtha, Kerosene, Diesel, Fuel Oil;	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System, Compress/Condense/Absorb	S100, S126, S127, S134, S137, S318, S323, S327, S367, S432, S513, S532, S603, S613, S699, S714, S819, S1025, S1484, S1496, , S32103	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S1025	Volatile Organic Compounds	POC < 0.08 lb POC per 1000 gallons of material loaded	BAAQMD 8-33-301 and BAAQMD Condition #21849, Part 11(a)	N/A	Yes - POC Parametric Monitoring	64.2(1)(b)(vi)	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.



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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
S1026 - DNF Effluent Air Stripper	39	Thermal Oxidizer, Direct Flame Afterburner	S1026	Volatile Organic Compounds	70% control	BAAQMD 8-8-307.2 SIP 8-8-307.2	N/A	Yes - CEMS (temperature monitoring)	64.2(1)(b)(vi)	N/A	N/A	No	No	
			S819, S1026		NMHC: 10 ppmv, calculated as methane (rolling one-hour average)	BAAQMD Condition # 7406, part B5A								
			S819, S1026	Hydrogen Sulfide	H2S: 1 ppm	BAAQMD Condition # 7406, part B7	N/A	Yes - CEMS (temperature monitoring)	64.2(1)(b)(vi)	N/A	N/A	No	No	
S1001 - No. 50 Crude Unit	1524	50 Crude Unit Vapor Recovery System	S1001	N/A	Operate at all times except during malfunction when valid breakdown (BAAQMD Condition 24323 Part 1)	BAAQMD Condition #24323, part 2	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
S1106 - No. 4 HDS Reactor Feed Heater (F72)	1106	Selective Catalytic Reduction (SCR) System, F72	S1106	Oxides of Nitrogen	NOx: 10 ppmv, dry, corrected to 3% oxygen	BAAQMD Condition #19199, Part H9	N/A	Yes - CEMS	64.2(1)(b)(vi)	N/A	N/A	No	No	Exempt based upon continuous compliance demonstration using CEMS.
S1401 - Sulfur Recovery Unit	1402	SCOT Tail Gas Unit	S1401	Sulfur Dioxide	SO2: 250 ppmvd @ 0% excess air	BAAQMD Condition 267, Part 5; 40 CFR 60.104(a)(2)(i); 40 CFR 63.1568(a)(1)	NSPS J - pre-1990 MACT UUU - Apr. 11, 2002	Yes - CEMS	64.2(1)(b)(i), 64.2(1)(b)(vi)	N/A	N/A	No	No	Exempt based upon continuous compliance demonstration using CEMS.
			S1401		SO2: 4 lb/ton sulfur processed	BAAQMD Condition 267, Part 2								

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				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
			S1401		SO3 and/or H2SO4 expressed as 100% H2SO4: 183 mg/dscm or 0.08 gr/dscf of exhaust gas	BAAQMD 6-1-330 SIP 6-330								
	1525	SRU Stack Incinerators	S1401, A1402		SO2: 250 ppmvd @ 0% excess air	BAAQMD Condition 267, Part 5; 40 CFR 60.104(a)(2)(i); 40 CFR 63.1568(a)(1)								
	S1013	Ammonia Plant Flare	S825, S851, S856, A1401, A1402	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
A1402 - SCOT Tail Gas Unit	1525	SRU Stack Incinerators	S1401, A1402	Sulfur Dioxide	SO2: 250 ppmvd @ 0% excess air	BAAQMD Condition 267, Part 5; 40 CFR 60.104(a)(2)(i); 40 CFR 63.1568(a)(1)	NSPS A (60.13) - Original: Oct. 6, 1975  NSPS J - Original: Mar. 15, 1978 Modified: 1) Aug. 17, 1989, 2) Oct. 2, 1990, 3) Oct. 17, 2000, 4) June 24, 2008	Yes - CEMS	64.2(1)(b)(i), 64.2(1)(b)(vi)	N/A	N/A	No	No	
	S1013	Ammonia Plant Flare	S825, S851, S856, A1401, A1402	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
S1404 - Sulfur Storage Tank A-756	1422	Sulfur Tank Vent Scrubber, Calvert Scrubber	S1404	Particulate Matter	Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301	N/A	Yes - pressure	64.2(1)(b)(vi)	N/A	N/A	No	No	Exempt based upon continuous compliance

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				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments	
					PM: 0.01 gr/dscf	BAAQMD Condition 8535, part 1, part 3		drop monitoring							demonstration using continuous pressure drop monitoring. Pressure drop can be directly correlated to PM emissions.

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/ Comments
S1405 - Sulfur Collection Pit	S1401	Sulfur Recovery Unit	S1405	N/A	<p>4a. Permittee/Owner/Operator shall abate the Sulfur Collection Pit (S-1405) by either the Sulfuric Acid Plant (SAP) (S-1411) or the Sulfur Recovery Unit (SRU) (S-1401) whenever S-1405 is being filled with sulfur or when S-1401 is in operation. (basis: cumulative increase)</p> <p>4b. Until April 1, 2008, if S-1411 is shutdown, the Owner/Operator may temporarily route S-1405 emissions to the S-1401 SRU stack. During this temporary operation, all S-1405 emissions must be included in the S-1401 emissions that are monitored for SO<sub>2</sub> emissions compliance with NSPS Subpart J. (Basis: EPA consent decree, paragraph 226)</p>	BAAQMD Condition 267, Part 4	N/A	No specific monitoring mentioned for S1405 to determine if being abated by other sources. Both S1405 and S1411 have SO <sub>2</sub> CEMS though.	64.2(1)(b)(vi)	N/A	N/A	No	No	No emission limit for EU, therefore, not subject to CAM.
S1411 - Sulfuric Acid Mfg Plant	1403	Brink Mist Eliminator, Sulfuric Acid Plant	S1411	Particulate Matter	Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301	N/A	No	No	15.18	1.52	No	No	Uncontrolled emissions < 100 tpy.

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/ Comments
	1417	Final Converter/Absorber, Sulfuric Acid Plant, Dual Absorber			Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301								
	1417	Final Converter/Absorber, Sulfuric Acid Plant, Dual Absorber			Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301								
	1421	Final Mist Eliminator, Sulfuric Acid Plant		Sulfuric Acid Mist	SO3 and/or H2SO4 expressed as 100% H2SO4: 92 mg/dscf or 0.04 gr/dscf of exhaust gas	BAAQMD 6-1-320 SIP 6-320	N/A	No - conservatively assumes SO2 CEM doesn't qualify as CCD for SAM.	No	22.28	2.23	No	No	Uncontrolled emissions < 100 tpy.
S1413 - No. 1 Oleum Tank A-763	1404	Brink Mist Eliminator, Sulfuric Acid Plant Tanks and Loading Rack	S1413, S1414, S1415	Particulate Matter	Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301	N/A	No	No	0	0	No	No	Assumed particulate emissions are negligible.
S1414 - No. 2 Oleum Tank A-753	1404	Brink Mist Eliminator, Sulfuric Acid Plant Tanks and Loading Rack	S1413, S1414, S1415	Particulate Matter	Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301	N/A	No	No	0	0	No	No	Assumed particulate emissions are negligible.
S1415 - H2SO4 Loading Dock	1404	Brink Mist Eliminator, Sulfuric Acid Plant Tanks and Loading Rack	S1413, S1414, S1415	Particulate Matter	Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301	N/A	No	No	0	0	No	No	Assumed particulate emissions are negligible.
S1416 - No. 1 Spent Acid Tank A-746;	1525	SRU Stack Incinerator	S990, S1416, S1418	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
	1525	SRU Stack Incinerator	S990, S1416, S1418	Particulate Matter	Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301	N/A	No	No	0	0	No	No	Assumed particulate emissions are negligible.

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				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
S1418 - Rich DEA Tank A-750	1418	Packed Bed Scrubber (Lean DEA), Rich DEA Tank A-750	S1418	N/A	Nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
	1525	SRU Stack Incinerator	S990, S1416, S1418	N/A		BAAQMD 1-301								
	1525	SRU Stack Incinerator	S990, S1416, S1418	Particulate Matter	Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301	N/A	No	No	0	0	No	No	
S1470 - No. 3 Crude Vacuum Distillation Heater (F71)	908	No. 3 Crude, F-8 Selective Catalytic Reduction (SCR) System	S1470	Oxides of Nitrogen	NOx: 10 ppmv corrected to 3% oxygen, 3 hour average	BAAQMD Condition #18539, Part 15	N/A	Yes - CEMS	64.2(1)(b)(vi)	N/A	N/A	No	No	Exempt based upon continuous compliance demonstration using CEMS.

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
S1484 - Oil Water Separator; Pressure Vessel, 50 Unit Desalter Brine;	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System, Compress/Condense/Absorb	S100, S126, S127, S134, S137, S318, S323, S327, S367, S432, S513, S532, S603, S613, S699, S714, S819, S1025, S1484, S1496, , S32103	N/A	nuisance odors	BAAQMD 1-301	N/A	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S532, S1484	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-8-301.3 SIP 8-8-301.3	N/A	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.



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				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
S1489 - Fixed Volume Portable Tank #1	1001	Carbon Canister, Fixed Volume Portable Tanks	S1489, S1490, and S1491	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306	N/A	No	No	0.31	0.02	No	No	
	1002	Carbon Canister, Fixed Volume Portable Tanks	S1489, S1490, and S1491		VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306								
S1490 - Fixed Volume Portable Tank #2	1001	Carbon Canister, Fixed Volume Portable Tanks	S1489, S1490, and S1491	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306	N/A	No	No	0.31	0.02	No	No	
	1002	Carbon Canister, Fixed Volume Portable Tanks	S1489, S1490, and S1491		VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306								
S1491 - Fixed Volume Portable Tank #3	1001	Carbon Canister, Fixed Volume Portable Tanks	S1489, S1490, and S1491	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306	N/A	No	No	0.31	0.02	No	No	
	1002	Carbon Canister, Fixed Volume Portable Tanks	S1489, S1490, and S1491		VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306								

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/ Comments
S1496 - Tank A-876;	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System, Compress/Condense/Absorb	S100, S126, S127, S134, S137, S318, S323, S327, S367, S432, S513, S532, S603, S613, S699, S714, S819, S1025, S1484, S1496, , S32103	N/A	nuisance odors	BAAQMD 1-301	N/A	No		N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S134, S137, S318, S323, S327, S367, S432, S603, S714, S1496,	Volatile Organic Compounds	VOC: 95% control	BAAQMD 8-5-306 SIP 8-5-306	NSPS Kb - Original Apr. 8, 1987 Last Modified Oct. 8, 1997	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this

Permit Evaluation and Statement of Basis, Renewed Permit: Site B5728 & B5729, Tesoro Refining and Marketing Company  
Golden Eagle Refinery, 150 Solano Way and 1750 Marina Vista Way, Martinez, CA 94553

Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>			
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments	
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S134, S137, S318, S323, S327, S367, S656, S658, S1496,		VOC: 95% control	40 CFR 60.112b(a)(3)(ii)									PSEU is not subject to CAM.
	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S1496		VOC: 99.5% destruction efficiency	BAAQMD Condition #21100, part 2									
S1511 - Delayed Coker Heater #1 (F78)	1511	Coker Heater #1 Selective Catalytic Reduction (SCR) System	S1511	Oxides of Nitrogen	NOx: 7 ppmvd, corrected to 3% O <sub>2</sub> , 3 hour average	BAAQMD Condition #23129, Part 12	N/A	Yes - CEMS	64.2(1)(b)(vi)	N/A	N/A	No	No	Exempt based upon continuous compliance demonstration using CEMS.	
					NOx: 50 ppmvd (as NO <sub>2</sub> ) corrected to 3% O <sub>2</sub> , 3 hour average	BAAQMD Condition #23129, Part 12a									
S1512 - Delayed Coker Heater #2 (F79)	1512	Coker Heater #2 Selective Catalytic Reduction System (SCR)	S1512	Oxides of Nitrogen	NOx: 7 ppmvd, corrected to 3% O <sub>2</sub> , 3 hour average	BAAQMD Condition #23129, Part 12	N/A	Yes - CEMS	64.2(1)(b)(vi)	N/A	N/A	No	No	Exempt based upon continuous compliance demonstration using CEMS.	
					NOx: 50 ppmvd (as NO <sub>2</sub> ) corrected to 3% O <sub>2</sub> , 3 hour average	BAAQMD Condition #23129, Part 12a									
S1514 - Coke Silo#1	1514	Coker Silo #1 Baghouse, 4200 cfm	S1514	Particulate Matter	Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301	N/A	Yes - assumes bag failure	64.2(1)(b)(vi)	N/A	N/A	No	No	Exempt based upon continuous compliance	

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/ MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/ Comments
					0.15 grain per dscf	BAAQMD 6-1-310 SIP 6-310		warning device qualifies as CCD method. Table VII - E.6 states monitoring frequency is continuous.						demonstration using continuous bag failure monitoring. Baghouse performance can be directly correlated to PM emissions.
					0.01 grain per dscf	BAAQMD Condition #23129, part 39								
				N/A	No visible particles on real property of another	BAAQMD 6-1-305 SIP 6-305	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.
S1515 - Coke Silo#2	1515	Coker Silo #2 Baghouse, 4200 cfm	S1515	Particulate Matter	Ringelmann No. 1 < 3 min/hr	BAAQMD 6-1-301 SIP 6-301	N/A	Yes - assumes bag failure warning device qualifies as CCD method. Table VII - E.6 states monitoring frequency is continuous.	64.2(1)(b)(vi)	N/A	N/A	No	No	Exempt based upon continuous compliance demonstration using continuous bag failure monitoring. Baghouse performance can be directly correlated to PM emissions.
					0.15 grain per dscf	BAAQMD 6-1-310 SIP 6-310								
					0.01 grain per dscf	BAAQMD Condition #23129, part 39								
				N/A	No visible particles on real property of another	BAAQMD 6-1-305 SIP 6-305	N/A	No	No	N/A	N/A	No	No	Limit is not on a regulated air pollutant.

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
S1517 Coker Flare	S1517	Coker Flare	See Note 1 for Table II-A1	Volatile Organic Compounds	POC: 98.5% destruction efficiency (mass basis)	BAAQMD Condition 23129, Part 52	Pilot = N/A Process vents connected to flare: Subject to MACT CC MPV emission limit. MACT CC proposed in 1995.	No - assumes CD provisions not yet applicable for flare monitoring.	Process Vents: 64.2(1)(b)(i)	N/A	N/A	No	No	Evaluated the flare as an EU considering only the pilot combustion emissions generated by the flare itself, which has no control device. The process vents routed to the flare are considered separate Eus.
S1524 50 Unit Flare	S1524	50 Unit Flare	See Note 4 for Table II-A1	Volatile Organic Compounds	POC: 98% destruction efficiency (mass basis)	BAAQMD Condition 24323, Part 7	Pilot = N/A Process vents connected to flare: Subject to MACT CC MPV emission limit. MACT CC proposed in 1995.	No - assumes CD provisions not yet applicable for flare monitoring.	Process Vents: 64.2(1)(b)(i)	N/A	N/A	No	No	Evaluated the flare as an EU considering only the pilot combustion emissions generated by the flare itself, which has no control device. The process vents routed to the flare are considered separate Eus.

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/ Comments
S1550 - Backup Steam Boiler No. 1	1550	Backup Boiler #1 SCR	S1550	Oxides of Nitrogen	NOx: 7 ppmvd @ 3% O2 except for: NOx: 30 ppmvd @ 3% O2 during startup and shutdown unabated operation	BAAQMD Condition 24491, Parts 4 & 7	N/A	No	No	42.51	N/A	No	No	Uncontrolled emissions < 100 tpy.
S1551 - Backup Steam Boiler No. 2	1551	Backup Boiler #2 SCR	S1551	Oxides of Nitrogen	NOx: 7 ppmvd @ 3% O2 except for: NOx: 30 ppmvd @ 3% O2 during startup and shutdown unabated operation	BAAQMD Condition 24491, Parts 4 & 7	N/A	No	No	42.51	N/A	No	No	Uncontrolled emissions < 100 tpy.
S1553 - Backup Steam Boiler No. 3	1553	Backup Boiler #3 SCR	S1553	Oxides of Nitrogen	NOx: 7 ppmvd @ 3% O2 except for: NOx: 30 ppmvd @ 3% O2 during startup and shutdown unabated operation	BAAQMD Condition 24491, Parts 4 & 7	N/A	No	No	42.51	N/A	No	No	Uncontrolled emissions < 100 tpy.
S1554 - Tank A-943	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S1554	Volatile Organic Compounds	VOC: 99.5% destruction efficiency	BAAQMD Condition #25025, part 3	N/A	No	No	N/A	N/A	No	No	A-14 meets the definition of "inherent process equipment" and thus does not meet the definition of control device. Therefore, this PSEU is not subject to CAM.

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Emission Unit	A-	Abatement Device [3]	Sources subject to emission limit	Emissions Standards			CAM Exemptions <sup>[1]</sup>			Emissions		Applicability Summary <sup>[4]</sup>		
				Pollutant Controlled	Emission Limits	Basis of Limit	Date of CAA Sec. 111/112 (NSPS/MACT) Emissions Standard	Continuous Compliance Demonstration Method? <sup>[2]</sup>	Applicable Exemption ?	Un-controlled (tpy)	Controlled (tpy)	PSEU Subject to CAM?	Large PSEU	Rationale/Comments
S32103 - Fugitive Components Compressor Seals and Pump Seals	14	Vapor Recovery System to No. 1 Gas Plant and 40# Refinery Fuel Gas System, Compress/Condense/Absorb	S100, S126, S127, S134, S137, S318, S323, S327, S367, S432, S513, S532, S603, S613, S699, S714, S819, S1025, S1484, S1496, , S32103	N/A	nuisance odors	BAAQMD 1-301	N/A	No		N/A	N/A	No	No	Limit is not on a regulated air pollutant.
	14	Vapor Recovery System , to No. 1 Gas Plant and 40# Refinery Fuel Gas System Compress/Condense/Absorb	S32103	Volatile Organic Compounds	VOC: 95% control	BAAQMD Condition # 11609, parts E1, E2	N/A	Yes - CEMS (Temperature Monitoring and Pump Flow Indicators)	64.2(1)(b)(vi)	N/A	N/A	No	No	
	40	Thermal Oxidizer, Electric, Tract 6 Pump Seals	S32103		VOC: 95% control	BAAQMD Condition # 11609, part A1								
	42	Thermal Oxidizer, Electric, Hydrocracker Pump Seals	S32103		VOC: 95% control	BAAQMD Condition # 11609, part C1								
	43	Thermal Oxidizer, Electric, Tract 3 Pump Seals	S32103		VOC: 95% control	BAAQMD Condition # 11609, part D1								

## **APPENDIX D – ENGINEERING EVALUATIONS**



**Application 23138, Change in S-1005 Hydrogen Plant Source Test Frequency**

**EVALUATION REPORT  
TESORO - GOLDEN EAGLE REFINRY  
Application #23138 - Plant #14628**

**150 Solano Way  
Martinez, CA 94553**

**I. BACKGROUND**

Tesoro has applied for a change in conditions for the following source:

**S-1005 No 1 Hydrogen Plant**

This application originally addressed the three remaining issues in the Tesoro Appeal of the original Title V permit. In the development of this application, Tesoro has rescinded their appeal of two items (#9 and #23), leaving only Item #1, S-1005 Source Test Frequency.

Currently Tesoro is required to perform annual source tests for the two S-1005 Hydrogen Plant vents to determine compliance with Regulation 8-2-301:

**8-2-301 Miscellaneous Operations:** A person shall not discharge into the atmosphere from any miscellaneous operation an emission containing more than 6.8 kg. (15 lbs.) per day and containing a concentration of more than 300 PPM total carbon on a dry basis.

The source test is difficult to perform because the vents are not designed for source testing and expensive because scaffolding has to be erected for the test. Recent source test history has demonstrated compliance with a substantial margin, as shown below:

Source Test Date	Test Number	Vent 1		Vent 2	
		VOC as Carbon ppm	VOC as Carbon lb/day	VOC as Carbon ppm	VOC as Carbon lb/day
July, 2010	OS-3418, 3419	13.6	5.78	261	2.95
Dec 2010	OS-3610, 3611	17.0	4.54	62.6	3.43
8-2-301 Limit		300	15	300	15

Tesoro requests that the source tests be every other year (biennial). The District proposed, and Tesoro accepted, a provision to return to annual source tests if a single source test shows that the margin of compliance falls below 50%.

**II. EMISSION CALCULATIONS**

There are no emissions changes associated with this application.

### III. PLANT CUMULATIVE INCREASE SINCE 4/5/1991

There is no Cumulative Increase associated with this application.

### IV. STATEMENT OF COMPLIANCE

There are no changes in compliance for S-1005 No 1 Hydrogen Plant. S-1510 is subject to and expected to be in compliance with Regulation 8, Rule 2, Miscellaneous Operations.

This application for a change in conditions, is exempt from CEQA per Regulation 2-1-312.1, and therefore is not subject to CEQA review.

2-1-312.1 Applications to modify permit conditions for existing or permitted sources or facilities that do not involve any increases in emissions or physical modifications.

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.

PSD, NSPS, NESHAPS, BACT, Toxics and Offsets are not applicable.

### V. CONDITIONS

The change to Condition 22070 is shown below:

#### Condition 22070

S-1005 No. 1 Hydrogen Plant: CO2 Vents #1 & #2:

The owner/operator shall conduct a District approved ~~annual~~biennial source test at CO2 Vent #1 and CO2 Vent #2 at the S-1005 No. 1 Hydrogen Plant to demonstrate compliance with Regulation 8-2-301 in accordance with District source test methods or other methods approved in advance by the District. At least two weeks prior to testing, Permittee/Owner/Operator shall contact the District's Source Test Section, in writing, to provide notification of the testing procedure, date and time, and to obtain details on source testing requirements. Source test procedures are subject to approval of the APCO. A copy of the test report shall be provided to the Engineering Division, the District Director of Compliance and Enforcement, and the District Source Test Division within 45 days of completion of the test. If the results for any source test exceed 7.5 lb/day total carbon or more than 150 ppm total carbon, the District approved source test frequency shall be annual. Records of the source test results and any related correspondence with the District's Source Test Division shall be retained on-site by the owner/operator for a minimum of 5 years from the date of the document.  
(Basis: Regulation 2-6-409.2)

### VI. RECOMMENDATION

It is recommended that a change in conditions be granted to Tesoro Refining & Marketing Company for the following equipment:

**S-1005 No 1 Hydrogen Plant**

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**Arthur Valla**  
**Senior Air Quality Engineer**

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**August 31, 2011**

**Application 25718: S-830, S-977 and S-980 Grandfathered Limit Revisions**

**ENGINEERING EVALUATION**  
**Tesoro Refining and Marketing Company**  
**PLANT NO. 14628**  
**APPLICATION NO. 25718**

**BACKGROUND**

Tesoro Refining & Marketing Company LLC (Tesoro) has reported exceeding the Grandfathered throughput limits for the following sources:

- S-830 Wastewater Surge Ponds**
- S-977 No. 3 Crude Unit Cooling Tower**
- S-980 Hydrocracker Cooling Tower**

Tesoro is applying to change the Grandfathered limits to address this exceedance. This permit application was deemed complete August 30, 2016.

Title V Standard Condition J.2 addresses this circumstance:

- I. STANDARD CONDITIONS
- J. Miscellaneous Conditions
2. In Table II-A1 or Table II-A2, for each source identified as a grandfathered source, the throughput limits as shown in Table II-A1 and Table II-A2 are based upon District records at the time of the MFR permit issuance. These throughput limits function as reporting thresholds only and exceedance of any of these limits does not constitute noncompliance with the MFR permit. As such, exceedance of a grandfathered limit is not subject to Section I.F reporting requirements. Exceedance of a grandfathered limit does not establish a presumption that a modification has occurred, nor does compliance with the limit establish a presumption that a modification has not occurred. The facility must report any exceedance of these limits in the form of a permit application within 30 days of discovery to facilitate the determination of whether a modification has occurred. The applications shall be sent to the following address: (Regulation 2-1-234.3).

Air Quality Engineering Manager  
Bay Area Air Quality Management District  
375 Beale Street, Suite 600  
San Francisco, CA 94105  
Attn: Permit Evaluation Section, Title V Reports

The purpose of the Standard Condition J.2 is for the District to determine if the source in question has been modified. The general approach is to review the pre-construction design drawings, compare them to the current design, and determine if any changes have been made. If there are changes that would result in an increase in emissions, the source is modified. If there have been no changes, or if the changes will not result in an increase in

emissions, the source is not modified, and the change in the Grandfathered Limit is justified.

Tesoro was notified of the exceedances for S-830, S-977 and S-980 on 6/18/2013. Tesoro responded and promised to submit the "J.2" permit application. However, after 30 days passed, the required permit application had not been submitted. An enforcement referral dated 8/14/2013 was approved. This application was received 9/23/2013.

The following table summarizes the Grandfathered throughput limits for this permit application.

Source	Units	Current Title V Limits	Tesoro Requested	Granted
S-830	K Bbl/day	2,400	2,400	2,400
	K Bbl/yr	46,000	133,225	133,225
S-977	K gal/day	31,680	59,040	31,680
	K gal/yr	11,563,200	21,549,600	11,563,200
S-980	K gal/day	17,280	25,920	20,200
	K gal/yr	6,307,200	9,460,800	7,373,000

After review of the documentation provided by Tesoro, it has been determined that S-830 has not been modified.

The determination for the cooling towers is more complicated. The basis for increasing the Grandfathered Limit for the cooling towers is changing the spare cooling water circulation pump to continuous duty service, a change in operation. In addition, for S-980, there were physical changes to both the circulation pumps and the cooling tower itself. Normally these changes would be considered a modification since the result would increase cooling tower emissions. However, it is likely that the change for each cooling tower was part of an expansion project permitted in the 1980's by former refinery owner Tosco.

The other complicating factor for the cooling towers is that at the time of the changes, even though these sources were permitted, they were typically considered exempt from permitting pursuant to Regulation 2-1-128.4:

**2-1-128 Exemption, Miscellaneous Equipment:** The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319

128.4 Water cooling towers and water cooling ponds not used for evaporative cooling of process water, or not used for evaporative cooling of water from barometric jets or from barometric condensers

At the time of the Tosco Projects, emissions from cooling towers were not regulated as they are today (currently cooling towers are addressed in Regulation 11, Rule 10, Hexavalent Chromium Emissions from All Cooling Towers and Total Hydrocarbon Emissions from Petroleum Refinery Cooling Towers, first adopted 11/15/1989).

## DETERMINATIONS

### S-830 Wastewater Surge Ponds

S-830 is part of the Tesoro wastewater treatment system, including S-819 API Oil/Water Separator, S-842 Wastewater Treatment Plant and S-831 Bio-Oxidation Ponds. During the development of the initial Tesoro Title V permit, the District worked with former refinery owner Ultramar to establish the throughput or capacity limits for all Grandfathered sources. The final spreadsheet that documents this effort is titled "Ultramar- rev8". In this document, the Air District Throughput Limit is specified 46,000 KBbl/yr for S-830, S-842 and S-831. However, the Maximum Annual Historical or Design Data is also specified. For S-830, S-831 and S-842, the maximum historical throughputs are specified at 2400 KBbl/day and 133,225 KBbl/yr. The Title V permit shows the 133,225 KBbl/yr for S-831 and S-842, but not for S-830. Therefore, changing the S-830 annual limit to 133,225 KBbls is justified and is considered an administrative correction. No further review is required.

### S-980 Hydrocracker Cooling Tower

#### Summary:

S-980 was physically and operationally modified. The modifications likely occurred in 1987 when the Hydrocracker was expanded via Tosco Permit Application 548. At this time cooling towers were exempt from permitting. Therefore, changing the S-980 grandfathered limit is justified. However, Tesoro's requested limit increase is not physically attainable. Previous tests have shown the change from two pump operation to three pump operation increases circulation rates 13-17%. Therefore, an increase of 17% is justified.

S-980 is the cooling tower that serves the cooling water system in Hydrocracker Units S-1007 and S-1008. The cooling water is circulated to the Hydrocracker Unit cooling water exchangers by P-8000, P-8001, and P-8002 circulation pumps. The system design documents show that two pumps are intended to be in service, and the other a spare, a typical configuration for cooling water systems.

The S-980 Grandfathered limits are based on a 12000 gpm cooling water circulation rate, two pumps operating at 6000 gpm each, and are consistent with the Title V analysis documented in the spreadsheet "Ultramar-rev8". In the 2004 Cooling Tower Study completed by Enforcement, the S-980 flowrate was provided by Tesoro at 17,280 Kgal/day (12,000 gpm\*60\*24). Prior to 2011, Tesoro reported S-980 throughput in each annual update questionnaire as 6,701,400 Kgal, equivalent to 12750 gpm, and slightly higher than the Title V limit of 6,307,200 Kgal. Even though the grandfathered limit was exceeded, triggering the requirements of Title V Standard Condition J.2, no action was taken, either by Tesoro or by the District. This inaction was likely because the exceedances were less than 10% of the Title V limit. Starting in 2011, Tesoro reported 7,844,000 Kgal throughputs for S-980 in the annual updates. These exceedances were 25% higher than the grandfathered limit.

A review of the documents indicated that the Tesoro proposed throughput was based on three pumps operating at a maximum capacity of 6000 gpm each. Tesoro does not monitor and report actual cooling water circulation rates. Instead, the reported throughputs are based on the cooling water circulation pump curves and the number of pumps in service. At some point in time, Tesoro changed the service of the spare pump to an in-service pump, resulting in three pumps in service. In 2012, for calendar year 2011, Tesoro started reporting the throughput based on three pumps in service.

In order to determine if the S-980 throughput increase was the result of a modification, Tesoro was requested to provide pre-construction design drawings. The design documents provided by Tesoro included the initial 1961 Bechtel design documents that were used to obtain construction proposals for the system. These documents included a Cooling Tower Data Sheet designed for 8000 gpm, three 4000 gpm circulation pumps with a head rated at 47.6 psi, with each pump driven by a 150 HP motor. Tesoro also provided a 1962 Cooling Water Pump specification for what was actually constructed. These documents indicated each pump was rated at 5000 gpm with a head of 45 psi (105 feet) driven by 150 HP GE motors. These were three 50% duty pumps (2 operating, 1 spare). The 1962 pump curve was also provided, indicating Peerless Pumps rated at 5600 gpm at 100ft of head, requiring 160 HP of power. The Peerless Pump curve showed that each pump could operate at 6000 gpm with a 40 psi differential head (93 feet).

In 1977, when most of the existing refinery sources were first permitted, then refinery owner Lion Oil submitted a source data form for S-980. This form specified the S-980 maximum throughput of 0.66 MMgph based on a design 11,000 gpm cooling water circulation rate, or 5500 gpm for each pump.

Shortly thereafter, then refinery owner Tosco was concerned about the hydrocracker cooling water system. The system performance appeared to be based on which two (of the three) pumps were in service. To determine system performance, in 1979 a Pump Flow Test was performed. The results of this test are demonstrated in the following table:

P-8000	P-8001	P-8002	Header psig	Total Circulation gpm
Off	On	On	38.5	11,200
On	Off	On	38.0	11,000
On	On	Off	39.0	11,400
On	On	On	45.5	12,900

The conclusions were that indeed, the system performance performed best when P-8002 was in spare service, and performed worst when P-8001 was in spare service. It was also concluded that when three pumps were in service, the increase in circulation would range between 1500 and 1900 gpm, a 13-17% increase. This was far less than the 5500 gpm pump capacity and was due to the inherent pressure drop in the cooling water exchanger system.

In 1987, the hydrocracker cooling water system performance concerns were addressed by installing new pumps. Tesoro provided the new pump design documents. According to the 1987 Johnson Pump Co Pump curves, the new pumps are rated at 5000 gpm at a differential head of 60 psi (140 feet). Therefore, the resolution to the problem was not to

increase the circulation rate of the pumps, but to install pumps with 33% higher head (a 15 psi increase over the original 45 psi). To accommodate these higher head pumps, the 150 HP drivers were replaced with 250 HP drivers.

Lastly in review of the design documents, it also appears that the S-980 cooling tower itself was modified. The 1962 Tidewater Oil P&ID for the cooling tower specifies the 11000 gpm cooling tower with three fans, each driven with 60 HP motors. The current Tesoro P&ID shows each of the three fans driven by 160 HP motors. The new, larger motors would increase the cooling tower air flow allowing more cooling water to be cooled.

In conclusion, it is determined that S-980 has been modified. Both the cooling water circulation pumps and the cooling tower itself have been physically changed and the changes resulted in an increase in cooling water circulation rate. Switching the spare pump to continuous duty is a change in operation that also increases the circulation rate. The increase in circulation rate will increase emissions.

In 1987, Tosco permitted the Hydrocracker Expansion Project via NSR Permit Application 548. This permit application was approved and the Hydrocracker processing capacity was increased from 20MBPD to 35MBPD. The permit application project description does not include any changes to the cooling water system. The new circulation pump design document shows that the pumps were indeed installed in 1987, so it can be concluded that the new pumps were part of the Hydrocracker Expansion Project. It is unclear when the cooling tower itself was modified, but it is likely that the new fan motors were also installed as part of the Hydrocracker Expansion Project.

At the time of the Hydrocracker Expansion Project, it was not unusual for projects to concentrate on the process unit changes and not on the utility services. In addition, at the time cooling towers were exempt from permitting per 2-1-128.4. Regulation 11, Rule 10 addressed cooling tower emissions was not adopted until 1989. Therefore, the physical changes to S-980 in 1987 cannot be considered a source modification that was subject to the New Source Review in 1987.

In conclusion, changing the grandfathered capacity of S-980 is justified. Tesoro has proposed the limits be increased to 25,920 KBbl/day and 9,460,000 KBbl/yr (three pumps at 6000 gpm each). These circulation rates are not achievable.

The increase in cooling water throughput is not just the pump capacity times the number of pumps. This was clearly demonstrated in the 1979 Pump Flow Test. Tesoro was requested to perform another Pump Flow test in support of this application. This test would provide the current circulation rates with the current Johnson Pumps (the 1979 test was for the original Peerless Pumps), and would provide the best opportunity to revise the grandfathered limit accurately. Unfortunately, Tesoro declined to perform another Pump Flow Test.

(Tesoro did review the system operation in August 2016. However, the data showed the discharge pressures of the three pumps to be 57.5 psia, 48 psig and 38 psig. This pressure data did not make sense. The expectation is that the discharge pressure of each pump would be close to identical since there is only about 10 feet of pipe downstream of each



pump before discharging into an underground common header. For the pressures to vary as widely and reported, the pump discharge block valves would have had to been partially closed, not a likely operation. When a test report was requested Tesoro indicated there was none. When the District requested that it be allowed to speak with the test engineer, Tesoro declined. Therefore, no meaningful data could be extracted from this August 2016 review.)

The increase in cooling water rate would cause an increase in pressure drop across the cooling water system. The relationship between pressure and flow is found by the conservation of energy for incompressible fluid flow (aka the Bernoulli Equation). The relationship is that pressure drop  $\Delta P$  is proportional to the square of the fluid velocity (which is directly proportional to the flow rate  $Q$ ), which means  $\Delta P \sim Q^2$ . Therefore, if the cooling water flow rate were to increase about 50% as proposed by Tesoro, the pressure drop across the cooling water system has potential to increase by a factor of 2.25 ( $1.5^2$ ). In this case, using the existing Johnson Pump rated design of 5000 gpm at 60 psi (10000 gpm for two pumps), the  $\Delta P \sim Q^2$  relationship, and the Tesoro 3 6000 gpm pump proposal:

$$\Delta P = 60 \text{ psi} * (18000 \text{ gpm} / 10000 \text{ gpm})^2 = 194 \text{ psi} = 449 \text{ feet of head}$$

According to the 1987 Johnson Pump performance curve, this pump head is beyond the capability of the pumps. The pump would be deadheaded well before achieving the pressure drop required to circulate 18000 gpm of cooling water.

The real capacity of these pumps is determined by balancing the pressure drop in the cooling water system to the pump performance curve. When the total flow through the cooling water system is 10930 gpm, the cooling water system pressure drop is:

$$\Delta P = 60 \text{ psi} * (10930 \text{ gpm} / 10000 \text{ gpm})^2 = 71.7 \text{ psi} = 165.6 \text{ feet of head}$$

The 1987 Johnson Pump curve shows the capacity of each pump to be about 3650 gpm, or 10950 gpm for three pumps. This 10950 gpm represents the theoretical capacity of S-980 when three pumps are simultaneously operated. This is about a 9.5% increase over the design circulation rate with two pumps operating.

The cooling water circulation and heat exchange system is complex and the  $\Delta P \sim Q^2$  relationship over simplifies the fluid hydraulics of the system. Each cooling exchanger will have a control system that modulates the cooling water flow. Some of the system pressure drop will be realized across this control valve, discounting the theoretical  $\Delta P \sim Q^2$  approach. This is seen in the 1979 Pump Flow Test where using three pumps in service increased the circulation rate 13-17% over using two pumps.

Since Tesoro declined to perform a new Pump Flow test on the currently operating pumps, a reasonable approach would be to allow the maximum increase demonstrated in the 1979 Pump Flow Test. Applying this approach the new limit will be 2 pumps \* 6000 gpm \* 1.17 = 14040 gpm, or three pumps at 4680 gpm (about 28% higher than the theoretical capacity).

The results are summarized in the following table:

Source	Units	Current Title V Limits	Tesoro Requested	Recommended Change
S-980	K gal/day	17,280	25,920	20,200
	K gal/yr	6,307,200	9,460,800	7,373,000
Notes:		Based on two 6000 gpm pumps	Based on three 6000 gpm pumps	Based on a 17% increase when three pumps are in service

### S-977 No. 3 Crude Unit Cooling Tower

#### Summary:

S-977 was operationally modified by changing the spare pump to continuous duty. The modifications likely occurred prior to 1990 when the S-817 No 3 Crude Unit was returned to service after an extended shutdown. At this time cooling towers were exempt from permitting. Therefore, changing the S-977 grandfathered limit is justified. The current Title V limit is based on the operation of a 22,000 gpm circulation rate. The 1968 Gould Pump specifications show each pump rated at 16,500 gpm at 59 psi. Tesoro's requested limit increase to 41,000 gpm (2 pumps at 20,500 gpm) is not physically attainable. The 1979 Pump Test for S-980 demonstrated that the change from two pump operation to three pump operation increases circulation rates 13-17%. However, applying the 17% to the rated 16,500 gpm results in a circulation rate lower than the 22,000 gpm that is the basis of the current Title V limits. Therefore, an change in the Title V limits is not recommended. The current Title V limit will be retained.

S-977 is a cooling tower that serves the No 3 Crude Unit S-817. The cooling water is circulated to the No 3 Crude Unit cooling water exchangers by P-8334 and P-8335 circulation pumps. The system design documents show that one pump is intended to be a spare, a typical configuration for cooling water systems.

The S-977 Grandfathered limits are based on a 22000 gpm cooling water circulation rate, and are consistent with the Title V analysis documented in the spreadsheet "Ultramar-rev8". In the 2004 Cooling Tower Study completed by Enforcement, the S-977 flowrate was provided by Tesoro at 16,500 Kgal/day (11,500 gpm). Prior to 2010, Tesoro reported S-977 throughput in each annual update questionnaire as 6,044,400 Kgal, consistent with the 11,500 gpm, and less than the Title V limit of 11,563,200 Kgal. Starting in 2010, Tesoro reported 17,344,800 Kgal throughputs for S-977 in the annual updates, almost a 3-fold increase.

A review of the documents provided by Tesoro indicated that this revised throughput was based on two pumps operating at a maximum capacity of 20,500 gpm each. Tesoro does not monitor and report actual cooling water circulation rates. Instead, the reported throughputs are based on the cooling water circulation pump curves and the number of pumps in service. At some point in time, Tesoro changed the service of the spare pump to an in-service pump, resulting in two pumps in service. In 2011, for calendar year 2010, Tesoro started reporting the throughput based on two pumps in service.

In order to determine if the S-977 throughput increase was the result of a modification, Tesoro was requested to provide pre-construction design drawings. However, this proved to be a difficult request. According to Tesoro, the No 3 Crude Unit was initially operated in 1937

as a thermal cracking unit. At some point in time, it was redesigned to a Crude Unit, and is now permitted as S-817 No 3 Crude Unit. The first permit application for S-817 is 1985 Application 30952 that modified an atmospheric gas oil draw. This permit application was approved with no change to the then unit capacity of 38,000 BPD. According to Tesoro, S-817 was idle and out of service for an extended time, beginning at or before 1990. In 1993, S-817 was proposed to be modified in Clean Fuels Project Application 10912, but the S-817 element of the Clean Fuels Project was never constructed and the Authority to Construct expired. Throughout the unit outage, the S-817 permits were retained and renewed each year. In 2000, S-817 was returned to service. Since the permits were retained, no permit application was submitted for the S-817 return to service. However, S-817 processing capacity was no longer limited to the original permitted 38,000 BPD throughput. This disparity became a permitting issue, which was finally resolved by then District Permit Services Manager Steve Hill sent a letter dated 1/30/2001 to Ultramar authorizing the S-817 throughput not to exceed 65,000 BPD and 20,974,190 BPY. Even though the authorization was not provided as a result of a permit application, and there is no record of any evaluation of the throughput increase from 38,000 to 65,000 BPD, Tesoro has accepted this 1/30/2001 letter as S-817 permitting authority, and the District has abided with this position. (It should be noted that emissions from S-817 are only fugitive emissions. Combustion sources that operate in the No 3 Crude Unit are permitted separately. Fugitive emissions are based on fugitive component counts and are independent of process unit throughput.)

What Tesoro did provide was 1968 Goulds Pump specifications for the cooling water circulation pumps P-8334 and P-8335. According to these specifications, each pump was designed for 16,500 gpm and 136 ft of head (59 psi). Both pumps were driven with 735 HP Elliott steam turbines. The pump curves showed that with a maximum power of 800 HP, the pumps could pump about 20,500 gpm at 126 ft of head (55 psi). In addition, a 1971 Fluor Cooling Tower performance specification shows the equipment designed for 15,000 gpm, with a 110% design factor at 16,500 gpm, consistent with the pump specifications.

It is unclear exactly when the S-977 spare pump was placed into continuous duty service. It is only known that this occurred prior to 2010 when Tesoro started reporting higher S-977 annual throughputs. It is likely that this change in operation occurred prior to 2000 when S-817 was returned to service, or earlier. It is highly probable that an increase in crude processing from 38,000 BPD to 65,000 BPD would require significantly more cooling water duty. Since the 1/30/2001 District letter authorized the 65,000 BPD crude processing capacity of S-817, it is reasonable to conclude that the authorization also included an increase in cooling water circulation for the then-exempt S-977 cooling tower.

Therefore, changing the grandfathered capacity of S-977 is justified. Tesoro has proposed the limits be increased to 59,040 KBbl/day and 21,549,600 KBbl/yr (two pumps at 20,500 gpm each). These circulation rates are not achievable. Tesoro could demonstrate the achievable circulation rate with a Pump Flow Test similar to the 1979 test performed for S-980. Such a test would provide the best opportunity to revise the grandfathered limit accurately. However, Tesoro did not perform such a test.

The increase in cooling water throughput is not just the pump capacity times the number of pumps. The increase in cooling water rate would cause an increase in pressure drop across

the cooling water system. The relationship between pressure and flow is found by the conservation of energy for incompressible fluid flow (aka the Bernoulli Equation). The relationship is that pressure drop  $\Delta P$  is proportional to the square of the fluid velocity (which is directly proportional to the flow rate  $Q$ ), which means  $\Delta P \sim Q^2$ . Therefore, if the cooling water flow rate were to increase almost 3-fold as proposed by Tesoro, the pressure drop across the cooling water system has potential to increase 9 times. Even if the flow rate were to double (simply derived by 2 pumps/1 pump), the pressure drop would increase by a factor of 4. In this case, using the 1968 Goulds Pump rated 16,500 gpm at 59 psi, the  $\Delta P \sim Q^2$  relationship, and the doubling of the circulation rate:

$$\Delta P = 59 \text{ psi} * (33000 \text{ gpm} / 16500 \text{ gpm})^2 = 236 \text{ psi} = 545 \text{ feet of head}$$

According to the 1968 Goulds Pump performance curve, this pump head is beyond the capability of the pumps. The pump would be deadheaded well before achieving the pressure drop required to circulate 33000 gpm of cooling water.

The real capacity of these pumps is determined by balancing the pressure drop in the cooling water system to the pump performance curve. When the total flow through the cooling water system is 17510 gpm, the cooling water system pressure drop is:

$$\Delta P = 59 \text{ psi} * (17510 \text{ gpm} / 16500 \text{ gpm})^2 = 66.4 \text{ psi} = 153.5 \text{ feet of head}$$

The 1968 Goulds Pump curve shows the capacity of each pump to be about 8750 gpm, or 17500 gpm for two pumps. This 17500 gpm represents the theoretical capacity of S-977 when two pumps are simultaneously operated. This is below the current Title V limit basis (22,000 gpm).

This 17500 gpm is about 6% higher than using a single pump, lower than the pumping test Tesoro completed for the Hydrocracker cooling water system S-980 referred to above (where the system circulation rate increased by 13-17%).

As explained in the S-980 section above, actual pump flow tests demonstrate higher circulation rate increases (compared to the theoretical capacity). If the circulation rate were to increase as much as the increase in the S-980 test, or 17%, the maximum S-977 flowrate would be:

$$16500 \text{ gpm} * 1.17 = 19,300 \text{ gpm}$$

This is also below the current Title V limit basis (22,000 gpm).

Therefore, the current Title V limit should remain unchanged, as summarized in the following table:

Source	Units	Current Title V Limits	Tesoro Requested	Recommended Change
S-977	K gal/day	31,680	59,040	No change
	K gal/yr	11,563,200	21,549,600	No change
Notes:		Based on 22,000 gpm cooling water circulation	Based on two 20,500 gpm pumps	Pump curves show two pump capacity is below current Title V limit.

## EMISSION CALCULATIONS

There are no emission increases associated with this application. This application simply corrects the grandfathered limits for the sources in question.

## STATEMENT OF COMPLIANCE

This application does not change the compliance for these sources.

S830 is expected to remain in compliance with the following:

- Regulation 8, Rule 8, Wastewater Collection and Separation Systems

S977 is expected to remain in compliance with the following:

- Regulation 6, Rule 1, Particulate Matter; General Requirements
- Regulation 11, Rule 10, Hexavalent Chromium Emissions from All Cooling Towers and Total Hydrocarbon Emissions from Petroleum Refinery Cooling Towers
- 40 CFR 63, Subpart CC, Petroleum Refinery MACT

S980 is expected to remain in compliance with the following:

- Regulation 6, Rule 1, Particulate Matter; General Requirements
- Regulation 11, Rule 10, Hexavalent Chromium Emissions from All Cooling Towers and Total Hydrocarbon Emissions from Petroleum Refinery Cooling Towers
- 40 CFR 63, Subpart CC, Petroleum Refinery MACT

The application is exempt from CEQA pursuant to Regulation 2-1-312.1:

312.1 Applications to modify permit conditions for existing or permitted sources or facilities that do not involve any increases in emissions or physical modifications.

The applicant has provided a Form Appendix H in support of this CEQA exemption.

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

PSD, BACT, Offsets, and Toxics do not apply.

## PERMIT CONDITIONS

There are no changes in permit conditions associated with this permit application.

## RECOMMENDATION

It is recommended that the grandfathered limits for the following sources

- S-830 Wastewater Surge Ponds**
- S-977 No. 3 Crude Unit Cooling Tower**
- S-980 Hydrocracker Cooling Tower**

be changes as shown below:

Source	Units	Current Title V Limits	New Limits
S-830	K Bbl/day	2,400	2,400
	K Bbl/yr	46,000	133,225
S-977	K gal/day	31,680	No change
	K gal/yr	11,563,200	No change
S-980	K gal/day	17,280	20,200
	K gal/yr	6,307,200	7,373,000

By: \_\_\_\_\_  
Arthur P Valla  
Senior Air Quality Engineer  
June 28, 2017

**Application 26198, S-1025 Truck Rack Backpressure Monitoring for 8-33 Compliance**

**ENGINEERING EVALUATION  
TESORO REFINING & MARKETING COMPANY LLC  
PLANT NO. 14628  
APPLICATION NO. 26198**

**Background**

Tesoro Refining & Marketing Company LLC (Tesoro) is proposing to alter/modify its S-1025 Loading Rack in order to comply with new monitoring requirements contained in Regulation 8-33 at its Golden Eagle Refinery facility located in Martinez. 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. Regulation 1-115 would not subject this modification to either BACT or Offsets since the modification is required by a change in the regulations. However, Regulation 1-115 does not exempt these modifications for purposes of Regulation 2, Rule 5 (NSR for TACs).

The District workgroup associated with Regulation 8-33 created a standardized permit condition template that includes a source test condition to clarify the correlation testing requirement in 8-33-309.10. The conditions imposed for this application will be based on the workgroup template and is similar to the permit conditions imposed for the other facilities and terminals subject to Regulation 8-33.

**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 increase in POC emissions = 48 #/yr.

The emissions estimate is contained in the table appended to this evaluation.

**Plant Cumulative Increase**

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

**Toxic Risk Screening Analysis**

<u>Toxic</u>	<u>Emissions Rates</u>	<u>Trigger Levels</u>
Benzene	7E-05 #/hr, 0.62 #/yr	2.9 #/hr, 3.8 #/yr
Naphthalene	2.39 #/yr	3.2 #/yr
Ethylbenzene	2.39 #/yr	43 #/yr
Toluene	0.002 #/hr, 14.4 #/yr	82 #/hr, 12000 #/yr
Xylene	0.002 #/hr, 14.4 #/yr	49 #/hr, 27000 #/yr

A toxic risk 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**

S-1025 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 of organic liquid loaded, the Vapor Recovery System 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 Vapor Recovery 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 8-33-301.

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

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 2-1-312.3 since the sole purpose of this application is to bring S-1025 into compliance with the amended requirements of Regulation 8, Rule 33.

PSD does not apply to this application.

NSPS and NESHAPs do not directly apply to this application. S-1025 is subject to MACT Subpart CC, which refers to the requirements of MACT Subpart R, which in turn has references to requirements of NSPS Subpart XX. S-1025 is expected to continue compliance with these federal requirements.

### **Conditions**

1. Within 30 days of installing the back pressure monitors on the vapor collection piping of each S-1025 loading arm abated by A-14 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 14628 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 14628 and for the interim, the owner/operator has proposed to and has been permitted by the District under Application 26198 to install the following fugitive components: 36 connectors, 0 flanges, 0 open-ended lines, 0 pump seals, 12 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 26198 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 60 days of discovering a leak, the owner/operator shall repair and re-inspect all fugitive components installed under Application 26198 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. Each backpressure monitor installed by the owner/operator under Application 26198 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 26198 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](mailto:sourcetest@baaqmd.gov). [Basis: Regulation 8, Rule 33]

6. 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 26198 for at least 60 months from date of entry. 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]

## **Recommendation**

It is recommended that the following equipment be granted a Permit to Operate:

**S-1025 Truck/Rail Bulk Plant equipped with 20 Loading Arms and  
equipped with backpressure monitoring**

by \_\_\_\_\_ date \_\_\_\_\_  
Arthur Valla 4Jun15  
Senior Air Quality Engineer

**Application 26422, NOx Box Revision for S-920**  
**EVALUATION REPORT**  
**TESORO REFINING AND MARKETING COMPANY**  
**REVISED NO<sub>x</sub> BOX FOR S-920, F-20**  
**No. 2 HDS CHARGE HEATER**  
**APPLICATION 26422, PLANT 14628**

**BACKGROUND**

The Tesoro Golden Eagle Refinery (Tesoro) operates several furnaces and boilers that are subject to Regulation 9, Rule 10, Nitrogen Oxides And Carbon Monoxide From Boilers, Steam Generators And Process Heaters In Petroleum Refineries. Regulation 9-10-301 limits the refinery wide NOx emissions to 0.033 lb/MMBtu of fired duty. Regulation 9-10-502 requires the installation of a NOx, CO and O2 CEM to demonstrate compliance with Regulation 9-10-301. Regulation 9-10-502 also allows a CEM equivalent verification system to determine compliance with Regulation 9-10-301. The District and Tesoro (through WSPA) have produced the CEM equivalent verification system. This system is called the “NOx Box”. The NOx Box is an operating window for the unit, expressed in terms of fired duty and oxygen content in the flue gas. The operating window is established by source tests for various operating conditions. The source tests demonstrate the NOx emissions are equal to or less than a specified emission factor. As long as the fired unit duty and oxygen content are in this NOx Box operating window, the specified emission factor is used to determine compliance with the 0.033 lb/MMBtu limit of Regulation 9-10-301. The Permit Condition that contains the details of the NOx Box is #18372.

Condition 18372, Part 30 required Tesoro to submit the initial NOx Box for the affected sources by January 1, 2005. Tesoro met this requirement via Application 15682. The NOx Box’s in the application were supported by properly conducted source tests and the NOx Box operating windows for all the affected sources have been included in Revision 4 of the Title V permit (reference: Section VI, Condition 18372, Part 31A, NOx Box Ranges).

This application requests a change in the NOx Box operating window for:

**S-920 F-20 No. 2 HDS Charge Heater**

The change is as follows:

Source No.	Emission Factor (lb/MMBtu)	Min O <sub>2</sub> at Low Firing (O <sub>2</sub> % , MMBtu/hr)	Max O <sub>2</sub> at Low Firing (O <sub>2</sub> % , MMBtu/hr)	Min O <sub>2</sub> at High Firing (O <sub>2</sub> % , MMBtu/hr)	Mid O <sub>2</sub> at Mid/High Firing (polygon) (O <sub>2</sub> % , MMBtu/hr)	Max O <sub>2</sub> at High Firing (O <sub>2</sub> % , MMBtu/hr)
920	0.041	2.5, 25.72	7.1, 15.34	3.41, 45.25	6.23, 55.3	8.0, 60.26
	0.055	7.1, 15.34	10.8, 27.53	8.0, 60.26	N/A	10.0, 45.15
920 new	0.0454	2.5, 25.72	7.1, 15.34	3.41, 45.25	5.75, 60.97 6.23, 55.3	8.0, 60.26

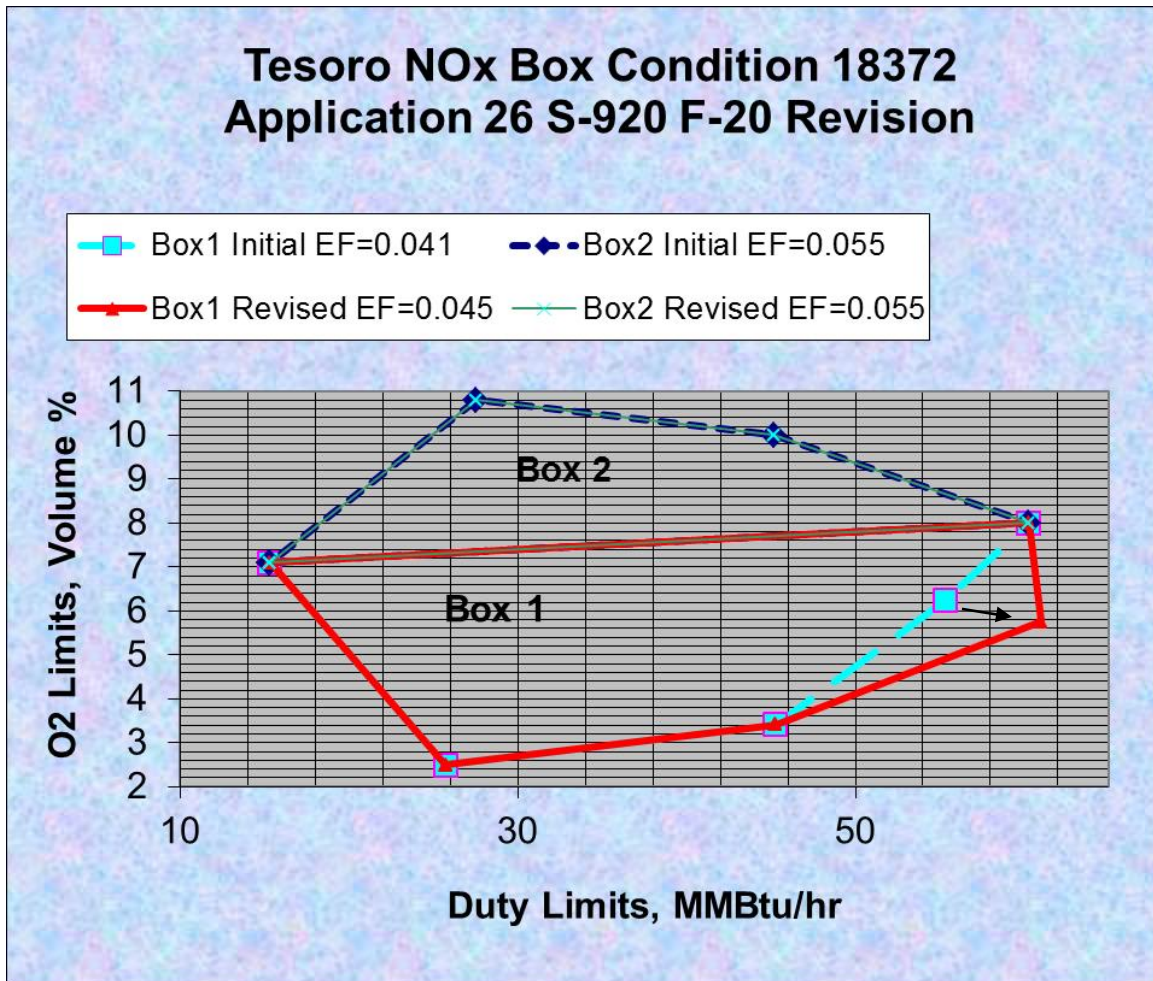
	0.055	7.1, 15.34	10.8, 27.53	8.0, 60.26	N/A	10.0, 45.15
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Tesoro is using two operating ranges as allowed by Condition 18372, Part 30.  
 The changes are supported by source tests reviewed by the Source Test Section.

This application is being processed as an administrative change in conditions even though there is an increase to the specified NOx emission factor for this unit. Tesoro completed the retroactive analysis to the time of the previous source test (12/9/2013) as required by Condition 18372, Part 32.A.2. This analysis show that there are two days where the higher emission factor for S-920 will result in daily emissions over the Regulation 9-10-301 limit. On the first occasion the excess was already reported (06N26) due to non-S920 changes. On the second occasion, the excess was reported in August 2014 (06R57) due to an increase from 0.03347 lb/MM to 0.3357 lb/MM. Round-off results in this second occasion to change from 0.033 lb/MM to 0.034 lb/MM. This change is insignificant and does not impact the decision to process the application administratively.

This is the fifth revision to the S-920 NOx Box, but only the first time the emission factor was increased, so a CEM is not required. Previous revisions were approved in Permit Applications 20359, 25580, 23339 and 26159. According to Engineering Policy approved 4/11/03 and included in Appendix B of the December 2003 Title V Statement of Basis, a CEM is only required if two source tests in a 5-year period exceed the NOx emission factor. However, a CEM will be installed on S-920 as part of the 9-10 monitoring plan approved by Enforcement October 1, 2014.

The following diagram summarizes the changes to the S-920 NOx Box:



### **EMISSIONS SUMMARY**

There are no changes in emissions due to this application. The emission factor change by this permit application will result in no impact on the overall facility limit of 0.033 lb/MMBtu required by Regulation 9-10-301.

### **PLANT CUMULATIVE INCREASE**

There are no net changes to the plant cumulative emissions.

### **TOXIC RISK SCREEN**

This proposed NOx Box change would not emit toxic compounds in amounts different that previously emitted. Therefore, a toxic risk screen is not required.

### **BEST AVAILABLE CONTROL TECHNOLOGY**

BACT is triggered for new or modified sources that emit criteria pollutants in excess of 10 lbs/day. However, Regulation 2-1-234 defines a modified source as one that results in an increase in daily or annual emissions of a regulated air pollutant. For this application, there is no change in emissions. Therefore, BACT does not apply.

**PLANT LOCATION**

According to the SCHOOL program, the closest school is Las Juntas Elementary, which is almost two miles from the facility.

**COMPLIANCE**

The change to the NOx Box will not change the compliance for Furnace S-920. Emissions from S-920 will continue to comply with all applicable regulations, including Regulation 6, Rule 1, Regulation 9, Rule 10, and 40 CFR 60 Subpart J.

The closest school is over a mile from the facility, so the Public Notice requirements of Regulation 2-1-214 do not apply.

This project is exempt from CEQA per Regulation 2-1-312.1 since there is no increase in emissions and no physical modifications. Form Appendix H has been submitted in support of the exemption.

Toxics, NESHAPS, BACT, and Offsets do not apply.

**CONDITIONS**

The NOx Box Condition 18372, will be modified as shown below. Only the substantive changes for the S-920 NOx Box points detailed in Part 31A are shown. All of the other parts of Condition 18372 remain unchanged by this application.

Condition 18372

- 31. Except as provided in part 31B & C, the owner/operator shall operate each source within the NOx Box ranges listed below at all times of operation. This part shall not apply to any source that has a properly operated and properly installed NOx CEM. (Regulation 9-10-502)

A. NOx Box ranges

Source No.	Emission Factor (lb/MMBtu)	Min O2 at Low Firing (O2% , MMBtu/hr)	Max O2 at Low Firing (O2% , MMBtu/hr)	Min O2 at High Firing (O2% , MMBtu/hr)	Mid O2 at Mid/High Firing (polygon) (O2% , MMBtu/hr)	Max O2 at High Firing (O2% , MMBtu/hr)
920	0.0454	2.5, 25.72	7.1, 15.34	3.41, 45.25	5.75, 60.97 <del>6.23, 55.3</del>	8.0, 60.26

Source No.	Emission Factor (lb/MMBtu)	Min O2 at Low Firing (O2% , MMBtu/hr)	Max O2 at Low Firing (O2% , MMBtu/hr)	Min O2 at High Firing (O2% , MMBtu/hr)	Mid O2 at Mid/High Firing (polygon) (O2% , MMBtu/hr)	Max O2 at High Firing (O2% , MMBtu/hr)
	0.055	7.1, 15.34	10.8, 27.53	8.0, 60.26	N/A	10.0, 45.15

The limits listed above are based on a calendar day averaging period for both firing rate and O2%.

## **RECOMMENDATION**

It is recommended that a Change of Conditions to the Permit to Operate be granted to Tesoro for:

**S-920 F-20 No. 2 HDS Charge Heater**

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Arthur P. Valla  
 Senior Air Quality Engineer

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Date  
 June 24, 2015

**Application 26522, S-1510 Delayed Coker Steam Ejectors**  
**ENGINEERING EVALUATION**  
**Tesoro Refining & Marketing Company LLC**  
**2461 Crocker Circle, Fairfield, CA 94533**  
**Plant Number: 14628**  
**Application Number: 26552**

## **BACKGROUND**

The Applicant has submitted an application for the following alteration:

**S-1510 Delayed Coker with 4 Coke Drums and Associated Equipment:**  
**Add two steam ejectors**

Tesoro installed the Delayed Coker (S-1510) in 2008 under permit application 14141. Application 21744 corrected emission calculations from S-1510 and the revised emissions were fully offset with 27.353 tons of POC in October 2011.

Delayed Coking is a batch process that converts residual oil from the vacuum and atmospheric towers into gas oil and petroleum coke. The residual oil is heated to its thermal cracking temperature in a heater that supplies the feed to a coke drum where the hydrocarbons thermally crack. As cracking takes place, gas oil and lighter fractions are generated and returned to the fractionator; longer chain hydrocarbons form solid coke particles that are deposited and remain in the coke drum until filled to a predetermined limit. Once the drum is filled it is steamed out to reduce the hydrocarbon content of the petroleum coke, and then quenched with water to cool it. The resulting vapors are routed to an enclosed blowdown system. The lighter stripped vapors (primarily methane and ethane) are routed to the No. 5 Gas Plant (S-1526) and the water is routed to the wastewater system. Once the quench is complete and the drum pressure reaches a predetermined level, the top of the drum is vented to the atmosphere through the Delayed Coker Steam Vent. The top and bottom heads of the coke drum are then removed and the solid petroleum coke is then cut from the coke drum with a high pressure water nozzle, where it falls into a pit and enters the coke handling system. The coke drum is then prepared to receive another batch of residual oil feed.

The Delayed Coker (S-1510) at Tesoro consists of two pairs of coke drums (4 drums total); each having a dedicated heater - S-1511 and S-1512. Each pair of coke drums operates in tandem; where once one coke drum is full of the solidified coke the residual oil feed from the furnace is switched to fill the other coke drum and the full drum undergoes decoking. So at any given time two drums are online being filled while the other two drums are offline undergoing decoking or being prepared to be switched back online. Tesoro indicates that each the coke drums fill on a 16 hour cycle and between the two systems there is a 9 hour cycle for venting to the enclosed blowdown system.

Due to the difficulties associated with monitoring and capturing emissions from the coking process the EPA is developing work practice standards for DCUs in place of emission limits for DCUs. The EPA Refinery Sector Rule (FR Vol. 79, No. 125) includes a MACT floor for DCU decoking operations to depressure to 2 psig or lower before venting is switched from the enclosed blowdown system to the atmosphere. The EPA's position is that there is a fixed quantity of steam that will be generated as the coke drum and its contents cool. A lower pressure set point requires the DCU to vent to the enclosed blowdown system for a longer period of time resulting in fewer emissions because more precursor organic compounds (POC) and hazardous air pollutants (HAP) will be recovered and/or controlled.

Currently Tesoro's coke drums are vented to atmosphere once the drum pressure reaches 5 psig. The new EPA limit requires lowering the drum pressure to 2 psig before venting to the atmosphere. Tesoro plans to install two steam ejectors in between the blowdown system and the No.5 gas plant to create a pressure differential that would lower the coke drum's internal pressure to 2 psig because the pressure of the No. 5 Gas Plant accumulator is less than or equal to 2 psig. Each steam ejector consists of a nozzle which discharges a high-speed pressure steam jet across a suction chamber connected to the coke drum head space.

The physical modification to add these steam ejectors to the blowdown system will include new and replaced piping and fugitive components in gas service. Tesoro estimates that 10 valves and 30 connectors will be added to the fugitive component count with this project. Since the depressure set point is changing, this project constitutes a change in the method of operation at the DCU (S-1510) and considered an alteration per Regulation 2-1-233.

## **EMISSION CALCULATIONS:**



The steam used in the steam ejectors is a new steam requirement for Tesoro which raises the possibility of increased combustion emissions to produce this additional steam. The steam will be supplied from the No. 6 Boiler (S-904) at Tesoro and/or Foster Wheeler Cogen plant (which is a separately permitted facility; not part of Tesoro's permit). The steam ejectors will use 2,350 lb/hr of steam (3.0 MMBTU/hr) and operate for 1-2 hours every 9 hours. The maximum impact on combustion emissions at Tesoro would occur if all of the steam is being supplied by Tesoro No. 6 Boiler. Application 23194 established the grandfathered potential to emit firing rate of this this Boiler at 700 MMBTU/hr. While Tesoro indicated that the minimum firing rate is 299 MMBTU/hr. The new steam requirement of 3.0 MMBTU/hr expressed as a percentage of overall firing capacity for 2 hours out of every 9 hours is summarized below:

Firing Rate (MMBTU/hr)	New Steam Requirement
700 (potential to emit limit)	0.09%
299 (minimum)	0.2%

Since the new steam requirement is such a small percentage of the potential to emit firing rate as well as the minimum firing rate, it will not result in an increase above the permitted level for No.6 Boiler, and is clearly not a debottlenecking. The No. 6 Boiler is not modified as a result of this application.

The vapors captured while the coke drums depressure from 5 psig to 2 psig will be vented to the No. 5 Gas Plant (S-1526) and represent a negligible increased throughput at S-1526. All emissions at the gas plant are fugitive and are not dependent on throughput so there will be no increase in emission at the gas plant from this project. However, there is a possible impact on the fuel gas sulfur content. The sulfur content concentration in the gas being sent to the gas plant is 3% and will not change because of this project.

The additional vapors captured are quantified the same way coke drum degassing emissions were calculated when the DCU was originally permitted. The calculation is based on source test data from Hovensa refinery in Croix, U.S. Virgin Islands. Based on the calculations (Attachment A) the amount of additional vapors to be sent to the No. 5 Gas Plant, rather than atmosphere is 0.719 lb moles hydrocarbon per cycle. Tesoro is permitted to operate 1,065 cycles per year (A/N 21744). The conversion to scf follows:

$$\frac{\left[ \frac{0.719 \text{ moles}}{\text{cycle}} \right] \left[ \frac{10.73 \text{ scf psi}}{^{\circ}\text{R lbmole}} \right] 528 \text{ } ^{\circ}\text{R}}{14.7 \text{ psi}} = 277 \text{ scf vapors to S-1526 per cycle}$$

Where:  $V = dnRT/dP$   
 $dn = \text{moles per cycle}$   
 $T = 68 \text{ } ^{\circ}\text{F} (528 \text{ } ^{\circ}\text{R})$   
 $R = \text{gas constant} = \frac{10.73 \text{ ft}^3 \text{ psi}}{^{\circ}\text{R lbmole}}$   
 $dP = 14.7 \text{ psi}$

The No. 5 Gas Plant, S-1526, has a Title V limit of 3.46 MMscfh which is based on the capacity of the two wet gas compressors. Adding 277 scf of vapor to the gas plant is 0.008%<sup>1</sup> of this hourly capacity. At 3% sulfur concentration, the increase in the amount of sulfur vented to S-1526 would be 0.0216 moles per cycle or 0.69 lb<sup>2</sup> of sulfur per cycle. This equates to a total annual increase of 736 pounds of sulfur<sup>3</sup> going to S-1526 which will not have a negative impact on the existing sulfur removal capacity of the gas plant operations.

Additionally, the vapors captured while the coke drums depressure from 5 psig to 2 psig represent a decrease in emissions from the DCU, S-1510. At 0.719 moles of hydrocarbon captured per cycle and assuming the majority of vapor is ethane this reduction is approximately 11.5 tons HC per year<sup>4</sup>. Tesoro is not requesting that Emission Reduction Credits be banked or returned to Tesoro.

<sup>1</sup>  $\left[ \frac{277 \text{ scf}}{3,340,000 \text{ scf}} \right] = 0.00008$

<sup>2</sup>  $(0.0216 \text{ moles S})(32 \text{ lb S/lb mole S}) = 0.69 \text{ lb S}$

<sup>3</sup>  $(0.69 \text{ lb S/cycle})(1,065 \text{ cycles/yr}) = 736 \text{ lb S per year}$

<sup>4</sup>  $(0.719 \text{ lb moles HC/cycle})(30 \text{ lb HC/ lb mole})(1 \text{ ton}/2,000 \text{ lb})(1,065 \text{ cycles/yr}) = 11.5 \text{ tons HC per year}$

Currently Tesoro's 61FF report identifies the blowdown settling drum V-10 as a benzene waste source and this project will increase flow to V-10. Tesoro attests that any increase in benzene at V-10 will be slight to immeasurable and since they are well below their 6 BQ limit there will be no impact to applicability, compliance or reporting requirements of 61FF Benzene Waste Operations NESHAP (BWON).

The only increase in emissions will be from the additional fugitive components.

### Criteria pollutants

For Fugitive Components:

The increase in fugitive component count after installing the steam ejectors will be 10 valves and 30 connectors. The Correlation Equation Method from the CAPCOA Implementation Guideline for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities (Feb. 1999) is used to calculate the emissions from the additional fugitive components. The emissions factors are derived from the correlation equation in Table IV-3 of the CAPCOA Guidance. Emission factors and emissions are summarized below.

	Max ppm	Emission Factors at Max ppm (lb/day)	Pegged Leakers	
			Reg. 8-18-306.2 (%)	CAPCOA Guidance (lb/day)
Valves	100	0.00375	0.3%	0.1
Flanges	100	0.00620	0.3%	0.1
Connectors	100	0.00240	0.3%	0.1
Pumps	500	0.12820	1.0%	0.2
PSVs	100	0.00885	1.0%	0.2

Since the number of components being modified is relatively small the emissions for this project are calculated without the allowance for the maximum allowable non-repairable fugitive components, identified as pegged leakers, per Regulation 8-18-306.2.

Emissions				
Component	Total Count	Emission Factor (lbs/day/source)	Emissions (lbs/day)	Emissions (lbs/yr)
Valves	10	0.004	0.04	13.69
Connectors	30	0.002	0.07	26.28
<b>Totals</b>	40		<b>0.11</b>	<b>39.97</b>

### Toxic Pollutants

Since there is no increase in overall emissions it is not necessary to quantify toxic emissions.

### Cumulative Increase

Since the decrease in emissions resulting from this project exceeds the increase there is no change in the Cumulative Increase for this application.

## STATEMENT OF COMPLIANCE:

### Regulation 2 - Permits, Rule 1 – General Requirements

#### *Exemption, Miscellaneous Equipment (2-1-128)*

This section states that the following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

128.21 Modification, replacement, or addition of fugitive components (e.g. valves, flanges, pumps, compressors, relief valves, process drains) at existing permitted process units at petroleum refineries, chemical plants, bulk terminals or bulk plants, provided that the cumulative emissions from all additional components installed at a given process unit during any consecutive twelve month period do not exceed 10 lb/day, and that the components meet applicable requirements of Regulation 8 rules.

**Definition, Alter (2-1-233)**

To make any physical change to, or change in the method of operation of, a source which may affect emissions. Such changes require a permit to operate, and may require permit conditions, whether or not the alteration results in an emission increase.

>The addition of steam ejectors to reduce the depressure set point from 5 psig to 2 psig is considered a change in the method of operation at the DCU (S-1510). Therefore, notwithstanding the 2-1-128.21 exemption, this project is considered an alteration and requires a permit to operate.

**Ministerial Projects (Section 2-1-311)**

An application that is classified as ministerial is exempt from the CEQA requirement of *Section 2-1-310 Applicability of CEQA*. To be classified as ministerial the engineering evaluation and basis for approval or denial of the permit application is subject to specific procedures, fixed standards and objective measurements set forth in the District's Permit Handbook and BACT/TBACT Workbook.

>Chapter 3.4 *Petroleum Refinery Fugitive Emissions* of the District's Permit Handbook sets forth evaluation guidelines and was used to evaluate this application. As such, this application is ministerial and exempt from CEQA review with regards to air quality.

**Public Notice, Schools (Section 2-1-412)**

A new or modified source located within 1,000 feet of the outer boundary of a K-12 school site which results in the increase in emissions of a toxic air contaminant in Table 2-5-1 of *Regulation 2, Rule 5 New Source Review of Toxic Air Contaminants* shall prepare and distribute a public notice in accordance with subsections 412.1 and 412.2 of *Regulation 2, Rule 1 General Requirements*.

>According to the District's Databank program school.pub there are no K-12 schools within 1,000 feet of this facility.

**Regulation 2 - Permits, Rule 2 – New Source Review**

**Best Available Control Technology Requirement (Section 2-2-301)**

Any new or modified source that has the potential to emit 10.0 pounds or more per highest day of precursor organic compounds (POC), non-precursor organic compounds (NPOC), nitrogen oxides (NOx), sulfur dioxide (SO<sub>2</sub>), PM<sub>10</sub> or carbon monoxide (CO) is required to use Best Available Control Technology as defined in *Regulation 2-2-206 Best Available Control Technology (BACT)*.

>This project does not involve new or modified sources and therefore the requirements of this section do not apply to this application.

**Offset Requirements, POC and NOx (Section 2-2-302)**

Federally enforceable emission offsets shall be provided for any new or modified source at a facility that that emits or will be permitted to emit more than 10 tons per year, on a pollutant specific basis, of POC or NOx. In addition, emission offsets shall be provided from the District's Small Facility Bank at a 1.0 to 1.0 ratio for new or modified sources at a facility which 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. Offsets shall be provided for the emissions from the new or modified source and any pre-existing cumulative increase that has not yet been offset.

>This project does not involve new or modified sources and therefore the requirements of this section do not apply to this application. Fugitive emissions from additional valves and connectors are "offset" by the emission decrease due to capturing more hydrocarbons before venting coke drums to atmosphere. This emission decrease is not being banked or returned to Tesoro as part of this application.

**Offset Requirement, PM<sub>10</sub> and Sulfur Dioxide, NSR (2-2-303)**

*Regulation 2-2-303* establishes emission offset requirements for PM<sub>10</sub> and Sulfur Dioxide from new or modified sources located at a Major Facility.

>This project does not emit PM<sub>10</sub> or SO<sub>2</sub> and therefore Regulation 2-2-303 does not apply.

***Prevention of Significant Deterioration (PSD) (Section 2-2-304)***

New major facilities and major modifications at major facilities must meet modeling requirements of *Regulation 2-2-304 PSD Requirement*.

>Tesoro is not a new major facility; nor is this project a major modification of a major facility and therefore PSD modeling is not required for this application.

**Regulation 2- Permits, Rule 5 New Source Review of Toxic Air Contaminants**

***General (2-5-100)***

*Regulation 2-5-101 –Description* states that any new or modified source of toxic air contaminant (TAC) shall be evaluated for potential public exposure and health risk. *Regulation 2-5-110 Exemption, Low Emission Levels* provides an exemption if, for each toxic air contaminant, the increase in emissions from the project is below the trigger levels listed in Table 2-5-1 of Regulation 2-5.

>Since there is no increase in emissions from this project it is exempt from the requirements of Regulation 2-5.

***Best Available Control Technology for Toxics (TBACT) Requirement (2-5-301)***

The applicant shall apply TBACT to any new or modified source of TACs where the source risk is a cancer risk greater than 1.0 in one million and/or a chronic hazard index greater than 0.20.

>This project does not involve new or modified sources and therefore the requirements of this section do not apply to this application.

**Regulation 3 – Fees**

***Exemption, Abatement Devices (3-103)***

Installation, modification, or replacement of abatement devices on existing sources are subject to fees pursuant to Section 3-302.3.

***Alteration (3-304)***

An applicant to alter an existing permitted source shall pay only the filing fee, provided that the alteration does not result in an increase in emissions of any regulated air pollutant.

>Fees are as follows:

S-1510 = \$ 441  
Total = \$ 441

**Regulation 8 - Organic Compounds, Rule 18 – Equipment Leaks**

***Standards (8-18-301through 8-20-304)***

A person shall not use any valve, pump, or connector that leaks total organic compounds in excess of the following limits:

Valve	100 ppm
Pump	500 ppm
Connector (Flange)	500ppm

>Tesoro has been and will continue to and comply with these limits.

**Regulation 10 – Standards of Performance for New Stationary Sources**

***New Source Performance Standards (NSPS)***

Any new or modified source is required to comply with *Regulation 10, Standard of Performance for New Stationary Sources* – which is Title 40, Part 60 of the Code of Federal Regulation incorporated by reference.

> This project does not involve new or modified sources and therefore the requirements of this section do not apply to this application.

**Regulation 11 – National Emission Standards for Hazardous Air Pollutants**

***National Emission Standards for Hazardous Air Pollutants (NESHAP)***

40 CFR Part 63 sets emission and/or performance standards for hazardous pollutants.

> Since there is no increase in emissions from this project it is not subject to NESHAP.

**Conditions**

This project does not require changes to the existing conditions governing S-1510.

**Recommendation**

I recommend that an Authority to Construct be issued for the following alterations:

**S-1510 Delayed Coker with 4 Coke Drums and Associated Equipment:**

**Add two steam ejectors**



\_\_\_\_\_  
Anne C. Werth

\_\_\_\_\_  
October 14, 2014

**Application 27030, S-1517 Coker Flare Change in Conditions  
EVALUATION REPORT  
TESORO REFINING AND MARKETING COMPANY  
S-1517 Coker Flare Pilot and Purge Gas  
APPLICATION 27030, PLANT 14628**

**BACKGROUND**

The Tesoro Refining and Marketing Company (Tesoro) is applying for a Change in Conditions to its Permit to Operate to increase the pilot gas and purge gas rates for:

**S-1517 Coker Flare.**

Pursuant to Condition 23129, Parts 53, the pilot gas is limited to 1,314,000 scf per consecutive 12-month period, as permitted in Tesoro NSR Application 14141. Purge gas was inadvertently left out of Application 14141 and Tesoro NSR Permit Application 16389 permitted the purge gas for S-1517 to 8,584,800 scf of natural gas. Condition 23129, Part 56 applies to the purge gas.

Tesoro proposes to increase the S-1517 pilot and purge gas as shown in the following table:

Source (S-1517)	Current Limit	Proposed Limit
Pilots	1.314 MMScf per consecutive 12 months natural gas to pilots	3.504 MMScf per consecutive 12 months natural gas to pilots
Purge	8.585 MMscf / consecutive 12 months natural gas to flare purge	10.731 MMscf / consecutive 12 months natural gas to flare purge

Tesoro has also requested that the two limits be combined into one limit totaling 14.235 MMscf.

In addition, the following two sources are no longer in service:

- S-659 Coke Storage.**
- S-660 Coke Storage.**

Permit Condition 23129 needs to be updated to reflect the removal of these sources as follows:

Coker Silos (S-1514 and S-1515 abated by A-1514 and A-1515, respectively) ~~and (S-659 and S-660 Storage Tanks, both abated by A-9 Electrostatic Precipitator)~~

38. The owner/operator shall not operate ~~S-659, S-660~~, S-1514, S-1515, ~~A-9~~, A-1514, and A-1515 unless the visible particulate emissions from the listed equipment are less than or equal to Ringelmann Number 1.0 except for three minutes in any consecutive 60-minutes period, or result in fallout on adjacent

property in such quantities as to cause a public nuisance per Regulation 1- 302.  
(basis: Regulation 6-1, and Regulation 1)

39. The owner/operator shall not operate S-1514 and S-1515 unless all particulate emissions from the silos are vented to A-1514 and A-1515, respectively. ~~The owner/operator shall not operate S-659 and S-660 unless all particulate emissions from the storage tanks are vented to A-9.~~ Particulate emissions from ~~A-9 Precipitator~~, A-1514 and A-1515 baghouses shall not exceed 0.01 grains/dscf each. (basis: cumulative increase)

40. The owner/operator shall install, maintain, and operate an approved bag failure warning device such as manometer or equivalent on A-1514 and A-1515. ~~The Owner/Operator shall install an approved ESP failure warning device on A-9.~~  
(Basis: Cum Inc)

41. The owner/operator of each abatement device A-1514 or A-1515 shall not exceed 4,200 scfm of exhaust air flow rate without District approval. ~~The owner/operator of abatement device A-9 shall not exceed 550 scfm of exhaust air flow rate without District approval.~~ (basis: cumulative increase)

42. The owner/operator of ~~S-659, S-660~~, S-1514 and S-1515 shall record and keep the following records on site and make the log available for District inspection for a minimum period of 5 years from the date on which a record was made. (basis: cumulative increase)

- a. Total monthly hours of operation, summarized on a consecutive 12-month period.

## EMISSIONS CALCULATIONS

### A. Current Emissions

The currently permitted S-1517 pilot and purge gas emissions are as follows.

Basis:

Source Information	Flare Pilots	Flare Purge
Permit Application	14141	16389
Nat. gas, SCFH per pilot	50	
No. of pilots	3	
Pilot gas volume, SCFH	150	
Purge Gas Volume, SCFH		980
Nat. gas heat value, Btu/SCF	1050	1050
Gas Consumption Rate, MMBtu/hr	0.16	1.03

Permitted Emissions:

Emissions (lb/day)	Flare Pilots (lb/day)	Flare Purge (lb/day)	Flare Total (lb/day)	Flare Total lb/hr	Flare Total lb/yr
Permit Application	14141	16389	16389	16389	16389
NOx	.338	2.211	2.5490		930
SO2	.0022	0.0149	0.0171		6.24
PM10	0.0274	0.1776	0.2050		74.8
POC	0.020	0.1281	0.1481		54.1
CO	0.144	0.9409	1.0849		396
Benzene				3.7E-6	0.0208
Formaldehyde				8.48E-5	0.742
Toluene				3.84E-6	0.0336

**B. Proposed Emissions**

Basis:

Source Information	Flare Pilots	Flare Purge
Nat. gas, SCFH per pilot	133.3	
No. of pilots	3	
Pilot gas volume, SCFH	400	
Purge Gas Volume, SCFH		1225
Total Gas Volume, MMSCFY	3.504	10.731
Nat. gas heat value, Btu/SCF	1020	1020
Gas Consumption Rate, MMBtu/hr	0.408	1.250

New S-1517 Annual Emissions:

Pollutant	AP-42 Natural Gas EF Lb/MMBtu	Flare Pilots Lb/yr	Flare Purge Lb/yr	Flare Total Lb/yr	Flare Total tons/yr
NOx	0.092	328.8	1007.0	1,336	0.668
SO2	0.00059	2.11	6.46	8.6	0.004
PM10	0.00745	26.63	81.54	108.2	0.054
POC	0.00539	19.26	59.00	78.3	0.039
CO	0.0392	140.16	429.24	569	0.285

Note: Some Emission Factors specified above are slightly different that those used in Applications 14141 and 16389 because the applications used 1050 Btu/SCF for natural gas, and AP-42 uses 1020 Btu/SCF.

New S-1517 Daily Emissions:

Pollutant	Emissions Lb/yr	Emissions lb/day
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NOx	1,336	3.66
SO2	8.6	0.02
PM10	108.2	0.30
POC	78.3	0.21
CO	569	1.56

S-1517 Emissions Increases:

Emissions (lb/yr)	Current Emissions	New Emissions	Increase	Increase ton/yr
NOx	930	1,336	406	0.2028
SO2	6.24	8.6	2	0.0012
PM10	74.8	108.2	33	0.0167
POC	54.1	78.3	24	0.0121
CO	396	569	173	0.0867

S-1517 Daily Emissions Increases:

Emissions	Increase Lb/yr	Increase lb/day
NOx	406	1.111
SO2	2	0.006
PM10	33	0.091
POC	24	0.066
CO	173	0.475

**PLANT CUMULATIVE INCREASE**

Emissions (tons/yr)	Current Emissions	Application Emissions	Increase
NOx	0	0.203	0.203
SO2	0	.001	0.001
PM10	.993	.017	1.010
POC	0	0.012	0.012
CO	14.308	0.401	14.709

**TOXIC RISK SCREEN**

This proposed Change in Conditions would not emit toxic compounds in amounts that require a risk screen, as shown below:

Permit Evaluation and Statement of Basis, Renewed Permit: Site B5728 & B5729, Tesoro Refining and Marketing Company  
Golden Eagle Refinery, 150 Solano Way and 1750 Marina Vista Way, Martinez, CA 94553

Substance	lb/MMBTU <sup>(1)</sup>	Coker Flare Pilot Emissions Increases (lb/Year)		Coker Flare Purge Emissions Increases (lb/Year)		Sum of Project Emissions Increases (lb/Year)		BAAQMD Regulation 2-5 Triggers (lb/Year)		Project TAC Emissions Exceed BAAQMD Regulation 2-5 Trigger?
		lb/hour	lb/year	lb/hour	lb/year	lb/hour	lb/year	lb/hour	lb/year	
Acenaphthene	2.36E-09	6.1E-10	5.4E-06	6.1E-10	5.3E-06	1.2E-09	1.1E-05			No
Acenaphthylene	1.55E-09	4.0E-10	3.5E-06	4.0E-10	3.5E-06	8.0E-10	7.0E-06			No
Acetaldehyde	1.53E-05	4.0E-06	3.5E-02	3.9E-06	3.4E-02	7.9E-06	6.9E-02	1.00E+00	3.80E+01	No
Antimony	5.17E-07	1.3E-07	1.2E-03	1.3E-07	1.2E-03	2.7E-07	2.3E-03			No
Arsenic	8.50E-07	2.2E-07	1.9E-03	2.2E-07	1.9E-03	4.4E-07	3.9E-03	4.40E-04	7.20E-03	No
Barium <sup>(2)</sup>	0.00E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00			No
Benzene	6.47E-05	1.7E-05	1.5E-01	1.7E-05	1.5E-01	3.3E-05	2.9E-01	2.90E+00	3.80E+00	No
Benzo(a)anthracene	3.21E-08	8.3E-09	7.3E-05	8.3E-09	7.2E-05	1.7E-08	1.5E-04		6.90E-03	No
Benzo(a)pyrene	8.96E-08	2.3E-08	2.0E-04	2.3E-08	2.0E-04	4.6E-08	4.1E-04		6.90E-03	No
Benzo(b)fluoranthene	4.04E-08	1.1E-08	9.2E-05	1.0E-08	9.1E-05	2.1E-08	1.8E-04		6.90E-03	No
Benzo(g,h,i)perylene <sup>(2)</sup>	0.00E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		6.90E-03	No
Benzo(k)fluoranthene	2.41E-08	6.3E-09	5.5E-05	6.2E-09	5.4E-05	1.2E-08	1.1E-04		6.90E-03	No
Beryllium <sup>(2)</sup>	0.00E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00			No
Cadmium	9.88E-07	2.6E-07	2.3E-03	2.5E-07	2.2E-03	5.1E-07	4.5E-03		2.60E-02	No
Chromium (Hex) <sup>(2)</sup>	0.00E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		7.70E-04	No
Chromium (Total)	1.07E-06	2.8E-07	2.4E-03	2.8E-07	2.4E-03	5.5E-07	4.8E-03			No
Chrysene	1.63E-09	4.2E-10	3.7E-06	4.2E-10	3.7E-06	8.4E-10	7.4E-06		6.90E-03	No
Copper	4.21E-06	1.1E-06	9.6E-03	1.1E-06	9.5E-03	2.2E-06	1.9E-02	2.20E-01		No
Dibenz(a,h)anthracene <sup>(2)</sup>	0.00E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		6.90E-03	No
Ethylbenzene	3.02E-05	7.9E-06	6.9E-02	7.8E-06	6.8E-02	1.6E-05	1.4E-01		4.30E+01	No
Fluoranthene	3.06E-09	8.0E-10	7.0E-06	7.9E-10	6.9E-06	1.6E-09	1.4E-05			No
Fluorene	1.08E-08	2.8E-09	2.5E-05	2.8E-09	2.4E-05	5.6E-09	4.9E-05			No
Formaldehyde	1.11E-04	2.9E-05	2.5E-01	2.9E-05	2.5E-01	5.7E-05	5.0E-01	1.20E-01	1.80E+01	No
Hydrogen Sulfide <sup>(2)</sup>	0.00E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.30E-02	3.90E+02	No
Indeno(1,2,3-cd)pyrene	1.03E-07	2.7E-08	2.3E-04	2.6E-08	2.3E-04	5.3E-08	4.7E-04		6.90E-03	No
Lead	4.89E-06	1.3E-06	1.1E-02	1.3E-06	1.1E-02	2.5E-06	2.2E-02		3.20E+00	No
Manganese	6.81E-06	1.8E-06	1.6E-02	1.8E-06	1.5E-02	3.5E-06	3.1E-02		3.50E+00	No
Mercury	1.80E-07	4.7E-08	4.1E-04	4.6E-08	4.1E-04	9.3E-08	8.2E-04	1.30E-03	2.70E-01	No
Naphthalene	3.13E-07	8.1E-08	7.1E-04	8.1E-08	7.1E-04	1.6E-07	1.4E-03		3.20E+00	No
Nickel	9.42E-06	2.4E-06	2.1E-02	2.4E-06	2.1E-02	4.9E-06	4.3E-02	1.30E-02	4.30E-01	No
Phenanthrene	1.46E-08	3.8E-09	3.3E-05	3.8E-09	3.3E-05	7.6E-09	6.6E-05			No
Phenol	5.63E-06	1.5E-06	1.3E-02	1.4E-06	1.3E-02	2.9E-06	2.6E-02	1.30E+01	7.70E+03	No
Phosphorus <sup>(2)</sup>	0.00E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00			No
Propylene	2.17E-06	5.6E-07	4.9E-03	5.6E-07	4.9E-03	1.1E-06	9.8E-03		1.20E+05	No
Pyrene	2.48E-09	6.4E-10	5.6E-06	6.4E-10	5.6E-06	1.3E-09	1.1E-05			No
Selenium	1.96E-08	5.1E-09	4.5E-05	5.0E-09	4.4E-05	1.0E-08	8.9E-05		7.70E+02	No
Silver	1.61E-06	4.2E-07	3.7E-03	4.1E-07	3.6E-03	8.3E-07	7.3E-03			No

Substance	lb/MMBTU <sup>(1)</sup>	Coker Flare Pilot Emissions Increases (lb/Year)		Coker Flare Purge Emissions Increases (lb/Year)		Sum of Project Emissions Increases (lb/Year)		BAAQMD Regulation 2-5 Triggers (lb/Year)		Project TAC Emissions Exceed BAAQMD Regulation 2-5 Trigger?
		lb/hour	lb/year	lb/hour	lb/year	lb/hour	lb/year	lb/hour	lb/year	
Thallium <sup>(2)</sup>	0.00E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00			No
Toluene	1.07E-04	2.8E-05	2.4E-01	2.8E-05	2.4E-01	5.5E-05	4.8E-01	8.20E+01	1.20E+04	No
Xylene (Total)	3.73E-05	9.7E-06	8.5E-02	9.6E-06	8.4E-02	1.9E-05	1.7E-01	4.90E+01	2.70E+04	No
Zinc	2.08E-05	5.4E-06	4.7E-02	5.4E-06	4.7E-02	1.1E-05	9.4E-02			No

**BEST AVAILABLE CONTROL TECHNOLOGY**

BACT is triggered for new or modified sources that emit criteria pollutants in excess of 10 lbs/day. For this application, there is no increase in emissions that is greater than 10 lb/day. Therefore, BACT does not apply.

**OFFSETS**

Pursuant to Regulation 2, Rule 2, NOx, POC and PM10 emissions must be offset.

- (0.203 tons NOx)(1.15) = 0.233 tons NOx ERCs
- (0.012 tons POC)(1.15) = 0.014 tons POC ERCs
- (1.010 tons PM10)(1.00) = 1.010 tons PM10 ERCs

Tesoro will provide the required offsets from Banking Certificates 915, 968 and 1206

**Banking Certificate: 968**

Application no: 13047  
 Final Disposition: Certificate Issued 04/17/06  
 Reduction Location: Lesaffre Yeast Corporation [Oakland]  
 Certificate owner: Tesoro Refining & Marketing Company  
 Contact: Sharon Lim, tel: (925) 335-3467  
 Mailing address: 150 Solano Way, Martinez, CA 94553  
 Transfer from #: 940  
 Original cert.#: 898

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 tons per  
 year    PM25        POC            NOX            SO2            CO            NPOC        P  
 M10

Requested 000	.000	28.407	.000	.000	.000	.
Approved 000	.000	28.319	.088	.000	.000	.
Applic:14919 Withdrawal 000	.000	1.620	.000	.000	.000	.
Applic:14894 Withdrawal 000	.000	.023	.000	.000	.000	.
Applic:14917 Withdrawal 000	.000	.006	.000	.000	.000	.
Applic:12592 Withdrawal 000	.000	.076	.000	.000	.000	.
Applic:16125 Withdrawal 000	.000	1.205	.000	.000	.000	.
Applic:16389 Withdrawal 000	.000	.018	.000	.000	.000	.
Applic:16850 Withdrawal 000	.000	.045	.000	.000	.000	.
Applic:15944 Withdrawal 000	.000	.002	.000	.000	.000	.
Applic:16822 Withdrawal 000	.000	.348	.000	.000	.000	.
Applic:13228 Withdrawal 000	.000	.037	.000	.000	.000	.
Applic:18715 Withdrawal 000	.000	.014	.000	.000	.000	.
Applic:14141 Withdrawal 000	.000	7.360	.000	.000	.000	.
Applic:21023 Withdrawal 000	.000	.369	.000	.000	.000	.

Applic:12205						
Withdrawal	.000	5.302	.000	.000	.000	.
000	.000					
Applic: 2298						
Withdrawal	.000	.008	.000	.000	.000	.
000	.000					
Applic:21713						
Withdrawal	.000	.003	.052	.000	.000	.
000	.000					
Applic:20968						
Withdrawal	.000	.075	.000	.000	.000	.
000	.000					
Applic:22152						
Withdrawal	.000	.001	.036	.000	.000	.
000	.000					
Applic:22615						
Withdrawal	.000	.079	.000	.000	.000	.
000	.000					
Applic:22823						
Withdrawal	.000	.476	.000	.000	.000	.
000	.000					
Applic:23322						
Withdrawal	.000	2.744	.000	.000	.000	.
000	.000					
Applic:25942						
Withdrawal	.000	.003	.000	.000	.000	.
000	.000					
<hr/>						
Balance	.000	8.505	.000	.000	.000	.
000	.000					

Banking Certificate: 1206

Application no: 21731  
 Final Disposition: Certificate Issued 05/06/10  
 Reduction Location: Tesoro Refining and Marketing  
 Company [Pittsburg]  
 Certificate owner: Tesoro Marketing and Refining  
 Company  
 Contact: Wilma Dreessen, tel: (925) 228-  
 1220  
 Mailing address: 150 Solano Way, Martinez, CA 94553

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tons per year M10	PM25	POC	NOX	S02	CO	NPOC	P
Requested 000	26.671	.000	.000	.000	.000	.000	.
Approved 000	4.010	?	.000	.000	.000	.000	.
Balance 000	4.010	?	.000	.000	.000	.000	.

Banking Certificate: 915

Application no: 8454  
 Final Disposition: Certificate Issued 12/09/03  
 Condition #: 18379  
 Reduction Location: Ultramar, Inc [Martinez]  
 Certificate owner: Tesoro Refining & Marketing Company  
 Contact: Sharon Lim, tel: (925) 335-3467  
 Mailing address: 150 Solano Way, Martinez, CA 94553

Transfer from #: 892  
 Original cert. #: 891

tons per year NPOC	PM25 PM10	POC	NOX	S02	CO
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Requested  
.000 .000

Approved  
.000 .327

Applic:14917  
Withdrawal  
.000 .000

Applic:21023

Withdrawal	.000	.000	.000	.000	.000
.000	.318				
Applic:23322					
Withdrawal	.000	.000	.000	.260	.000
.000	.000				
Applic: 2813					
Withdrawal	.000	.000	.000	.793	.000
.000	.000				
Applic:14917					
Withdrawal	.000	.000	.000	.006	.000
.000	.000				
Applic:25942					
Withdrawal	.000	.000	.193	.000	.000
.000	.000				

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Balance	?	.000	9.303	3.525	2.938
.000	.009				

The withdrawal from Bank 915 is in compliance with Permit Condition 18379:

COND# 18379 -----

Application #3180  
 Plant #14628

S-940 Industrial Boiler; #1 Boiler @ 4 Boiler House,  
 Maximum Firing Rate: 150 MMBtu/hr

- S
- The emission reductions quantified pursuant to banking application #3180 granted for the permanent closure of 940 shall only be used to offset emission increases occurring at the Avon refinery located at 150 Solano Way in Martinez, California and may be used for no other purpose.  
 (basis: Regulation 2, Rule 4, Section 302.1)

**PLANT LOCATION**

According to the SCHOOL program, the closest school is Las Juntas Elementary, which is almost two miles from the facility.

## COMPLIANCE

The proposed Change in Conditions will not change the compliance for Flare S-1517. Tesoro will continue to comply with all applicable regulations, including Regulation 6, Rule 1, Regulation 12, Rules 11 and 12, and 40 CFR 60 Subpart J.

The closest school is over a mile from the facility, so the Public Notice requirements of Regulation 2-1-214 do not apply.

This project is exempt from CEQA per Regulation 2-1-312.6. There is no expansion of the S-1517 source beyond the 24,500MM Btu/hr currently permitted. This application only increases the permitted purge and pilot gas for S-1517, a minor alteration of an existing source involving negligible expansion of use. Form Appendix H has been submitted in support of the exemption.

312.6 Permit applications relating exclusively to the repair, maintenance or minor alteration of existing facilities, equipment or sources involving negligible or no expansion of use beyond that previously existing.

This project is also exempt from CEQA because the District's decision on the application was ministerial (CEQA § 21080(b)(1)); and because there is no possibility of a significant effect on the environment resulting from the District's action (CEQA Guidelines § 15061(b)(3)). A Notice of Exemption will be posted for public information.

Toxics and NESHAPS do not apply.

## CONDITIONS

The Tesoro Condition 23129 will be modified as shown below. Only the changes for the parts pertaining to the Coker Silos (Parts 38 through 42) and to The S-1517 Flare (Parts 50 through 57) are shown. All of the other parts of Condition 23129 remain unchanged by this application.

Condition 23129

Coker Silos (S-1514 and S-1515 abated by A-1514 and A-1515, respectively) ~~and (S-659 and S-660 Storage Tanks, both abated by A-9 Electrostatic Precipitator)~~

38. The owner/operator shall not operate ~~S-659, S-660, S-1514, S-1515, A-9, A-1514, and A-1515~~ unless the visible particulate emissions from the listed equipment are less than or equal to Ringelmann Number 1.0 except for three minutes in any consecutive 60-minutes period, or result in fallout on adjacent property in such quantities as to cause a public nuisance per Regulation 1- 302. (basis: Regulation 6-1, and Regulation 1)



39. The owner/operator shall not operate S-1514 and S-1515 unless all particulate emissions from the silos are vented to A-1514 and A-1515, respectively. ~~The owner/operator shall not operate S-659 and S-660 unless all particulate emissions from the storage tanks are vented to A-9.~~ Particulate emissions from ~~A-9 Precipitator~~, A-1514 and A-1515 baghouses shall not exceed 0.01 grains/dscf each. (basis: cumulative increase)

40. The owner/operator shall install, maintain, and operate an approved bag failure warning device such as manometer or equivalent on A-1514 and A-1515. ~~The Owner/Operator shall install an approved ESP failure warning device on A-9.~~ (Basis: Cum Inc)

41. The owner/operator of each abatement device A-1514 or A-1515 shall not exceed 4,200 scfm of exhaust air flow rate without District approval. ~~The owner/operator of abatement device A-9 shall not exceed 550 scfm of exhaust air flow rate without District approval~~ (basis: cumulative increase)

42. The owner/operator of ~~S-659, S-660~~, S-1514 and S-1515 shall record and keep the following records on site and make the log available for District inspection for a minimum period of 5 years from the date on which a record was made. (basis: cumulative increase)  
a. Total monthly hours of operation, summarized on a consecutive 12-month period.

#### Flare S-1517

50. The owner/operator of S-1517 shall not exceed Ringelmann Number 1.0 for three minutes in any consecutive 60-minutes period or result in fallout on adjacent property in such quantities as to cause a public nuisance per Regulation 1-302. (basis: Regulation 6-1, and Regulation 1)

51. The owner/operator of S-1517 shall use steam in the flare to minimize smoking. (basis: BACT)

52. The owner/operator of S-1517 shall have a hydrocarbon destruction efficiency of at least 98.5 wt.% POC on a mass basis: (basis: BACT)

53. The owner/operator of S-1517 shall not exceed ~~14,235,000~~1,314,000 standard cubic feet of natural gas for flare purge and pilots in any consecutive 12-month period. (basis: cumulative increase)

54. The owner/operator shall comply with the requirements of 40 CFR 60, Subpart J. (basis: NSPS 40 CFR 60, Subpart J)

55. The owner/operator of S-1517 shall install H<sub>2</sub>S continuous monitoring and recording system to verify compliance with the requirement of Regulation 12-11. The owner/operator shall maintain the equipment in accordance with manufacturer's recommendations. (basis: Regulation 12, Rule 11)

56. The owner/operator of S-1517 shall fire only natural gas at all flare pilots and purge gas. (basis: cumulative increase)

57. The owner/operator shall maintain all records and reports required by this permit in a District-approved log. The following records shall be kept on site and made available for District inspection for a period of at least 5 years from the date on which a record is made. (basis: Regulation 2-6-501)

a. The continuous H<sub>2</sub>S concentration at source S-1517.

b. Total daily flow rate of the gas through the flare, summarized in a consecutive 12-month period.

In addition, Condition 19528, Part 14a, will be deleted:

14a. ~~Deleted. (A-9 Precipitator removed from service.) Effective June 1, 2004, Permittee/Owner/Operator shall conduct a daily visual inspection at A-9 Coke Silo Precipitator for any emission that is greater than or equal to 20% opacity for more than 3 minutes in any hour. (basis: Regulation 6-1-302)~~

## **TITLE V PERMIT**

This facility is a major facility that operates pursuant to, and in compliance with, a federal operating permit, aka Title V permit, pursuant to Regulation 2, Rule 6, Major Facility Review. The only substantial change to this permit would be a revision of Condition 23129, and Table VII-C.2.1. In addition, S-659 and S-660 Tables IV-E.2 and VII-E.2 would be deleted, and Condition 19528, Part 14a would be deleted. Tesoro has submitted Title V Permit Application 27031 for a minor revision to the Title V permit. The complete parts of the Title V permit that apply to S-659, S-660, and S-1517, and the revisions associated with this application are shown in Appendix A.

## **RECOMMENDATION**

It is recommended that a Change of Conditions to the Permit to Operate be granted to Tesoro for:

### **S-1517 Coker Flare.**

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Arthur P. Valla  
Senior Air Quality Engineer

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Date  
December 16, 2015

Appendix A  
Tesoro NSR Permit Application 27030.  
Title V Permit Revision Application 27031

The changes shown in this Appendix only reflect the revisions associated with Tesoro Permit Application 27030, and are based on the Proposed Revision 5 Title V Permit.

Revisions to Section IV, Source-Specific Applicable Requirements

**Table IV – E.2**  
**Source-specific Applicable Requirements**  
**S659- COKE STORAGE , S660- COKE STORAGE,**  
**ABATED BY A-9 BAGHOUSE**

Deleted by Title V Application 27031. Sources Demolished.

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
<del>BAAQMD Regulation 6 Rule 1</del>	<del>Particulate Matter; General Requirements (12/05/2007)</del>		
<del>6-1-301</del>	<del>Ringelmann Number 1 Limitation</del>	<del>N</del>	
<del>6-1-305</del>	<del>Visible Particles</del>	<del>N</del>	
<del>6-1-310</del>	<del>Particulate Weight Limitation</del>	<del>N</del>	
<del>6-1-311</del>	<del>General Operations (process weight rate limitation)</del>	<del>N</del>	
<del>6-1-401</del>	<del>Appearance of Emissions</del>	<del>N</del>	
<del>6-1-601</del>	<del>Particulate Matter, Sampling, Sampling Facilities, Opacity Instruments and Appraisal of Visible Emissions</del>	<del>N</del>	
<del>SIP Regulation 6</del>	<del>Particulate Matter and Visible Emissions (09/04/1998)</del>		
<del>6-301</del>	<del>Ringelmann Number 1 Limitation</del>	<del>Y</del>	
<del>6-305</del>	<del>Visible Particles</del>	<del>Y</del>	
<del>6-310</del>	<del>Particulate Weight Limitation</del>	<del>Y</del>	
<del>6-311</del>	<del>General Operations (process weight rate limitation)</del>	<del>Y</del>	
<del>6-401</del>	<del>Appearance of Emissions</del>	<del>Y</del>	
<del>6-601</del>	<del>Particulate Matter, Sampling, Sampling Facilities, Opacity Instruments and Appraisal of Visible Emissions</del>	<del>Y</del>	
<del>BAAQMD Condition 19528</del>			
<del>Part 14a</del>	<del>Monitoring (basis: Regulation 6-1-302)</del>	<del>Y</del>	
<del>BAAQMD Condition 20682</del>	<del>Operation in Fluid Coke Service</del>		
<del>Part 1</del>	<del>S659 and S660 shall be abated by A-9 at all times petroleum coke transfer operations occur</del>	<del>Y</del>	

**Table IV – E.2**  
**Source-specific Applicable Requirements**  
**S659- COKE STORAGE , S660- COKE STORAGE,**  
**ABATED BY A-9 BAGHOUSE**

**Deleted by Title V Application 27031. Sources Demolished.**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
Part 2	Total throughput limit	Y	
Part 3	Recordkeeping	Y	
<b>BAAQMD Condition 23129</b>	<b>Operation in Delayed Coke Service</b>		
Part 38	Ringelmann Number 1 Limitation, Public Nuisance Prohibition	Y	
Part 39	S659 and S660 shall be abated by A-9 at all times. PM limit for A-9. (basis: cumulative increase)	Y	
Part 40	A-9 failure warning device (basis: cumulative increase)	Y	
Part 41	A-9 air flow (basis: cumulative increase)	Y	
Part 42	Recordkeeping	Y	

Revisions to Section VI, Permit Conditions

Condition 19528

Modified by App 18739 (Nov 2008) Removal of S924 from Part 6

Administratively Modified by Application 19326 (Feb2009), Removed Part 2 and 2A

Administratively changed by Application 19419 (June 2009). Updated to remove parts 7 and 7A redundant with District regulations.

Administratively Revised by Application 19874 (July 2009) Updates for Combustion Sources

Administratively Revised by Application 18261 Title V Renewal. Added Parts 20 and 20A for S-1411 SAP CAM.

Administratively Changed by Application 21711 (May 2010). Deleted Parts 8/8A. Deleted S1416 from Part 10/10A. Renumbered Part 11C.

Administratively Changed by Application 23232 (April 2012). Added 40 CFR 64 CAM requirements for S963 Gas Turbine.

Revised by Application 27030 (November 2015). Removal of Part 14a. A-9 was demolished.

1. Deleted. (Redundant with Title V Standard Conditions I.J.1 and I.J.2.)
- 2) Deleted. [The source test requirements in Regulation 8-44-601 are more stringent.]
- 2A) Deleted. [Part 2 source test requirements replaced by Regulation 8-44-601.]
- 3) Deleted. (Source Test not required. S-901 now has a CO CEM.)
- 3A) Deleted. (Source Test not required. S-901 now has a CO CEM.)
- 4) For each of S-909, S-912, S-913, S-915, S-916, S-919, S-920, and S-921, Permittee/Owner/Operator shall ensure that not less frequently than twice each calendar year a District approved source test is conducted for each source measuring its NOx and CO emission rate using a District approved source test method and that each test is conducted in compliance with the District's Manual of Procedures. Permittee/Owner/Operator shall ensure that the first District approved source for each of S909, S912, S913, S915, S916, S919, S920, and S921 is completed before July 31, 2004.  
(basis: Regulation 2-1-403; Regulation 9-10, Regulation 2-6-503)
- 4A) Permittee/Owner/Operator shall ensure that within 60 days of the date of completion of the (each) District approved source test required by condition 19528 part 4, two identical copies of the results of the source test along with supporting documentation, each referencing the subject source number, condition 19528 part 4 and part 4A, and plant # B12758 are received by the District and that both copies are addressed to the District's Engineering Division.  
(basis: Regulation 2-1-403; Regulation 9-10, Regulation 2-6-503)
- 5) Deleted. (Sources either have a CEM or the Source Tests requirements are included in Condition 18372, Parts 33A2 or 34.)
- 5A) Deleted. (Sources either have a CEM or the Source Tests requirements are included in Condition 18372, Parts 33A2 or 34.)
- 6) Deleted. (Source Test Requirements now included in Condition 18372, Part 33A1.)
- 6A) Deleted. (Source Test Requirements now included in Condition 18372, Part 33A1.)
- 7) Deleted. (Monitoring requirements for S-952, S-953, S-954, S-955, S-956, S-957, and S-960 are required quarterly per Regulation 9-8-503)

- 7A) Deleted. (Monitoring requirements for S-952, S-953, S-954, S-955, S-956, S-957, and S-960 are required quarterly per Regulation 9-8-503)
- 8) Deleted. (Monitoring requirements for S-955, S-956, S-957, S-958, S-959, and S-960 are required quarterly per Regulation 9-8-503)
- 8A) Deleted. (Monitoring requirements for S-955, S-956, S-957, S-958, S-959, and S-960 are required quarterly per Regulation 9-8-503)
- 9) For S1401, Permittee/Owner/Operator shall ensure that not less frequently than once each calendar year a District approved source test is conducted for S-1401 measuring its SO<sub>3</sub> and H<sub>2</sub>S<sub>04</sub> emission rate per dry standard foot of exhaust volume, expressed as 100% H<sub>2</sub>S<sub>04</sub>. This monitoring requirement shall become effective April 1, 2004.  
(basis: Regulation 6-1-330, Regulation 2-1-403, Regulation 2-6-503)
- 9A) Permittee/Owner/Operator shall ensure that within 60 days of the date of completion of the (each) District approved source test required by condition 19528 part 9, two identical copies of the results of the source test and supporting documentation, each referencing S-1401, condition 19528 part 9 and part 9A, and plant #14628 are received by the District and that both copies are addressed to the District's Engineering Division.  
(basis: Regulation 2-1-403; Regulation 6-1-330, Regulation 2-6-503)
- 10) For S-1415, Permittee/Owner/Operator shall ensure that not less frequently than once every 60 months, a District approved source test is conducted in compliance with the District's Manual of Procedures, measuring the POC emission rate and carbon concentration in ppm, dry.  
(basis: Regulation 8-2; Regulation 2-1-403, Regulation 2-6-503)
- 10A) Permittee/Owner/Operator shall ensure that within 60 days of the date of completion of the (each) District approved source test required by condition 19528 part 10, two identical copies of the results of the source test along with supporting documentation, each referencing the subject source number, condition 19528 part 10 and part 10A, and plant #14628 are received by the District and that both copies are addressed to the District's Engineering Division .  
(basis: Regulation 2-1-403; Regulation 8-2, Regulation 2-6-503)

Conditions for monitoring smoking flares :

- 11. Deleted. (See Discussion in Rev. 3 Statement of Basis.)
- 11A) Deleted. (See Discussion in Rev. 3 Statement of Basis.)
- 11B) For the purposes of these conditions, a flaring event is defined as a flow rate of vent gas flared in any consecutive 15 minutes period that

continuously exceeds 330 standard cubic feet per minute (scfm). If during a flaring event, the vent gas flow rate drops below 330 scfm and then increases above 330 scfm within 30 minutes, that shall still be considered a single flaring event, rather than two separate events. For each flaring event during daylight hours (between sunrise and sunset), the owner/operator shall inspect the flare within 15 minutes of determining the flaring event, and within 30 minutes of the last inspection thereafter, using video monitoring or visible inspection following the procedure described in Part 11C of this condition.

(basis: Regulation 2-6-409.2)

- 11C) The owner/operator shall use the following procedure for the initial inspection and each 30-minute inspection of a flaring event.
- a). If the owner/operator can determine that there are no visible emissions using video monitoring, then no further monitoring is necessary for that particular inspection.
  - b). If the owner/operator cannot determine that there are no visible emissions using video monitoring, the owner/operator shall conduct a visual inspection outdoors using either:
    - (i) EPA Reference Method 9; or
    - (ii) Survey the flare by selecting a position that enables a clear view of the flare at least 15 feet, but not more than 0.25 miles, from the emission source, where the sun is not directly in the observer's eyes.
  - c). If a visible emission is observed, the owner/operator shall continue to monitor the flare for at least 3 minutes, or until there are no visible emissions, whichever is shorter.
  - d). The owner/operator shall repeat the inspection procedure for the duration of the flaring event, or until a violation is documented in accordance with Part 11D. After a violation is documented, no further inspections are required until the beginning of a new calendar day. (basis: Regulation 6-1-301, 2-1-403)
- 11D) The owner/operator shall comply with one of the following requirements if visual inspection is used:  
If EPA Method 9 is used, the owner/operator shall comply with Regulation 6-1-301 when operating the flare.  
If the procedure of 4.b.ii is used, the owner/operator shall not operate a flare that has visible emissions for three consecutive minutes.  
(basis: Regulation 2-6-403)
- 11E) The owner/operator shall keep records of all flaring events, as defined in Part 11B. The owner/operator shall include in the records the name of the person performing the visible emissions check, whether video monitoring

or visual inspection (EPA Method 9 or visual inspection procedure of Part 11C of this condition) was used, the results of each inspection, and whether any violation of this condition (using visual inspection procedure in Part 11C of this condition) or Regulation 6-1-301 occurred (using EPA Method 9). (basis: Regulation 2-6-501; 2-6-409.2)

- 12) This condition applies to each organic liquid storage tank that is exempt from Regulation 8, Rule 5, Storage of Organic Liquids, due to Permittee/Owner/Operator's assertion or belief that the tank's contents comply with the exemption in Regulation 8-5-117 for storage of organic liquids with a true vapor pressure of less than or equal to 25.8 mm Hg (0.5 psia). Whenever the type of organic liquid in the tank is changed, the Permittee/Owner/Operator shall verify that the true vapor pressure at the storage temperature is less than or equal to 25.8 mm Hg (0.5 psia). The Permittee/Owner/Operator shall use Lab Method 28 from Volume III of the District's Manual of Procedures, Determination of the Vapor Pressure of Organic Liquids from Storage Tanks. For materials listed in Table 1 of Regulation 8 Rule 5, the Permittee/Owner/Operator may use Table 1 to determine the material's true vapor pressure, rather than Lab Method 28. If the results are above 25.8 mm Hg (0.5 psia), Permittee/Owner/Operator shall report non-compliance in accordance with Standard Condition I.F and shall submit a complete permit application to the District to obtain a new Permit to Operate for the tank not more than 180 days from discovery that the true vapor pressure of the material in the tank is greater than 25.8 mm Hg (0.5 psia). This monitoring requirement shall take effect on April 1, 2004. (basis: Regulation 8-5, Regulation 2-1-403, Regulation 2-6-503)
- 12.1) Deleted (basis: Initial testing/data collection completed).
- 12A) When laboratory testing is conducted to determine the true vapor pressure of the material stored in a tank subject to condition 19528 part 12, in a District-approved log, Permittee/Owner/Operator shall record the results of the testing, the laboratory method used, along with the identity of tank by District assigned source number where the material was sampled/stored. Permittee shall retain the log for not less than five years from the date of the recording in the log. Permittee/Owner/Operator shall ensure that the log is made available to District staff upon request. (basis: Regulation 8-5, Regulation 2-1-403, Regulation 2-6-503)
- 13.) With a frequency not less than once per month, Permittee/Owner/Operator shall visually inspect the outlet at A-4 while it is abating any of the catalyst hoppers S-97, S-98, and/or S-99 and Permittee/Owner/Operator shall note whether any visible emissions are present at the A-4 exhaust point venting to atmosphere. If there are visible emissions, Permittee/Owner/Operator shall immediately take corrective action to eliminate the visible emissions. Upon completion of each inspection, in a District approved log, Permittee/Owner/Operator shall record whether there are visible emissions or not and, when visible emissions are detected,



the corrective action taken to eliminate the visible emissions. During each month that S-97, S-98, and S-99 is not in operation for the entire month, Permittee/Owner/Operator need not complete this inspection for S-97, S-98, and S-99. (basis: Regulation 2-1-403, Regulation 2-6-503)

- 13A.) The owner/operator of S97, S98, S99 abated by A-4 Cyclone and Baghouse shall inspect the A-4 baghouse annually to ensure it is in good operating condition. The annual inspection and any filter bag changes shall be recorded in a District approved log. The logs in part 13 and 13A shall be kept for a minimum of five years and shall be made available to District personnel upon request. (basis: Regulation 2-1-403, Regulation 2-6-503)
- 14.) With a frequency not less than once per day, Permittee/Owner/Operator shall visually inspect S-810, S-821 and Permittee/Owner/Operator shall note whether any visible emissions are present at S-810, S-821. If there are visible emissions, Permittee/Owner/Operator shall immediately take corrective action to eliminate the visible emissions. Upon completion of each inspection, in a District approved log, Permittee/Owner/Operator shall record whether there are visible emissions or not and, when visible emissions are detected, the corrective action taken to eliminate the visible emissions. During each month that S-821 is not in operation for the entire month and when there is no petroleum coke stored at S-821, Permittee/Owner/Operator need not complete this inspection for S-821. This monitoring requirement shall take effect on April 1, 2004. (basis: Regulation 2-1-403, Regulation 2-6-503)
- 14a. ~~Deleted. (A-9 Precipitator removed from service). Effective June 1, 2004, Permittee/Owner/Operator shall conduct a daily visual inspection at A-9 Coke Silo Precipitator for any emission that is greater than or equal to 20% opacity for more than 3 minutes in any hour. (basis: Regulation 6-1-302)~~
- 15.) Deleted. A-1420 was removed from service in 2006 when S-1405 became abated by S-1411 or S-1401.)
16. Deleted. (Moved to Title V Standard Condition I.J.3.)
17. Deleted. (63 Subpart UUU requirements have been completed.)
18. Deleted. (63 Subpart UUU requirements have been completed.)
19. The Owner/Operator of S963 shall conduct an annual District-approved source test to demonstrate compliance with Regulation 9-9-301.1 (NOx not to exceed 42 ppmv, dry, at 15% O<sub>2</sub>, fired on natural gas. The test results shall be provided to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days

after the test. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. [Basis: Regulation 9-9-301.1]

- 20 For S1411, Permittee/Owner/Operator shall ensure that not less frequently than once each calendar year a District approved source test is conducted for S-1411 measuring its SO<sub>3</sub> and H<sub>2</sub>S<sub>04</sub> emission rate per dry standard foot of exhaust volume, expressed as 100% H<sub>2</sub>S<sub>04</sub>.  
(basis: Regulation 6-1-330, Regulation 2-1-403, Regulation 2-6-503; 40 CFR 64)
- 20A Permittee/Owner/Operator shall ensure that within 60 days of the date of completion of the (each) District approved source test required by condition 19528 part 20, two identical copies of the results of the source test and supporting documentation, each referencing S-1411, condition 19528 part 20 and part 20A, and plant #14628 are received by the District and that both copies are addressed to the District's Engineering Division.  
(basis: Regulation 2-1-403; Regulation 6-1-330, Regulation 2-6-503, 40 CFR 64)
21. For S963 Gas Turbine, the Owner/Operator shall install, calibrate, maintain and operate a continuous monitoring system to monitor and record the fuel consumption, steam injection and ratio of steam injection to fuel being fired in the turbine. When the turbine is in normal operation, as indicated by a fuel flow rate greater than 100 lb/hr (1 hour average), the steam to fuel ratio calculated by the monitoring system shall be greater than or equal to 30:1 steam to fuel (1 hour average) to ensure compliance with the NO<sub>x</sub> limit in SIP Regulation 9, Rule 9. During normal operation a steam to fuel ratio less than 30:1 (1 hour average) shall be considered an excursion under the CAM 40 CFR 64 rule and an exceedance of SIP Regulation 9, Rule 9 NO<sub>x</sub> limit for S963. (Basis: Regulations 2-1-403, 2-6-503, 40 CFR 64)
22. For S963 Gas Turbine, the Owner/Operator shall keep the following records in a District approved log:
- a. The rate of fuel consumption, steam injection, and the steam to fuel ratio.
  - b. Monitor performance data and corrective actions taken for monitor downtime.
  - c. Written Quality Improvement Plan(s) as required by 40 CFR 60.8 and activities undertaken to implement such plans.
  - d. Other supporting information as needed.
- (Basis: Regulations 2-1-403, 2-6-503, 40 CFR 64)
23. For S963 Gas Turbine, the Owner/Operator shall submit an semiannual monitoring report that includes the following information:
- a. Summary of the number, duration and cause of the steam to fuel ratio excursions and exceedances.

- b. Corrective actions taken for each excursion or exceedance.
- c. Summary of the number, duration and cause of monitor downtime incidents for the S963 fuel and steam monitors.
- d. Description of actions taken to implement a Quality Improvement Plan (QIP) during the reporting period.
- e. Documentation that the implementation of the QIP has been completed and reduced the likelihood of similar excursions or exceedances occurring.

(Basis: Regulations 2-1-403, 2-6-503, 40 CFR 64.9)

#### Condition 23129

##### Application 14141/14144 Coker Modification Project

Modified by Application 16389/16390 and  
Application 18311 (Modify Part 26 – Initial source tests for heaters).

Application 20679/20680 (July 2009) Revise throughput in Part 3  
Application 24065 (July 2012) Revised Part 56 to include purge gas.  
[Application 27030 \(November 2015\). Revised Parts 38, 39 and 42 \(S-659, S-660 and A-9 Demolished\) and Parts 53 and 56 for increased S-1517 Purge and Pilot Gas rates.](#)

The following permit conditions will be imposed to ensure that the proposed project complies with all applicable District, State, and Federal Regulations. The conditions limit operational parameters such as fuel use, stack gas emission concentrations, and mass emission rates. Permit conditions will also specify abatement device operation and performance levels. For compliance assurance purpose, conditions specifying emission monitoring, source testing, and record keeping requirements are included. Furthermore, pollutant mass emission limits (in units of lb./hr) will ensure that daily and annual emission rate limitations are not exceeded.

Compliance with CO and NOx limitations will be verified by continuous in-stack emission monitors (CEMs) that will be in operation during all heater operating modes, including start-up and shutdown. Compliance with SO2 and H2S limits will be determined by monitoring the total reduced sulfur (TRS) concentration level in the refinery fuel gas with a TRS analyzer. If natural gas is burned, the sulfur content will be assumed to be the same as natural gas specifications. Compliance with POC and PM10 mass emission limits will be demonstrated by annual source testing.

##### Delayed Coker (S-1510)

1. The owner/operator of source S-1510 shall not exceed Ringelmann No. 1.0, for three minutes in any consecutive 60-minutes period. (basis: Regulation 6-1).

2. The owner/operator of the delayed coker (S-1510) shall wash the pad area surrounding the Coke Pit and dewatering pad (where coke drops from the coker) at least once per day when the coker is operating or when coke is being removed from the coke drums. (basis: cumulative increase)
  3. The owner/operator of S-1510 delayed coker shall not process more than 55,000 barrels per day (12 midnight to 12 midnight), and 20, 075,000 barrels in any consecutive 12-month period. (basis: Cumulative increase)
  4. The owner/operator of all sources (S-1510 through S-1517, A-1511, A-1512, A-1514, A-1515) shall inspect and maintain all new valves, pumps and flanges/connectors associated with this project according to District Regulation 8-18. (basis: Regulation 8-18)
  5. The owner/operator of all sources (S-1510 through S-1517, A-1511, A-1512, A-1514, A-1515) shall ensure that each new pressure relief valve installed in hydrocarbon service is vented to the refinery fuel gas system or an abatement device with a capture/destruction efficiency of 98 wt% POC, or more, approved for this use in advance by the District. (basis: Regulation 8-28, BACT)
  6. The owner/operator of all sources (S-1510 through S-1517, A-1511, A-1512, A-1514, A-1515) shall ensure that each new process sample system in light liquid service installed is a closed loop, continuous flow design and in no event shall there be any line purging to process drains. (basis: cumulative increase)
  7. Deleted. [Final fugitive component count provided August 1, 2008. The Owner/Operator has been permitted to install fugitive components (992 gas service valves, 535 light liquid service valves, 15 pumps and 3080 connectors) with a total POC emission rate of 2.745 tons/yr for the entire Coker Modification Project.] (basis: cumulative increase, toxics)
  8. To demonstrate compliance with the above conditions, the owner/operator shall maintain the following records in a District-approved log:
    - a. The daily record of the throughput
    - b. The monthly record of the throughput summarized on a consecutive 12-month basisThese records shall be kept on site and made available for District inspection for a period of at least 5 years from the date on which a record is made. (basis: recordkeeping)
- Delayed Coker Heater # 1 and # 2 (S-1511 and S-1512)
9. The owner/operator of source S-1510 shall not exceed Ringlemann No. 1.0, for three minutes in any consecutive 60-minutes period. (basis: Regulation 6-1).
  10. The owner/operator shall burn in sources S-1511 and S-1512 only natural gas or refinery fuel gas. (basis: cumulative increase, BACT)

11. The owner/operator shall not burn in sources S- 1511 and S-1512 refinery fuel gas having total reduced sulfur (TRS) greater than 100 ppmv, based on 24-hour average and 35 ppmv, based on consecutive 365 day average. (basis: BACT)

12. Except as described below, the owner/operator of sources S-1511 or S-1512 shall not exceed 7 ppmv NO<sub>x</sub> (calculated as NO<sub>2</sub>) corrected to 3% oxygen dry (based on a three-hour average), and 35 ppmv CO, corrected to 3% oxygen dry (based on a three-hour average). (basis: BACT)

a. During startup, shut down and malfunction periods, the owner/operator of source S-1511 or S-1512 shall not exceed 50 ppmv NO<sub>x</sub> (calculated as NO<sub>2</sub>) corrected to 3% oxygen dry (based on a three hour average), and 400 ppmv CO, corrected to 3% oxygen dry (based on a three hour average). Startup, shutdown or malfunction shall not exceed 144 hours during any consecutive 12-month period. (basis: cumulative increase, offsets)

b. For up to 100 days per consecutive 12 month period, during periods of reduced furnace firing (such as spalling or reduced rates due to unit shutdowns or other reasons) the owner/operator of source S-1511 or S-1512 shall not exceed 50 ppmv CO at 3% O<sub>2</sub> dry (based on a three hour average). (basis: basis: cumulative increase, offsets)

13. The owner/operator shall not exceed 10 ppmv ammonia at 3% O<sub>2</sub> dry at the outlet of A-1511 or A-1512. (basis: cumulative increase, toxics)

14. The owner/operator shall not exceed 2,014,800 MMBtu of refinery fuel gas and natural gas combined at each source (S-1511 or S-1512) in any consecutive 12-month period. (basis: cumulative increase)

15. The owner/operator shall ensure that the total sulfur content in the natural gas shall not exceed 1.0 grain per 100 scf of natural gas. The owner/operator shall use PG&E specification or equivalent pipeline quality natural gas. Compliance will be demonstrated through records that show the specification of natural gas by the supplier. (basis: BACT for SO<sub>2</sub> when firing natural gas)

16. The owner/operator shall ensure that the total sulfur content in the natural gas shall not exceed 1.0 grain per 100 scf of natural gas. The owner/operator shall use PG&E specification or equivalent pipeline quality natural gas. Compliance will be demonstrated through records that show the specification of natural gas by the supplier. (basis: BACT for PM<sub>10</sub> when firing natural gas)

17. The owner/operator of sources S-1511, S-1512, A-1511 and A-1512 shall comply with the requirement of Regulation 2-2-306 for sulfuric acid mist emissions (SAM). (basis: PSD)

18. The owner/operator of S-1511, S-1512, A-1511 and A-1512 shall ensure that the emissions from A-1511 or A-1512 shall not exceed 230 mg/dsm (0.10 gr/dscf or 160 ppmv (dry basis)) of H<sub>2</sub>S average over 3 hours at the inlet of S-1511 or S-

1512, or 20 ppmv (dry basis) of SO<sub>2</sub> at the outlet of A-1511 or A-1512 except as allowed by NSPS Subpart J and Subpart A for startup, shutdown, or malfunction. (basis: NSPS 40 CFR 60, Subpart J)

19. When burning refinery fuel gas in S-1511 or S-1512, the owner/operator of S-1511, S-1512, A-1511 and A-1512 shall install a total reduced sulfur (TRS) or SO<sub>2</sub> continuous monitoring and recording system to verify compliance with the requirement of Part 18. The owner/operator shall maintain the equipment in accordance with manufacturer's recommendations. (basis: NSPS (40 CFR 60, Subpart J))

20. The owner/operator shall abate Heater #1 and Heater #2 (S-1511 and S-1512) with Selective Catalyst Reduction systems (A-1511 and A-1512), respectively at any time that S-1511 and S-1512 are in operation, except for 144 hours each in any consecutive 12-month period during startup, shutdown and malfunction. (basis: cumulative increase)

21. The owner/operator shall install, calibrate, maintain, and operate a District-approved continuous emission monitoring (CEM) device that continuously measures and records the concentration of nitrogen oxides (calculated as NO<sub>2</sub>), in ppmv units, in the combustion exhaust from A-1511 and A-1512, corrected to 3% oxygen, dry. This CEM device shall be in operation at all times when S-1511 and S-1512 operate except as allowed in the District's Manual of Procedures, which includes maintenance and malfunction. (basis: cumulative increase, BACT, offsets)

22. The owner/operator shall install, calibrate, maintain, and operate a District-approved continuous emission monitoring (CEM) device that continuously measures and records the concentration of carbon monoxide (CO), in ppmv units, in the combustion exhaust from A-1511 and A-1512, corrected to 3% oxygen, dry. This CEM device shall be in operation at all times when S-1511 and S-1512 operate except as allowed in the District's Manual of Procedures, which includes maintenance and malfunction. (basis: cumulative increase, BACT, offsets)

23. The owner/operator shall install, calibrate, maintain, and operate a District-approved continuous emission monitoring (CEM) device that continuously measures and records the concentration of oxygen in the combustion exhaust from A-1511 and A-1512. This CEM device shall be in operation at all times when S-1511 and S-1512 operate except as allowed in the District's Manual of Procedures, which includes maintenance and malfunction. (basis: cumulative increase, BACT, offsets)

24. The owner/operator shall install, operate and maintain a District approved fuel flow meter that measures the volume of fuel throughput to S-1511 and S-1512 in units of standard cubic feet. (basis: cumulative increase)

25. The owner/operator shall install, operate and maintain a District approved calorimeter that measures the heating value when refinery fuel gas is fired at S-1511 and S-1512. (basis: BACT, cumulative increase, offsets, toxics)

26. The owner/operator shall conduct District approved initial source tests on Heaters S-1511 and S-1512 to demonstrate compliance with the NO<sub>x</sub>, CO, TRS, NH<sub>3</sub>, PM<sub>10</sub> and SAM levels in Parts 11, 12, 13, and 17. For purposes of SAM, the applicant shall also test for SO<sub>3</sub> and ammonium sulfates. Source tests conducted while firing natural gas shall demonstrate compliance with the NO<sub>x</sub>, CO, NH<sub>3</sub> and PM<sub>10</sub> levels. Source tests conducted while firing refinery fuel gas shall demonstrate compliance with the NO<sub>x</sub>, CO, TRS, NH<sub>3</sub>, PM<sub>10</sub> and SAM levels.

The required source tests are as follows:

- a. Deleted. (The initial source test was completed from August 12 through August 14, 2008)
- b. Deleted. (The initial source test for part a. was at firing rates above 80% of maximum firing)
- c. Heaters S-1511 and S-1512 firing refinery fuel gas only at as-found conditions (within 60 days after the refinery fuel gas is first used). If Heater S-1511 or S-1512 is operating at 80% or more of maximum firing rate during this source test, then the requirements for source test (d) shall have been met for that heater.
- d. Heaters S-1511 and S-1512 firing refinery fuel gas only (within 60 days after 80% or more of maximum firing rate is first reached on refinery fuel gas).

The test results from source test (a) shall be forwarded to the District within 45 days of completion of the field tests, but no later than 150 days of initial startup. Subsequent test results shall be forwarded to the District within 45 days of completion of the field tests. The owner/operator shall notify the District of the following events:

- i. The actual date that each Heater first fires at 80% of maximum firing rate on natural gas within 15 days after such date.
- ii. The actual date that the Heaters first fire refinery fuel gas within 15 days after such date.
- iii. The actual date that each Heater first fires at 80% of maximum firing rate on refinery fuel gas within 15 days after such date.

(basis: compliance demonstration, PSD avoidance)

The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall notify the District's Source Test Section in writing of the source test protocols and projected test dates at least 7 days prior to the testing date(s). As indicated above, the Owner/Operator shall measure the contribution of condensable PM (back half) to the total PM<sub>10</sub> emissions. However, the Owner/Operator may propose alternative measuring techniques to measure condensable PM such as the use of a dilution tunnel or other appropriate method used to capture semi-volatile organic compounds. Source test results shall be

submitted to the District within 45 days of conducting the tests except as otherwise required above. (basis: source test compliance verification)

27. The owner/operator shall maintain all records and reports required by this permit in a District-approved log. These records shall be kept on site and made available for District inspection for a period of at least 5 years from the date on which a record is made (basis: Regulation 2-6-501)

28. When burning refinery fuel gas in sources S- 1511 and S-1512, the owner/operator shall record the consecutive 3-hour average total reduced sulfur content of the refinery fuel gas. On an annual basis, the owner/operator shall report: (a) the daily fuel consumption, (b) hourly total reduced sulfur content (as averaged over 24 consecutive hours) and (c) annual average reduced sulfur content. The report shall be sent to the District's Director of Compliance and Enforcement, and the Manager of the Permit Evaluation Section no later than 60 days after the end of the calendar year. (basis: BACT, offsets, cumulative increase)

Coker Screen/Crusher (S-1513) and Conveyors & Dewatering Pad

29. The owner/operator of S-1513 shall not exceed 1,277,500 wet tons of coke in any consecutive 12-month period. (basis: cumulative increase, BACT)

30. The owner/operator of S-1513 shall keep the moisture of the coke product to 5% by weight or more. (basis: cumulative increase)

31. The owner/operator of S-1513 shall not exceed Ringelmann No. 1.0, or 20% opacity visible emissions, for three minutes in any consecutive 60 minute period. (basis: Regulation 6-1)

32. The owner/operator shall use a water spray abatement system with chemical suppressant, if necessary, and take other control measures, as necessary, to maintain compliance with Regulation 6-1. (basis: Regulation 6-1, BACT)

33. The owner/operator shall completely enclose all coke conveyors downstream of the crusher and use water sprays to minimize particulate emissions from crushing operations. (basis: BACT)

34. The owner/operator shall inspect S-1513 for visible emissions no less than once per day when the equipment is in operation. If there are visible emissions, the owner/operator shall immediately take corrective action to eliminate the visible emissions. Upon completion of each inspection, in a District approved log, the owner/operator shall record the visible emission observation, and when visible emissions are detected, the corrective action taken to eliminate the visible emissions. During each day that S-1513 is not in operation for the entire day and when there is no petroleum coke stored or processed at S-1513, the owner/operator need not complete this inspection for S-1513. (basis: Regulation 2-1-403, Regulation 2-6-503).



35. The owner/operator shall use water sprays, as necessary, to minimize particulate emissions from the surfaces of the coke piles on the Coke Dewatering Pad. If particulate emissions from the Coke Dewatering Pad result in 3 or more visible emission violations within a six month period, or two public nuisance violations within a 5 year period, the owner/operator shall install additional controls, as approved by the District, which may include one or more of the following:

- a. Additional water sprays;
- b. Chemical suppressant in water spray system;
- c. Additional/improved enclosures;
- d. Wind screens; or e. Equivalent, as approved by the District.

(basis: BACT)

36. Deleted. (Laboratory analysis completed May 22, 2008. Moisture content was over the 5% by weight limit of Part 30)

37. To demonstrate compliance with the above Parts, the owner/operator shall maintain the monthly records, and the consecutive 12-month summary of coke (wet) produced in a District-approved log. These records shall be kept on site and made available for District inspection for a period of at least 5 years from the date on which a record is made. (basis: recordkeeping)

Coker Silos (S-1514 and S-1515 abated by A-1514 and A-1515, respectively) ~~and (S-659 and S-660 Storage Tanks, both abated by A-9 Electrostatic Precipitator)~~

38. The owner/operator shall not operate ~~S-659, S-660, S-1514, S-1515, A-9, A-1514, and A-1515~~ unless the visible particulate emissions from the listed equipment are less than or equal to Ringelmann Number 1.0 except for three minutes in any consecutive 60-minute period, or result in fallout on adjacent property in such quantities as to cause a public nuisance per Regulation 1-302. (basis: Regulation 6-1, and Regulation 1)

39. The owner/operator shall not operate S-1514 and S-1515 unless all particulate emissions from the silos are vented to A-1514 and A-1515, respectively. ~~The owner/operator shall not operate S-659 and S-660 unless all particulate emissions from the storage tanks are vented to A-9. Particulate emissions from A-9 Precipitator, A-1514 and A-1515 baghouses shall not exceed 0.01 grains/dscf each.~~ (basis: cumulative increase)

40. The owner/operator shall install, maintain, and operate an approved bag failure warning device such as manometer or equivalent on A-1514 and A-1515. ~~The Owner/Operator shall install an approved ESP failure warning device on A-9.~~ (Basis: Cum Inc)

41. The owner/operator of each abatement device A-1514 or A-1515 shall not exceed 4,200 scfm of exhaust air flow rate without District approval. ~~The~~

~~owner/operator of abatement device A-9 shall not exceed 550 scfm of exhaust air flow rate without District approval~~ (basis: cumulative increase)

42. The owner/operator of ~~S-659, S-660~~, S-1514 and S-1515 shall record and keep the following records on site and make the log available for District inspection for a minimum period of 5 years from the date on which a record was made. (basis: cumulative increase)

- a. Total monthly hours of operation, summarized on a consecutive 12-month period.

#### Coker Truck Loadout S-1516

43. The owner/operator of S-1516 shall not exceed Ringelmann Number 1.0 for three minutes in any consecutive 60-minute period or result in fallout on adjacent property in such quantities as to cause a public nuisance per Regulation 1-302. (basis: Regulation 6-1, and Regulation 1)

44. The owner/operator of S-1516 shall not exceed 1,277,500 tons of wet coke in any consecutive 12 month period. (basis: cumulative increase, BACT)

45. The owner/operator shall only conduct material truck loading in an enclosed structure that is either equipped with a water spray system to be used as needed to prevent visible dust emissions or vented to permitted air pollution control equipment that is operated during loading activities. The ends of the structure shall have overlapping flaps that reduce the opening to no greater than 11 feet high by 10 feet wide, or other equally effective devices as approved by the APCO. (basis: BACT)

46. The owner/operator shall load the trucks so that the level of coke is not higher than the top of the truck trailer. After loading onto trucks, the coke shall be completely covered with tarpaulin or other similar material, to minimize particulate spillage and entrainment during transit. If a slot-top type cover is used, either the material contained in the trailer is moist material, or a chemical stabilizer is applied to the surface of the material in sufficient amounts and concentration so as to prevent fugitive dust emissions during transport. (basis: BACT)

47. Before leaving the coke loading area, the owner/operator shall pass the trucks through a water wash system to remove coke from the truck and trailer tires, wheels and undercarriage, in order to minimize the tracking of coke onto the roadway. (basis: BACT)

48. The owner/operator shall sweep accumulated mud, dirt, or coke from the coke truck route in the refinery at least once a day except during periods of rain and equipment maintenance, and whenever there is visible accumulation. Dry rotary brushes shall not be used except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Blower devices shall not be used. (basis: BACT)

49. In order to demonstrate compliance with the above Parts, the owner/operator of S-1516 shall maintain the daily records, monthly records and the consecutive 12-month summary of coke (wet) loaded into trucks in District approved logs. These records shall be kept on site and made available for District inspection for a minimum period of 5 years from the date on which a record was made. (basis: cumulative increase)

#### Flare S-1517

50. The owner/operator of S-1517 shall not exceed Ringelmann Number 1.0 for three minutes in any consecutive 60-minutes period or result in fallout on adjacent property in such quantities as to cause a public nuisance per Regulation 1-302. (basis: Regulation 6-1, and Regulation 1)

51. The owner/operator of S-1517 shall use steam in the flare to minimize smoking. (basis: BACT)

52. The owner/operator of S-1517 shall have a hydrocarbon destruction efficiency of at least 98.5 wt.% POC on a mass basis: (basis: BACT)

53. The owner/operator of S-1517 shall not exceed ~~14,235,000~~1,314,000 standard cubic feet of natural gas for flare purge and pilots in any consecutive 12-month period. (basis: cumulative increase)

54. The owner/operator shall comply with the requirements of 40 CFR 60, Subpart J. (basis: NSPS 40 CFR 60, Subpart J)

55. The owner/operator of S-1517 shall install H<sub>2</sub>S continuous monitoring and recording system to verify compliance with the requirement of Regulation 12-11. The owner/operator shall maintain the equipment in accordance with manufacturer's recommendations. (basis: Regulation 12, Rule 11)

56. The owner/operator of S-1517 shall fire only natural gas at all flare pilots and purge gas. (basis: cumulative increase)

57. The owner/operator shall maintain all records and reports required by this permit in a District-approved log. The following records shall be kept on site and made available for District inspection for a period of at least 5 years from the date on which a record is made. (basis: Regulation 2-6-501)

a. The continuous H<sub>2</sub>S concentration at source S-1517.

b. Total daily flow rate of the gas through the flare, summarized in a consecutive 12-month period.

#### Contemporaneous Emissions reduction credit

58. Deleted. (Sources S-806, S-808, S-836,

S-837, S-838, S-903, S-923, S-924 and S-925 were shutdown and removed from the Owner/Operator's permit via Application 18739.)

Revisions to Section VII, Applicable Limits & Compliance Monitoring Requirements

The changes tracked below in Table VII-C.2.1 are all related to this permit application except the deletion of the Visible Emissions limit for S-1524. This limit was removed by Tesoro Application 24065 and was inadvertently left in the Proposed Rev 5 Title V Permit. It will be removed from the Final Revision 5 Title V Permit and is shown here for consistency.

**Table VII – C.2.1**  
**Applicable Limits and Compliance Monitoring Requirements**  
**FLARES SUBJECT TO NSPS BY DATE OF CONSTRUCTION**  
**S854-EAST AIR FLARE, S992-EMERGENCY FLARE, , S1012 WEST AIR FLARE,**  
**S1517- COKER FLARE, S1524-50 UNIT FLARE**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
SO2	60.104(a)(1)	Y		H2S in fuel gas burned $\leq$ 230 mg/dscm (0.1 gr/dscf), except process upset gases, relief valve leakage or emergency malfunctions	40 CFR 60.105(a)(4)(iv) exemption from 40 CFR 60.105(a)(4) and 60.105(e)(3)	P/E Within 15 Days of Loss of Exemption	Monitoring of flare gas composition and records
SO2	40 CFR 60.104(a)(1)	Y		H2S in fuel gas burned < 230 mg/dscm (0.1 gr/dscf), except process upset gases, relief valve leakage or emergency malfunctions	Condition 24324, Part 2	SO2	40 CFR 60.104(a)(1)
VOC, HAP	None	N		No limit	BAAQMD 12-11-501 12-11-505	P/C	<a href="#">Flow Rate</a>
VOC, HAP	None	N		No limit	BAAQMD 12-11-502.1 12-11-505	P/E	<a href="#">Composition</a>
VOC, HAP	None	N		No limit	BAAQMD 12-11-502.3 12-11-505	P/E	<a href="#">Composition</a>
Pilot Flame	None	N		No limit	BAAQMD 12-11-503 12-11-505	P/C	<a href="#">Flame Detector</a>

**Table VII – C.2.1**  
**Applicable Limits and Compliance Monitoring Requirements**  
**FLARES SUBJECT TO NSPS BY DATE OF CONSTRUCTION**  
**S854-EAST AIR FLARE, S992-EMERGENCY FLARE, , S1012 WEST AIR FLARE,**  
**S1517- COKER FLARE, S1524-50 UNIT FLARE**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Pilot/ Purge Gas	None	N		No limit	BAAQMD 12-11-504 12-11-505	P/C	<a href="#">Purge Gas Flow Rate</a>
Flame Detection	None	N		No limit	BAAQMD 12-11-507	P/C	<a href="#">1 frame per minute image video recording</a>
Visible Emissions	None	Y		No limit	BAAQMD Condition 19528, Part 11B, 11C	P/ 30 minutes	<a href="#">Video monitoring/ visual inspection</a>
<del>Visible Emissions S1524</del>	<del>40-CFR 63.11(b)(4)</del>	<del>Y</del>		<del>None except a total of 5 minutes in any consecutive 2 hours</del>	<del>40-CFR 60.18(f)(1)</del>	<del>P/E</del>	<del><a href="#">Method 22, 2 hr observation period</a></del>
PM	BAAQMD 6-1-310	N		0.15 grain/dscf	BAAQMD Condition 19528, Part 11B, 11C, 11D and 11E	P/E	Gas Flow Meter along with Visual Inspection and Records
PM	SIP 6-310	Y		0.15 grain/dscf	BAAQMD Condition 19528, Part 11B, 11C, 11D and 11E	P/E	Gas Flow Meter along with Visual Inspection and Records
Water Seal	None	N		No limit	BAAQMD 12-12-501	C	<a href="#">Water Seal pressure and water level</a>
Visible Emissions	BAAQMD 6-1-301	N		≥ Ringelmann No. 1 for no more than 3 minutes/hour	BAAQMD 6-1-401 BAAQMD Condition 19528, Part 11B, 11C, 11D and 11E	P/E	Gas Flow Meter along with Visual Inspection and Records

**Table VII – C.2.1**  
**Applicable Limits and Compliance Monitoring Requirements**  
**FLARES SUBJECT TO NSPS BY DATE OF CONSTRUCTION**  
**S854-EAST AIR FLARE, S992-EMERGENCY FLARE, , S1012 WEST AIR FLARE,**  
**S1517- COKER FLARE, S1524-50 UNIT FLARE**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Visible Emissions	SIP 6-301	Y		≥ Ringelmann No. 1 for no more than 3 minutes/hour	SIP 6-401 BAAQMD Condition 19528, Part 11B, 11C, 11D and 11E	P/E	Gas Flow Meter along with Visual Inspection and Records
Visible Particles	BAAQMD 6-1-305	N		Prohibition of nuisance	BAAQMD 6-1-401 BAAQMD Condition 19528, Part 11B, 11C, 11D and 11E	P/E	Gas Flow Meter along with Visual Inspection and Records
Visible Particles	SIP 6-305	Y		Prohibition of nuisance	SIP 6-401 BAAQMD Condition 19528, Part 11B, 11C, 11D and 11E	P/E	Gas Flow Meter along with Visual Inspection and Records
Sulfur	40 CFR 60.105(a)(4)(iv)(A)	Y		Exemption for exempt fuel gas streams – pilot gas for flares	40 CFR 60.107(e)	N	Records
<b>The following requirements apply only to S1517</b>							
H2S (S1517)		Y		No limit	BAAQMD Condition 23129, Part 55	C	H2S Monitoring System
POC (S1517)	BAAQMD Condition 23129, Part 52	Y		98.5 wt.% POC abatement efficiency (mass basis)	None	N	N/A
Through-put (S1517)	BAAQMD Condition 23129, Part 53	Y		<del>1,314,000</del> 14,235,000 scf natural gas/ consecutive 12-month period (Flare <u>Purge and Pilot</u> )	BAAQMD 12-11-501	C	Flow Meter

**Table VII – C.2.1**  
**Applicable Limits and Compliance Monitoring Requirements**  
**FLARES SUBJECT TO NSPS BY DATE OF CONSTRUCTION**  
**S854-EAST AIR FLARE, S992-EMERGENCY FLARE, , S1012 WEST AIR FLARE,**  
**S1517- COKER FLARE, S1524-50 UNIT FLARE**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Through-put (S1517)	<del>BAAQMD Condition 24323, Part 56</del>	<del>Y</del>		<del>8,584,800 scf natural gas/ consecutive 12-month period (Flare Purge)</del>	<del>BAAQMD 12-11-501</del>	<del>C</del>	<del>Flow Meter</del>
<b>The following requirements apply only to S1524</b>							
H2S (S1524)		Y		No limit	BAAQMD Condition 24323, Part 9 & 11	C	H2S Monitoring System, Records
POC (S1524)	BAAQMD Condition 24323, Part 7	Y		98 wt.% POC abatement efficiency (mass basis)	None	N	N/A
Through-put (S1524)	BAAQMD Condition 24323 Part 8	Y		3,942,000 scf natural gas/ consecutive 12-month period (Flare Pilot)	BAAQMD 12-11-501 BAAQMD Condition 24323, Part 11	C	Flow Meter, Records
Through-put (S1524)	BAAQMD Condition 24323 Part 10	Y		3,767,000 scf natural gas/ consecutive 12-month period (Flare Purge)	BAAQMD 12-11-501 BAAQMD Condition 24323, Part 11	C	Flow Meter, Records

**Table VII – E.2**  
**Applicable Limits and Compliance Monitoring Requirements**  
**S659- COKE STORAGE, S660- COKE STORAGE,**  
**ABATED BY A-9, BAGHOUSE**  
Deleted by Title V Application 27031. Sources Demolished.

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Visible Emissions	BAAQMD 6-1-301 BAAQMD Condition 23129 Part 38	N		≥ Ringelmann No. 1 for no more than 3 minutes/hour	BAAQMD Condition -19528, Part 14a	P/D	Visual Inspection
Visible Emissions	SIP 6-304	Y		≥ Ringelmann No. 1 for no more than 3 minutes/hour	BAAQMD Condition -19528, Part 14a	P/D	Visual Inspection
Visible Particles	BAAQMD 6-1-305	N		Prohibition of nuisance	BAAQMD Condition -19528, Part 14a	P/D	Visual Inspection
Visible Particles	SIP 6-305	Y		Prohibition of nuisance	BAAQMD Condition -19528, Part 14a	P/D	Visual Inspection
FP	BAAQMD 6-1-310	N		0.15 grain/dscf	BAAQMD Condition -19528, Part 14a	P/D	Visual Inspection
FP	SIP 6-310	Y		0.15 grain/dscf	BAAQMD Condition -19528, Part 14a	P/D	Visual Inspection
FP	BAAQMD 6-1-311	N		4.10 P <sup>0.67</sup> lb/hr particulate, where P is process weight rate in ton/hr	BAAQMD Condition -19528, Part 14a	P/D	Visual Inspection
FP	SIP 6-311	Y		4.10 P <sup>0.67</sup> lb/hr particulate, where P is process weight rate in ton/hr	BAAQMD Condition -19528, Part 14a	P/D	Visual Inspection
Through-put (Fluid Coke)	BAAQMD Condition -20682, Part 2	Y		1,016,160 tons/rolling consecutive 12 months [Fluid coke service]	BAAQMD Condition -20682, Part 3	P/M	Records



**Table VII – E.2**  
**Applicable Limits and Compliance Monitoring Requirements**  
**S659- COKE STORAGE, S660- COKE STORAGE,**  
**ABATED BY A-9, BAGHOUSE**  
Deleted by Title V Application 27031. Sources Demolished.

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Throughput (Delayed Coke)	BAAQMD Condition 23129, Part 41	Y		← 550 scfm exhaust air flow at A9 {Delayed-coke-service}	BAAQMD Condition 23129, Part 42	P/M	Records

## **Application 27054, S-904 No 6 Boiler Burner Replacement**

### Summary of Tesoro Application 27054 Alteration of S-904 No 4 Boiler

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Tesoro Application 27054 proposes replacing the boiler burners to resolve flame impingement problems (the current burner flame geometry causes frequent refractory replacements). Tesoro proposes the replacement as an alteration claiming the new burners will be the same size as the existing burners. S-904 is a grandfathered source that has never been modified, so using a grandfathered firing capacity is only valid if it is an actual attainable firing rate.

S-904 has been altered several times over the years. ACs were granted for the SCR (1999), for fuel gas lines (2003), and for pilots (2008), but not for the boiler itself – and the associated combustion emissions. Firing rate limits were placed in permit conditions as a result of these alterations.

The Incomplete letter for this application requested the peak historical daily and annual firing rate for S-904, as detailed in the approved Engineering Procedure. Tesoro's 10/30/2015 response to the incomplete letter did not include the historical information. Tesoro instead cited the firing rates that were placed in permit conditions when S-904 was altered. Tesoro cited the 775MM Btu/hr firing rate in Condition 22590 (added in 2008 when S-904 was altered adding new gas pilot burners) and stated that this firing rate is sufficient to determine that no emissions were increased pursuant to Regulation 2-1-234.1 and 234.2. However, since S-904 is a grandfathered source, it has never received an Authority to Construct, it is Regulation 2-1-234.3 that applies. The preamble to 2-1-234 says each subsection must be considered (i.e., the owner does not get to choose a subsection). The approved Engineering Procedure provides a method to address emission increases for 2-1-234.3. Tesoro did not use the method, nor did Tesoro provide any other method to determine if emissions are increased per 2-1-234.3.

Tesoro met with the District 9/10/2015 to discuss, among other things, this S-904 application. In follow-up to this meeting, Tesoro outside counsel Kevin Poloncarz sent a message to Randi Wallach. Randi discussed this message with Engineering, and sent the reply November 19, 2015. In this message the District agreed that Application 27054 would be treated as an alteration. This message is included in the application file, and is appended to this brief.

#### Alteration Procedure

Alteration of grandfathered sources had been a persistent problem. According to Regulation 2-1-234, a source is modified if emissions are increased. For grandfathered sources, where emissions have never been comprehensively reviewed or determined, the question that is difficult to answer is -- are emissions increased above what level? If the source is modified, then Reg 2-2 clearly establishes how an emission increase is determined. For alterations, Reg 2-2 is not triggered, and often the refineries want to use a grandfathered capacity as the emission level for which to measure the source alteration.

When Steve Hill was the section manager, he exercised an unwritten policy. If an applicant claimed a grandfathered source was altered, then all that was required was for the application to include the peak historical daily and annual throughputs (firing rates for combustion sources). If the owner could live with limits set at the peak historical rates, then the source would be considered altered. The rationale was that for unmodified sources in service for 30-40 years (sometimes longer), the actual 2-1-234.3 source capacity had been achieved at some time, and limits established at this peak historical level assure the source is not modified. However, if the owner would not accept limits set at the peak historical rates, the source was considered modified. (In practice, this 'hammer' was never applied because the 3-year baseline rates for a modified source was always lower than the peak historical rates.)

Once Steve Hill left the District, support for this practice appears to have left as well. When this unwritten policy was cited in other Tesoro applications (including Application 23194, addressed below), the issue was escalated and the Legal division would not support the policy because it was not formalized in writing.

Since the issue of the alteration of grandfathered sources comes up frequently, the Refinery Workgroup spent a lot of time and effort to establish a written procedure. This procedure was finalized and approved by Jim Karas 4/16/2015. This procedure details a method to confirm a grandfathered source is altered, essentially formalizing the practice employed previously by Steve Hill. It is an optional method, not a required method. This procedure does not include the backbone of the Steve Hill policy -- if the owner will not accept limits at the historical peak, then the source is considered modified. However, if an owner does not accept limits at historical peaks, then a red flag is triggered and the permit engineer needs to be convinced that the source is not modified.

#### Previous NSR Permit Application

Tesoro submitted an identical Permit Application 23194 in 2011 (Tesoro eventually cancelled the AC for S-904 on 3/11/2013). At this time Tesoro proposed the permit as an alteration claiming the new burners would be sized the same as the existing burners. However, Tesoro claimed the firing rate limits in the permit conditions (created by the alterations referred to in the paragraphs above), were firm NSR limits. This position was incorrect since the boiler was never modified and thus the combustion emissions from the boiler have never been subject to the requirements of Regulation 2, Rule 2, New Source Review. After much discussion and negotiation, an AC was granted for Application 23194 based on a review of the original burner design specification. In effect, the AC was granted as a "really good" grandfathered source evaluation.

However, Tesoro was not happy with the initial Application 23194 outcome. The original burner design document indicated that the S-904 grandfathered limit was 700MM Btu/hr. Tesoro engineers calculated a situation where both the steam supply from the Foster Wheeler Cogen unit is unavailable and the S-901 FCCU CO boiler is out of service and S-904 has to provide all refinery steam. This situation was represented as a rare occurrence, but nonetheless Tesoro identified that during this situation, the S-904 firing rate is estimated at 728MM Btu/hr and requested a daily firing limit at  $728 \times 24 = 17,472$ MM Btu/day. Since this "rare" firing rate is higher than the 700MM Btu/hr documented grandfathered limit, allowing the 728MM x 24 Btu/day firing rate in a permit condition is problematic since it implies S-904 is being modified, invalidating the grandfathered source approach for permitting this project. The District counter-proposed a 700x24 daily limit, but averaged on a weekly basis. This would allow for the rare times when 728MM Btu/hr was required. Tesoro rejected this proposal citing difficulty to administer the weekly averaging since it is different than all the other limits on fired sources. Tesoro also stated that the "rare" event could last a week or more during turnarounds. While it is true that turnarounds last longer than a day or two, Tesoro has permits (at the time) for S-1551, S-1552 and S-1553, 99MM Btu/hr portable back-up steam boilers that were specifically permitted for situations where steam supply is known to be limited (such as turnarounds). The Tesoro calculations that derived the 728MM Btu/hr included a 5% allowance for metering error and did not include the 298MM Btu/hr total duty of the permitted back-up boilers. The final negotiated agreement was to keep the 775MM Btu/hr limit (the Regulation 3 billing rate), and allow S-904 to fire at a daily rate of 700MM x 24 Btu/day, plus an allowance of 5% to account for the fact that the Riley Stoker Boiler document is over 50 years old, introducing the plausibility that the 80.9% specified efficiency is no longer valid, and that the monitoring

instrumentation contains an inherent inaccuracy. The AC was based on the following firing rates:

Duration	Limit	Units	Basis
Hourly	775	MMBtu/hr	Limit for Billing
Daily	16,800 + 5%	MMBtu/day	700x24 plus a 5% allowance
Annual	6,132,000	MMBty/yr	Grandfathered limit of 700MM x 24 x 365

Once Tesoro cancelled the AC, these limits were removed from the permit.

**Kevin Poloncarz Message 10/8/2015**

**date:** October 8, 2015  
**to:** Randi Wallach  
**from:** Kevin Poloncarz  
Telephone Number: 1(415) 856-7029  
**subject:** Draft Revision 5 of Tesoro Martinez Title V Permit

This memorandum follows our meeting at the District's office on September 10, 2015 and describes our concerns with the language that the District has proposed adding in several sections to the proposed Title V revision. In short, the language the District seeks to add is inconsistent with the District's rules.

Background on Language Proposed for Inclusion in Draft Revision 5. The District has proposed adding the following new language to Part 1 of Condition 16685, which currently identifies for certain sources, a "Firing Rate Used for Fees (MMBTU/hr)" and a "Firing Rate Enforceable Limit (MMBTU/day)"<sup>5</sup>:

These firing limits are enforceable not-to-exceed limits but are not considered enforceable New Source Review emissions limits since these sources were not subject to Regulation 2, Rule 2 when this condition was created. If any source below was subject to Regulation 2, Rule 2, the firing rate, emissions limits and other associated requirements will be contained in a separate enforceable permit condition.

Draft Proposed Revision 5 to Major Facility Review Permit, September 11, 2015 (hereinafter, Draft "Rev 5" Renewal) at 488.

Table II A1 indicates the hourly firing rates as "Firm Limit[s]", not "Grandfathered Limit[s]", which would be subject to reporting per Standard Condition J. *See* Draft "Rev 5" Renewal at Table II A1. For two sources (Sources S-904 and S-908), the District proposes adding to the column entitled, "Grandfathered Limit or Firm Limit and Basis", the words, "Grandfathered Source" immediately below the words "Firm Limit".<sup>6</sup>

<sup>5</sup> This condition currently provides as follows:

Permittee/Owner/Operator shall ensure that each combustion source listed below does not exceed its indicated maximum firing rate (higher heating value), expressed in the units of million BTU per day (MMBTU/day). These firing rates are sustainable maximum firing rates. The sustainable hourly firing rates, used for billing purposes, are established by dividing the maximum daily firing rates by 24 hours.

<sup>6</sup> *See id.* at 20. The District proposes adding similar language to Part 1 of Condition 17322, which currently provides that, "Permittee/Owner/Operator shall ensure that Boiler S-904 is not fired above its maximum firing rate of 775 MMBTU/hr (HHV) heat input at any time." *Id.* at 489-90. To this language, the District proposes adding the following:

This firing limit is an enforceable not-to-exceed limit but is not considered an enforceable New Source Review emissions limit since S-904 was not subject to Regulation 2, Rule 2 when this limit was created.

*Id.* at 490.

According to conversations with Mr. Art Valla, the District’s rationale for adding the above language to Draft “Rev 5” Renewal is to make clear that these “enforceable not-to-exceed [i.e., firm] limits” are not to be considered for purposes of determining whether or not a change constitutes an “alteration” or a “modification”, per the definition of “Modified Source” which appears at District Regulation 2-1-234. In other words, the District will disregard these firm or “enforceable not-to-exceed limits” for purposes of determining whether a change constitutes a modification because these limits do not constitute “New Source Review emissions limits.” Mr. Valla has also explained the District’s rationale for treating all grandfathered sources as though they were not subject to enforceable limits on their capacity or emissions as a means of assuring that no debottlenecking increase will occur as a result of any particular change. *See, e.g.*, “Procedure: A Method to Confirm that a Grandfathered Source at a Petroleum refinery is Altered rather than Modified”, Jim Karas, P.E., 4/16/2015, at 2.

The problem with the approach suggested by the language proposed for inclusion in the Draft “Rev 5” is that it is inconsistent with the District’s permitting rules

Impact on Determinations of Whether a Change Constitutes an Alteration or Modification.

Section 2-1-234.2 identifies a “Modified Source” as “[a]n increase in either the daily or annual emission level of any regulated air pollutant, or the production rate or capacity that is used to estimate the emission level, above levels contained in *any current permit to operate or major facility review permit.*” BAAQMD Reg. 2, Rule 1, § 234.2 (emphasis added).

According to Mr. Valla, although the foregoing limits on Tesoro’s sources are indicated as “enforceable not-to-exceed limits”—and therefore clearly constitute “emissions limits” pursuant to the Clean Air Act (*see* Clean Air Act § 304(f)(4), 42 U.S.C. § 7604(f)(4))—they are irrelevant for purposes of determining whether a change constitutes a modification under Section 2-1-234.2.

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With respect to the same source (S-904), the District also proposes to amend Condition 22590, which recites the same firing limit as “MAXIMUM firing rate of burners and pilots limited to 775 MMBtu/hr”. *Id.* at 560. To this condition, the District proposes to add the following:

[The firing limits contained in this condition \[sic\] are enforceable not-to-exceed limits used as a basis for the alteration project that added pilots to S-904 via Application 13076. These firing limits are not considered firm New Source Review emissions limits since S-904 was \[sic\] not subject to Regulation 2, Rule 2 when this condition was created.](#)

*Id.*

The District likewise proposes to add the following language to Part 1 of Condition 25161, which currently provides as follows:

The owner/operator shall operate the following sources only if firing rates do not exceed the following limits in any consecutive 365 calendar days:

S-909	1,036,600 MM Btu
S-912	1,162,608 MM Btu
S-920	513,920 MM Btu
S-950	3,417,495 MM Btu

*Id.* at 592. To this condition, the District proposes to add the following:

[These firing limits are enforceable not-to-exceed limits but are not considered enforceable New Source Review emissions limits since these sources were not subject to Regulation 2, Rule 2 when this condition was created. If any source above was subject to Regulation 2, Rule 2, the firing rate, emissions limits and other associated requirements will be contained in a separate enforceable permit condition. \(Basis: Regulations 2-1-233 and 2-1-403, Application No. 23341\)](#)

Rather, according to Mr. Valla, although such sources may be subject to firm, “enforceable not-to-exceed limits”, they will be evaluated pursuant to a separate subsection—Section 2-1-234.3—which, according to Mr. Valla, applies to *all* sources that have not undergone New Source Review.

Section 2-1-243.3 plainly does not apply to any source that is subject to enforceable limits on its operation because it only applies to “sources that have never been issued a District authority to construct *and* that do not have conditions limiting daily or annual emissions...” BAAQMD Reg. Rule 1, § 234.3 (emphasis added). As indicated above, the daily limits on operation of each of these sources are identified as “enforceable not-to-exceed limits” and/or clearly constitute enforceable limitations on the source’s operations and emissions. Thus, Section 2-1-243.2 applies for purposes of determining whether a change will result in an increase in emissions and therefore constitutes a modification.

Notably, the term “New Source Review emissions limits” or “NSR limits” (or any formulation thereof) appears nowhere in Section 2-1-234. Nor does any reference to Regulation 2, Rule 2. By seeking to manufacture a new term, “New Source Review emissions limits”, and using this term to distinguish such “NSR limits” from all other emissions limits and/or corresponding capacity limits established by District permit condition, the District is essentially seeking to rewrite Section 2-1-234, so that only “NSR limits” are to be given consideration in determining a source’s permitted potential to emit. But that is not how Section 2-1-234.2 reads (identifying a modification as a change that results in “[a]n increase in either the daily or annual emission level of any regulated air pollutant, or the production rate or capacity that is used to estimate the emission level, above levels *contained in a permit condition in any current permit to operate or major facility review permit*”) (emphasis added). Notably, Section 2-1-234.1 expressly applies to conditions appearing in a District authority to construct; so it would be wholly unreasonable under common canons of construction for the District to interpret 2-1-234.2 as only applying to conditions that were initially imposed pursuant to an authority to construct.

Nor would it be appropriate to limit 2-1-234.2 to only those conditions that were imposed by a District permit condition that also required the source to meet best available control technology (BACT) or offsets. Indeed, a synthetic minor operating limit that was taken specifically to avoid triggering New Source Review would constitute an emissions limit worthy of consideration pursuant to Section 2-1-234.2, no less than a condition that was imposed after undergoing New Source Review.

In short, District staff is seeking to have it both ways: They want to impose enforceable not-to-exceed capacity limitations on sources to limit emissions and then act as though such sources are not subject to enforceable limits on their emissions. District staff are seeking to treat these enforceable capacity limitations as no different from the capacities listed in the Title V permit that do not constitute enforceable limits and are subject to Standard Condition J. While staff seeks to manufacture a new term—New Source Review emissions limits—that term appears nowhere in Regulation 2, Rule 1 as the basis for determining whether a change constitutes a modification triggering NSR.

Note that the same analysis applies under the version of Regulation 2, Rule 1 that is pending EPA approval at this time. The proposed rule revisions would clarify that the test for determining whether a source is modified under the District’s rules is whether a change will

result in an increase in a source's potential to emit and that "[a]ny legally enforceable limitation on a source's operations that has the effect of limitation emissions may be taken into account in determining a source's potential to emit..." Proposed Reg. 2-1-234.1.1. ("Such limits may include direct limitations on the source's emissions and surrogate limits on operating conditions such as production rate or capacity that have the effect of limiting emissions."). Accordingly, under the proposed revisions to Regulation 2, Rule 1, capacity limitations of the sort currently appearing in Tesoro's existing permit Conditions 16685, 17322, 25590 and 25161 will undoubtedly constitute limitations that can establish the source's potential to emit, so long as the source can physically operate to the full extent of that capacity limitation. See Proposed Reg. 2-1-234.1.2.

***The language that the District seeks to add to each of Condition 16685, 17322, 25590 and 25161 above is problematic. Because of its implication that changes to sources subject to these conditions could trigger New Source Review—even if the particular change will not cause the source to exceed its current, physically achievable capacity limitations (and assuming the change will not constitute a federal major modification)—Tesoro objects to inclusion of the language in the Proposed Rev 5 of the Title V Permit.***



**Randi Wallach Reply Message 11/19/2015**

**From:** Randi Wallach  
**Sent:** Thursday, November 19, 2015 2:24 PM  
**To:** Poloncarz, Kevin  
**Cc:** Stoney K. Vining ([Stoney.K.Vining@TSOCorp.com](mailto:Stoney.K.Vining@TSOCorp.com))  
**Subject:** RE: Memo re Rev 5 of Martinez Title V Permit

Hi Kevin and Stoney,

Thank you for the October 8, 2015 memorandum on the draft revisions of Tesoro's Title V permit. We understand your position with regard to the background language that we worked on several years ago re: New Source Review limits and grandfathered sources and the similar proposed language from cancelled permit application # 23194 that was included in the latest round of draft Title V permit revisions. We are amenable to deleting the new proposed language and the older added language and will do so before Revision 5 is finalized; the changes are relevant to and will be addressed in current pending permit application # 27054. Because these changes are not substantive in nature they will not trigger a new comment period.

In general, any limits that currently exist, and any new limits added in the future, should be evaluated on a case-by-case basis each time they are at issue, whether for enforcement or permitting purposes. When for permitting purposes, enforceable capacity limits contained in permit conditions, such as those in conditions 16685, 17322, 25590 and 25161 will be considered under Regulation 2-1-234.2.

One point we want to raise, though, is the following: You state that "the daily limits on operation of each of these sources [S-909, S-912, S-920, S-950] are identified as "enforceable not-to-exceed limits" and/or clearly constitute enforceable limitations on the source's operations and emissions." (emphasis added). While the District agrees that the capacity limits for these sources are enforceable, it does not necessarily follow that these (or any) limits bound upper limitations of the sources' emissions. A firm, enforceable capacity limit will typically represent the attainable capacity of a source and thus provide surrogate data that can be used to calculate a maximum limit on emissions. A capacity limit will not in all cases constitute a condition limiting daily or annual emissions, however, as a source may not be able to physically operate to the full extent of that capacity limit and emissions thus may be capped at a lower level. For example, a source may not reach a limit because it is in some way bottlenecked by other upstream or downstream sources, or the limit may not reflect the true physical capabilities of the source, and in these cases the capacity limit does not limit the source's potential to emit ("PTE") and is not a "condition limiting daily or annual emissions" under the current 2-1-234.3. See *also* Proposed Regulation 2-1-234.1.2. (For sources whose emissions are not limited by any legally enforceable limitation (or that cannot physically operate to the full extent of such limitation), the source's potential to emit shall be determined by the source's actual physical ability to emit air pollution) (emphasis added).

Because a capacity limit does not always limit daily or annual emissions, “[f]or sources that have never been issued a District authority to construct and that do not have conditions limiting daily or annual emissions [i.e., conditions limiting PTE],” current section 234.3 sets out a method to determine a source’s PTE which can then be used to determine if proposed changes to that source are modifications or not. When determining whether a modification will occur, the analysis must be done under all subsections of Regulation 2-1-234, as its preamble requires that a proposed change be considered a modification if “any of the following” changes that are listed in the section 234 subsections occur. Thus, even if the analysis under 2-1-234.2 provides that no modification will occur, if the method under 2-1-234.3 results in a finding that the proposed changes to a source will increase its PTE, a modification will occur. On a case-by-case basis, even where a source has a firm capacity limit, the District may request further information so it can complete the analysis under section 234.3, such as where there is evidence to believe that the 234.3 analysis would result in a different determination than the analysis under 234.2.

The issue has relevance to Tesoro’s pending permit application # 27054. In this case, through the facts the District has requested and gathered with this application, the previous application # 23194 and otherwise historically, the District believes it has enough information to determine a modification will not occur under any of the subsections of Regulation 2-1-234 with an capacity limit of 745 MM Btu/hr for source 904, as proposed by Tesoro, and thus it can appropriately move forward processing the application as an alteration.

Please let me know if you have questions or would like to discuss further.

Best,  
Randi

**Randi Wallach**

Bay Area Air Quality Management District | Assistant Counsel  
939 Ellis Street | San Francisco, CA 94109  
Office: 415.749.4901 | Fax: 415.749.5103  
[rwallach@baaqmd.gov](mailto:rwallach@baaqmd.gov) | [www.baaqmd.gov](http://www.baaqmd.gov)

Please think before you print



**Application 27309, S-973 and S-974 3HDS Furnace Startup/Shutdown Duration  
EVALUATION REPORT**

**TESORO REFINING AND MARKETING COMPANY**  
**S-973 No. 3 HDS Recycle Gas Heater (F55)**  
**S-974 No. 3 HDS Fractionator Feed Heater (F56)**  
**APPLICATION 27309, PLANT 14628**

**BACKGROUND**

The Tesoro Refining and Marketing Company (Tesoro) is applying for a Change in Conditions to its Permit to Operate to extend the allowable start-up and shutdown time for the two furnaces at the No. 3 HDS Unit:

- S-973 No. 3 HDS Recycle Gas Heater (F55)**
- S-974 No. 3 HDS Fractionator Feed Heater (F56)**

Abated by

- A-31 No. 3 HDS Selective Catalytic Reduction (SCR) Unit**

During major maintenance events and turnarounds, Tesoro needs an extended time to startup and shutdown S-973 and S-974. During the duration of start-up and shutdown period, the Selective Catalytic Reduction (SCR) is operating without ammonia injection. Ammonia cannot be injected until the heater flue gas temperature exceeds 520 degrees F. Any ammonia injection below this temperature results in ammonia salts and plugging of the SCR bed and flue gas stack. Additionally, metallurgical constraints must be addressed to prevent heater tube failures. This requires a slow heat up process.

Pursuant to Condition 8077, Part A2B, Tesoro is required to begin ammonia injection into A-31 once the S-973/S-974 exhaust temperature reaches 530 degrees F. Tesoro currently has a limit in Permit Condition 8077 Part A2A for extended startup and shutdown events, not to exceed a total of 144 hours per rolling 12 months:

A2A. For S-974, the total start-up or shutdown period during which S-974 may be operated without ammonia injection at A-31, No. 3 HDS Selective Catalytic Reduction Unit, shall not exceed 72 hours per start-up or shutdown. For S-974, the total combined start-up and shutdown time shall not exceed 144 hours during any rolling 12 consecutive month period. During the start up or shutdown period for S-974, NOx emissions from S-974 shall not exceed 146 pounds during any rolling 24 consecutive hour period. During the start up or shutdown period for S-974, NOx emissions from S-973 and S-974 combined (when there is one combined emission point for S-973 and S-974) shall not exceed 146 pounds during any rolling 24 consecutive hour period. For S-974, sum total NOx emissions occurring during start up and shutdown shall not exceed 876 pounds during any rolling 12 consecutive month period. NOx emissions from S-973 and S-974 combined (when there is one combined emission point for S-973 and S-974) shall not exceed 876 pounds during any rolling 12 consecutive month period. (basis: cumulative increase, offsets)

The duration was increased to 144 hours in 2001 NSR Permit Application 2372 submitted by former refinery owner Ultramar. The 2001 duration increase was based on a 72 hour duration for each startup event and two events annually. The NOx emission increases associated with Application 2372 were 876 lb/yr, or 0.438 tons/yr. These emission increases were offset at a 1:15 ratio, and a total of 0.504 tons/yr NOx emission credits were provided through Bank 783 as allowed by Condition 18379.

Tesoro is proposing to increase the number of permitted startup events from 2 to 6 per year. Tesoro has already exceeded the 144 hour limit due to the Labor Strike and operational problems requiring more shutdowns. Tesoro currently plans to shut down the unit in late August or early September for maintenance. The proposed changes are shown below:

A2A. For S-974, the total start-up or shutdown period during which S-974 may be operated without ammonia injection at A-31, No. 3 HDS Selective Catalytic Reduction Unit, shall not exceed 72 hours per start-up or shutdown. For S-974, the total combined start-up and shutdown time shall not exceed ~~144~~432 hours during any rolling 12 consecutive month period. During the start up or shutdown period for S-974, NOx emissions from S-974 shall not exceed 146 pounds during any rolling 24 consecutive hour period. During the start up or shutdown period for S-974, NOx emissions from S-973 and S-974 combined (when there is one combined emission point for S-973 and S-974) shall not exceed 146 pounds during any rolling 24 consecutive hour period. For S-974, sum total NOx emissions occurring during start up and shutdown shall not exceed ~~876~~2628 pounds during any rolling 12 consecutive month period. NOx emissions from S-973 and S-974 combined (when there is one combined emission point for S-973 and S-974) shall not exceed ~~876~~2628 pounds during any rolling 12 consecutive month period. (basis: cumulative increase, offsets)

In addition, Tesoro has requested an administrative change to the S-973 and S-974 source descriptions. The current descriptions are based on the Tosco data forms that were submitted in 1984 when S-973 and S-974 were initially permitted (via Tosco NSR Permit Application 27769). These data forms mixed up the firing rates for the two furnaces, specifying S-973 as the smaller of the two furnaces. In fact, S-973 is the larger of the two furnaces, with a permitted firing rate of 110MMBtu/hr. S-974 is the smaller furnace, permitted for 55MM Btu/hr (in fact, the smaller furnace was permitted for 52MM in Application 27769, and the 55MM Btu/hr was specified in Condition 16685 in 1999 when the billing firing rate and capacity creep issue was addressed). The Enforcement Division confirmed that S-973 is the larger furnace. This administrative change is shown in the following table from the 2011 Tesoro Renewed Title V Permit.

**Table II A1 - Permitted Sources – Golden Eagle Refinery**

**Plant #B2758 – Tesoro Refining and Marketing Company - Golden Eagle Refinery**

Each of the following sources has been issued a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. The capacities in this table are the maximum allowable capacities pursuant to 2-1-301. Throughput limits function as reporting thresholds as described in Standard Conditions J.

S-#	Description	Make or Type	Model	Capacity	Grandfathered Limit, or Firm Limit and Basis
973	No. 3 HDS Recycle Gas Heater (F55) Refinery Fuel Gas, Natural Gas Abated by A-31 SCR on combined stack (P79) with S-974	Entec	Vertical Cylindrica 1	<del>55 mmbtu/hr</del> <del>481,800 mmbtu/yr</del> <del>110 mmbtu/hr</del> <del>963,600 mmbtu/yr</del>	Firm Limit Conditions #8077, Part B6B #16685, part 1
974	No. 3 HDS Fract Feed Heater (F56) Refinery Fuel Gas, Natural Gas Abated by A-31 SCR on combined stack (P79) with S-973	Entec	Vertical Cylindrica 1	<del>55 mmbtu/hr</del> <del>481,800 mmbtu/yr</del> <del>110 mmbtu/hr</del> <del>963,600 mmbtu/yr</del>	Firm Limit Conditions #8077, Part B6B #16685, part 1

**EMISSIONS CALCULATIONS**

Tesoro is currently subject to an S-973 and S-974 emission limit of 876 pounds during any rolling 12 consecutive month period, based upon an operating limit of 144 hours during any rolling 12 consecutive month period. Tesoro proposes an updated operating limit of 432 hours during any rolling 12 consecutive month period, three times greater than the current limit. Therefore, the total NOx emission limit is increased to 2,628 pounds during any rolling 12 consecutive month period.

$$\text{NOx increase} = 2628 - 876 \text{ lbs} = 1752 \text{ lbs} = 0.876 \text{ tons}$$

No increases in emissions of any other pollutants would be expected because the emissions are associated with operations of the furnaces without SCR for control of NOx emissions. This expectation is based on the assumption that if there are any increases in other pollutant concentrations during the startup/shutdown periods, the overall firing rate during the startup/shutdown period would be lower such that there would be no increase in mass emission limits compared to normal furnace operation. This is consistent with the treatment of other pollutants in other permit applications proposing source operation with no ammonia injection in the SCR.

## **PLANT CUMULATIVE INCREASE**

NOx: 0.000 tons/yr (current) + 0.876 tons/yr (proposed) = 0.876 tons/yr

## **TOXIC RISK SCREEN**

This proposed Change in Conditions would not emit toxic compounds in amounts different than previously emitted. Therefore, a toxic risk screen is not required.

## **BEST AVAILABLE CONTROL TECHNOLOGY**

BACT does not apply to this application. S-973 and S-974 were initially permitted with a BACT level of NOx control via Tosco NSR permit Application 27769. NOx emissions are limited to 40 ppmvd, corrected to 3% excess oxygen, 8-hour average, in Condition 8077 Part B7A. Pursuant to Regulation 2, Rule 2, BACT is triggered for new or modified sources that emit criteria pollutants in excess of 10 lbs/day. Since the proposed Change in Conditions could increase daily NOx emissions on the day of the startup event, compared to the pre-change where the heater would operate abated by the SCR, above 10 lbs/day, BACT for NOx must be evaluated. However, the operation covered in this application, both pre-change and post-change, covers limited durations during startup events that pertain to the BACT control technology (the SCR) currently installed on the sources. This BACT technology has operating temperature requirements to operate properly. BACT is not applicable to the limited duration when the existing BACT technology is brought up to operating temperature. Therefore, there is no change required to the current level of BACT control technology.

## **OFFSETS**

Pursuant to Regulation 2, Rule 2, 0.876 tons/year of NOx emissions must be offset.

0.876 tons NOx)(1.15) = 1.007 tons NOx ERCs

Tesoro will provide 1.007 tons of NOx from Banking Certificate 915.

### **Banking Certificate: 915**

Application no: 8454  
Final Disposition: Certificate Issued 12/09/03  
Condition #: 18379  
Reduction Location: Ultramar, Inc [Martinez]  
Certificate owner: Tesoro Refining & Marketing Company  
Contact: Sharon Lim, tel: (925) 335-3467  
Mailing address: 150 Solano Way, Martinez, CA 94553

Transfer from #: 892

Original cert.#: 891

-----		-----				
tons per year		PM25	POC	NOX	S02	CO
NPOC	PM10					
-----		-----				
Requested		.000	.000	.000	.000	.000
.000	.000					
Approved		?	.000	9.671	4.584	2.938
.000	.327					
Applic:14917						
Withdrawal		.000	.000	.175	.000	.000
.000	.000					
Applic:21023						
Withdrawal		.000	.000	.000	.000	.000
.000	.318					
Applic:23322						
Withdrawal		.000	.000	.000	.260	.000
.000	.000					
Applic: 2813						
Withdrawal		.000	.000	.000	.793	.000
.000	.000					
Applic:14917						
Withdrawal		.000	.000	.000	.006	.000
.000	.000					
Applic:25942						
Withdrawal		.000	.000	.193	.000	.000
.000	.000					
<hr/>						
Balance		?	.000	9.303	3.525	2.938
.000	.009					

The withdrawal from Bank 915 is subject to, and in compliance with, Permit Condition 18379:

COND# 18379 -----

Application #3180  
Plant #14628

S-940 Industrial Boiler; #1 Boiler @ 4 Boiler House,  
Maximum Firing Rate: 150 MMBtu/hr

- S
1. The emission reductions quantified pursuant to banking application #3180 granted for the permanent closure of
- way
- 940 shall only be used to offset emission increases occurring at the Avon refinery located at 150 Solano in Martinez, California and may be used for no other purpose.  
(basis: Regulation 2, Rule 4, Section 302.1)

### **PLANT LOCATION**

According to the SCHOOL program, the closest school is Las Juntas Elementary, which is almost two miles from the facility.

### **COMPLIANCE**

The proposed Change in Conditions will not change the compliance for Furnace S-973 and S-974. Tesoro will continue to comply with all applicable regulations, including Regulation 6, Rule 1, Regulation 9, Rule 10, and 40 CFR 60 Subpart J.

The closest school is over a mile from the facility, so the Public Notice requirements of Regulation 2-1-214 do not apply.

This project is exempt from CEQA per Regulation 2-1-312.6 since there is no expansion of the S-973 or S-974 sources beyond that currently permitted. Form Appendix H has been submitted in support of the exemption.

- 312.6 Permit applications relating exclusively to the repair, maintenance or minor alteration of existing facilities, equipment or sources involving negligible or no expansion of use beyond that previously existing.

Toxics and NESHAPS do not apply.

### **CONDITIONS**

The Tesoro Condition 8077, will be modified as shown below. Only the changes for Part A2A are shown. All of the other parts of Condition 8077 remain unchanged by this application.



Condition 8077

A2A. For S-974, the total start-up or shutdown period during which S-974 may be operated without ammonia injection at A-31, No. 3 HDS Selective Catalytic Reduction Unit, shall not exceed 72 hours per start-up or shutdown. For S-974, the total combined start-up and shutdown time shall not exceed 144432 hours during any rolling 12 consecutive month period. During the start up or shutdown period for S-974, NOx emissions from S-974 shall not exceed 146 pounds during any rolling 24 consecutive hour period. During the start up or shutdown period for S-974, NOx emissions from S-973 and S-974 combined (when there is one combined emission point for S-973 and S-974) shall not exceed 146 pounds during any rolling 24 consecutive hour period. For S-974, sum total NOx emissions occurring during start up and shutdown shall not exceed 8762628 pounds during any rolling 12 consecutive month period. NOx emissions from S-973 and S-974 combined (when there is one combined emission point for S-973 and S-974) shall not exceed 8762628 pounds during any rolling 12 consecutive month period. (basis: cumulative increase, offsets)

In addition, to accommodate Tesoro's administrative request for the S-973 and S-974 descriptions, Condition 16685 will be revised as follows:

COND# 16685 -----

Avon Refinery  
Condition Added 09/02/99

Application 18739 (November 2008) Removal of S-903  
& S-924

Application 19300 (December 2008) Removed S-904 No.  
6 Boiler House (because S-904 is included in  
Condition 17322)

Administratively Revised via Application 19647  
(March 2009) Consolidation of Bubble Condition 4357  
with Condition 8077

Administratively Deleted by Application 19874 (July  
2009) Updates for Combustion Sources - Combined  
with Condition 18372.

Administratively Reinstated Part 1 by Application 21464  
(April 2010)

Application 23194 (August 2011) S-904 Burner Replacement

Alteration (added clarifying language regarding firing limits and corrected basis of Part 1)  
 Authority to Construct cancelled March 2013.

Application 23322 (February 2013) Corrected firing rates  
 for  
 S-915, S-919, S-928 through S-933, S-934 and S-935.

Administratively Revised via Application 27309  
 (August 2015) Corrected firing rates of S-973 and S-974

Part #1:

Permittee/Owner/Operator shall ensure that each combustion source listed below does not exceed its indicated maximum firing rate (higher heating value), expressed in the units of million BTU per day (MMBTU/day). These firing rates are sustainable maximum firing rates. The sustainable hourly firing rates, used for billing purposes, are established by dividing the maximum daily firing rates by 24 hours. These firing limits are enforceable not-to-exceed limits but are not considered enforceable New Source Review emissions limits since these sources were not subject to Regulation

2,

Rule 2 when this condition was created.

District Source Number (#)	Firing Rate Used for Fees (MMBTU/hr)	Firing Rate Enforceable Limit (MMBTU/day)	District/ Permittee Source Description
S-908	220	5280	#8 Furnace NO. 3 Crude Heater
S-909	145	3480	#9 Furnace #1 Feed Prep. Heater
S-912	135	3240	#12 Furnace -#1 Feed Prep. Heater
S-913	59	1416	#13 Furnace -#2 Feed Prep. Heater
S-915	50	1200	#15Furnace -Plat former Intermediate Heater
S-916	55	1320	#16 Furnace -#1 HDS Heater
S-917	18	432	#17 Furnace -#1 HDS Prefractionator

Reboiler			
S-919	111	2664	#19Furnace -#2 HDS Depentanizer Reboiler
S-920	63	1512	#20 Furnace -#2 HDS Charge Heater
S-921	63	1512	#21 Furnace -#2 HDS Charge Heater
S-922	130	3120	#22 Furnace -#5 Gas Debutanizer Reboiler
S-926	145	3480	#26 Furnace -#2 Reformer Splitter Reboiler
S-927	280	6720	#27 Furnace -#2 Reformer Heater AND Reheating
S-928	18	432	#28 Furnace -HDN Reactor A Heater
S-929	18	432	#29 Furnace -HDN ReactorB Heater
S-930	18	432	#30 Furnace -HDN Reactor C Heater
S-931	18	432	#31 Furnace -Hydrocracker Reactor 1 Heater
S-932	18	432	#32 Furnace -Hydrocracker Reactor 2 Heater
S-933	18	432	#33 Furnace -Hydrocracker Reactor 3 Heater
S-934	135	3240	#34 Furnace -Hydrocracker Stabilizer Reboiler
S-935	135	3240	#35 Furnace -Hydrocracker Splitter Reboiler
S-937	743	17832	#37 Furnace -Hydrogen Plant Heater
S-950	440	10560	#50 Furnace - 50 Unit Crude Heater
S-951	30	720	#51 Furnace-#2 Reformer Auxiliary Reheater
S-971	300	7200	#53 Furnace -#3 Reformer UOP Furnace
S-972	45	1080	#54 Furnace -#3

Reformer Debutanizer  
Reboiler

S-973      11055      2640~~1320~~      #55 Furnace-No 3 HDS

Recycle Gas Heater

S-974      55~~110~~      1320~~2640~~      #56 Furnace-No 3 HDS

Fractionator Feed  
Heater

(basis: Regulation 2-1-403, Bubble  
Condition 4357/8077 for S917 via Application 19647, 1987

NSR

Application 164 for S-917, 1987 NSR Application 548 for S-928 through S-935, 1991 NSR Application 6468 for S-915 and S-916)

### TITLE V PERMIT

This facility is a major facility that operates pursuant to, and in compliance with, a federal operating permit, aka Title V permit, pursuant to Regulation 2, Rule 6, Major Facility Review. The only substantial change to this permit would be a revision of Condition 8077, Part A2A. There are also some corrections. Tesoro has submitted Title V Permit Application 27310 for a minor revision to the Title V permit. The complete parts of the Title V permit that apply to S-973, S-974 and A-31, and the revisions associated with this application are shown in Appendix A.

### RECOMMENDATION

It is recommended that a Change of Conditions to the Permit to Operate be granted to Tesoro for:

**S-973 No. 3 HDS Recycle Gas Heater (F55)**  
**S-974 No. 3 HDS Fractionator Feed Heater (F56)**

\_\_\_\_\_  
Arthur P. Valla  
Senior Air Quality Engineer

\_\_\_\_\_  
Date  
August 26, 2015

Appendix A

Tesoro NSR Permit Application 27309.

Title V Permit Revision Application 27310

Note: The changes shown in this Appendix only reflect the revisions associated with Tesoro Permit Application 27309, and are based on the current permit -- the 2011 Renewal Title V Permit. There are other revisions pertinent to S-973, S-974, A-31 and S-850 No. 3 HDS Unit detailed in the draft “Rev 5” permit that are proposed, but not currently approved. The initial draft of the Rev 5 permit was submitted for Tesoro review in September 2014. Tesoro Application 27309 was submitted in June 2015 after the ‘cut-off’ date for the Rev 5 permit. The omission of any “Rev 5” proposed revisions from this Appendix does not mean Rev 5 revisions are not without merit. In addition, any previously approved revisions to the 2011 Renewal Permit not shown in this Appendix do not mean the approved revisions are not without merit.

**Section II, Equipment.**

**Table II A1 - Permitted Sources – Golden Eagle Refinery**

**Plant #B2758 – Tesoro Refining and Marketing Company - Golden Eagle Refinery**

Each of the following sources has been issued a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. The capacities in this table are the maximum allowable capacities pursuant to 2-1-301. Throughput limits function as reporting thresholds as described in Standard Conditions J.

S-#	Description	Make or Type	Model	Capacity	Grandfathered Limit, or Firm Limit and Basis
973	No. 3 HDS Recycle Gas Heater (F55) Refinery Fuel Gas, Natural Gas Abated by A-31 SCR on combined stack (P79) with S-974	Entec	Vertical Cylindrica 1	<del>11055</del> mmbtu/hr <del>963,600</del> <del>481,800</del> mmbtu/yr	Firm Limit Conditions #8077, Part B76B #16685, part 1
974	No. 3 HDS Fract Feed Heater (F56) Refinery Fuel Gas, Natural Gas Abated by A-31 SCR on combined stack (P79) with S-973	Entec	Vertical Cylindrica 1	<del>55440</del> mmbtu/hr <del>481,800</del> <del>963,600</del> mmbtu/yr	Firm Limit Conditions #8077, Part B76B #16685, part 1

**Table II B – Abatement Devices**  
**Plant #B2758 - Tesoro Refining and Marketing Company - Golden Eagle Refinery**

A-#	Description	Source(s) Controlled	Applicable Requirement	Operating Parameters	Limit or Efficiency
31	No. 3 HDS Selective Catalytic Reduction (SCR) Unit	S974	BAAQMD Condition # 8077, part <a href="#">AB2A</a>	Ammonia injection not required during startup/shutdown periods: 72 hrs per SU or SD; <a href="#">432+44</a> hrs/12 months	NOx: 146 lb/rolling 24 hours; limit for S974 SU or SD
31	No. 3 HDS Selective Catalytic Reduction (SCR) Unit	S974	BAAQMD Condition # 8077, part <a href="#">AB2A</a>	Ammonia injection not required during startup/shutdown periods: 72 hrs per SU or SD; <a href="#">432+44</a> hrs/12 months	NOx: <a href="#">2628876</a> lb/rolling 12 months
31	No. 3 HDS Selective Catalytic Reduction (SCR) Unit	S973 S974	BAAQMD Condition # 8077, part <a href="#">AB2A</a>	Ammonia injection not required during startup/shutdown periods: 72 hrs per SU or SD; <a href="#">432+44</a> hrs/12 months	NOx: 146 lb/rolling 24 hours; combined limit for S973 and S974 during S974 SU or SD

**Table II B – Abatement Devices**

**Plant #B2758 - Tesoro Refining and Marketing Company - Golden Eagle Refinery**

A-#	Description	Source(s) Controlled	Applicable Requirement	Operating Parameters	Limit or Efficiency
31	No. 3 HDS Selective Catalytic Reduction (SCR) Unit	S973 S974	BAAQMD Condition # 8077, part <a href="#">AB2A</a>	Ammonia injection not required during startup/shutdown periods: 72 hrs per SU or SD; <a href="#">432+44</a> hrs/12 months	NOx: <del>2628876</del> lb/rolling 12 months; combined limit for S973 and S974 during S974 SU or SD
31	No. 3 HDS Selective Catalytic Reduction (SCR) Unit	S973 S974	BAAQMD Condition # 8077, part <a href="#">AB2B</a>	Requirement to begin ammonia injection during startup of S973 or S974	A31 Inlet Temperature: 530 F
31	No. 3 HDS Selective Catalytic Reduction (SCR) Unit	S973, S974	BAAQMD Condition # 8077, part B7A	none	NOx: 40 ppmv, dry, corrected to 3% oxygen, 8 hour average

**Section IV, Source-specific Applicable Requirements**

**Table IV – C.4.3**

**Source-specific Applicable Requirements**

**S917 NO. 17 FURNACE, S919 NO. 19 FURNACE, S951 NO. 51 FURNACE, S971–NO. 53 FURNACE, S972–NO. 54 FURNACE, S973–NO. 55 FURNACE, S974–NO. 56 FURNACE, NSPS SUBPART J BY DATE OF CONSTRUCTION, RECONSTRUCTION, MODIFICATION**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
BAAQMD Regulation 1	General Provisions and Definitions (07/19/2006)		
1-520	Continuous Emission Monitoring	Y	

**Table IV – C.4.3**  
**Source-specific Applicable Requirements**  
**S917 No. 17 FURNACE, S919 No. 19 FURNACE, S951 No. 51 FURNACE, S971–No. 53**  
**FURNACE, S972–No. 54 FURNACE, S973–No. 55 FURNACE, S974–No. 56 FURNACE,**  
**NSPS SUBPART J BY DATE OF CONSTRUCTION, RECONSTRUCTION, MODIFICATION**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
1-520.8	Monitors pursuant to Regulations 10, 12 and 2-1-403	Y	
1-522	Continuous Emission Monitoring and Recordkeeping Procedures	N	
1-522.1	approval of plans and specifications	Y	
1-522.2	scheduling requirements	Y	
1-522.3	CEM performance testing	Y	
1-522.4	reporting of inoperative CEMs	Y	
1-522.5	CEM calibration requirements	Y	
1-522.6	CEM accuracy requirements	Y	
1-522.7	emission limit exceedance reporting requirements	N	
1-522.8	monitoring data submittal requirements	Y	
1-522.9	recordkeeping requirements	Y	
1-522.10	monitors required by Sections 1-521 or 2-1-403 shall meet the requirements specified by the APCO	Y	
1-523	Parametric Monitoring and Recordkeeping Procedures	N	
1-523.1	Report periods of parametric monitor inoperation	Y	
1-523.2	Limits on periods of parametric monitor inoperation	Y	
1-523.3	Report exceedances	N	
1-523.4	Recordkeeping	Y	
1-523.5	Maintenance and calibration; written policy	Y	
1-602	Area and Continuous Monitoring Requirements	N	
<b>SIP Regulation 1</b>	<b>General Provisions and Definitions (06/28/1999)</b>		
1-522	Continuous Emission Monitoring and Recordkeeping Procedures	Y	
1-522.7	emission limit exceedance reporting requirements	Y	
1-523	Parametric Monitoring and Recordkeeping Procedures	Y	
1-523.3	Report exceedances	Y	
<b>BAAQMD Regulation 6 Rule 1</b>	<b>Particulate Matter; General Requirements (12/05/2007)</b>		
6-1-301	Ringelmann No. 1 Limitation	N	
6-1-305	Visible Particles	N	
6-1-310	Particle Weight Limitation	N	
6-1-310.3	Heat transfer operations	N	
6-1-601	Particulate Matter, Sampling, Sampling Facilities, Opacity Instruments and Appraisal of Visible Emissions	N	



**Table IV – C.4.3**  
**Source-specific Applicable Requirements**  
**S917 NO. 17 FURNACE, S919 NO. 19 FURNACE, S951 NO. 51 FURNACE, S971–NO. 53**  
**FURNACE, S972–NO. 54 FURNACE, S973–NO. 55 FURNACE, S974–NO. 56 FURNACE,**  
**NSPS SUBPART J BY DATE OF CONSTRUCTION, RECONSTRUCTION, MODIFICATION**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
<b>SIP Regulation 6</b>	<b>Particulate Matter and Visible Emissions (09/04/1998)</b>		
6-301	Ringelmann No. 1 Limitation	Y	
6-305	Visible Particles	Y	
6-310	Particle Weight Limitation	Y	
6-310.3	Heat transfer operations	Y	
6-601	Particulate Matter, Sampling, Sampling Facilities, Opacity Instruments and Appraisal of Visible Emissions	Y	
<b>BAAQMD Regulation 9 Rule 10</b>	<b>Inorganic Gaseous Pollutants - Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators, and Process Heaters in Petroleum Refineries (07/17/2002)</b>		
9-10-301	Emission Limit for Facility, NOx: 0.033 lb NOx/MMBTU	N	
9-10-303	Federal Interim Facility-wide NOx emission rate limit	Y	
9-10-305	CO emission limit	N	
9-10-502	Monitoring for sources subject to 9-10-301, 303, 304, and 305	N	
9-10-502.1	CEMS for NOx, CO, and O2	N	
9-10-502.2	Fuel flowmeters	N	
9-10-504	Recordkeeping	N	
9-10-504.1	Recordkeeping for sources subject to 9-10-301, 304, or 305, or effective 7/17/2007, 9-10-303	N	
9-10-505	Reporting for sources subject to 9-10-301, 303, 304, 305, and/or 306	N	
9-10-601	Determination of Nitrogen Oxides	Y	
9-10-602	Determination of Carbon Monoxide and Stack-Gas Oxygen	N	
9-10-603	Compliance Determination	Y	
9-10-604	Determination of Higher Heating Value	Y	
<b>SIP Regulation 9 Rule 10</b>	<b>Inorganic Gaseous Pollutants - Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators, and Process Heaters in Petroleum Refineries (04/12/2008)</b>		
9-10-502	Monitoring for sources subject to 9-10-303	Y	
9-10-504.1	Recordkeeping for sources subject to 9-10-303	Y	
9-10-505	Reporting requirements for sources subject to 9-10-303 and/or 306	Y	
<b>BAAQMD Regulation 10</b>	<b>Standards of Performance for New Stationary Sources incorporated by reference (02/16/2000)</b>		
10-14	Subpart J – Standards of Performance for Petroleum Refineries	Y	

**Table IV – C.4.3**  
**Source-specific Applicable Requirements**  
**S917 NO. 17 FURNACE, S919 NO. 19 FURNACE, S951 NO. 51 FURNACE, S971–NO. 53**  
**FURNACE, S972–NO. 54 FURNACE, S973–NO. 55 FURNACE, S974–NO. 56 FURNACE,**  
**NSPS SUBPART J BY DATE OF CONSTRUCTION, RECONSTRUCTION, MODIFICATION**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
<b>BAAQMD Manual of Procedures, Volume V</b>	<b>Continuous Emission Monitoring Policy and Procedures (01/20/1982)</b>	N	
<b>40 CFR 60 Subpart J</b>	<b>NSPS - Standards of Performance for Petroleum Refineries (06/24/2008)</b>		
60.100	Applicability	Y	
60.100(a)	Applicability: FCCU Catalyst Regenerators, Fuel Gas Combustion Devices, and Claus Sulfur Recovery Plants (20 LTD)	Y	
60.100(b)	Applicability: Constructed/reconstructed/modified after 6/11/1973 and before May 14, 2007	Y	
60.104	Standards for Sulfur Oxides	Y	
60.104(a)(1)	Limit on hydrogen sulfide content in fuel gas burned in fuel gas combustion devices	Y	
60.105	Monitoring of Emissions and Operations	Y	
60.105(a)	Continuous monitoring system requirements	Y	
60.105(a)(4)	Monitoring requirement for H <sub>2</sub> S (dry basis) in fuel gas prior to combustion (in lieu of separate combustion device exhaust SO <sub>2</sub> monitors as required by 60.105(a)(3))	Y	
60.105(a)(4)(i)	Span value for H <sub>2</sub> S monitoring is 425 mg/dscm H <sub>2</sub> S	Y	
60.105(a)(4)(ii)	Fuel gas combustion devices having a common source of fuel gas may be monitored at only one location	Y	
60.105(a)(4)(iii)	Use Performance Specification 7 for performance evaluations and Method 11, 15, 15A, or 16 for relative accuracy evaluations	Y	
60.105(e)	Periods of excess emissions for 60.7(c)	Y	
60.105(e)(3)	Excess emissions of sulfur dioxide from fuel gas combustion	Y	
60.105(e)(3)(ii)	excess H <sub>2</sub> S in fuel gas as measured under 60.105(a)(4)	Y	
60.106	Test methods and procedures	Y	
60.106(a)	Performance test requirements	Y	
60.106(e)(1)	Compliance determination for H <sub>2</sub> S standards for fuel gas combustion devices	Y	
60.107	Reporting and recordkeeping requirements	Y	
60.107(f)	Semiannual reporting	Y	
60.107(g)	Certification of semiannual report	Y	
<b>40 CFR 60 Appendix B</b>	<b>NSPS Title 40 Part 60 Appendix B – Performance Specifications (10/17/2000)</b>		

**Table IV – C.4.3**  
**Source-specific Applicable Requirements**  
**S917 NO. 17 FURNACE, S919 NO. 19 FURNACE, S951 NO. 51 FURNACE, S971–NO. 53**  
**FURNACE, S972–NO. 54 FURNACE, S973–NO. 55 FURNACE, S974–NO. 56 FURNACE,**  
**NSPS SUBPART J BY DATE OF CONSTRUCTION, RECONSTRUCTION, MODIFICATION**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
Performance Specification 7	Specifications and Test Procedures for Hydrogen Sulfide Continuous Emission Monitoring Systems in Stationary Sources	Y	
<b>40 CFR 60 Appendix F</b>	<b>NSPS Title 40 Part 60 Appendix F – Quality Assurance Procedures (06/13/2007)</b>		
Procedure 1	QA Requirements for Gas Continuous Emission Monitoring Systems	Y	
<b>Condition 8077</b>	<b>Listed conditions apply to sources noted</b>		
Part A2A (S973) (S974)	<a href="#">S-973 and S-974</a> Start-Up and Shutdown Time and NOx Emission Limits (basis: cumulative increase, offsets)	Y	
Part A2B (S973) (S974)	Ammonia Injection Requirement at A-31 SCR abating S-973 and S-974	Y	
Part B1	Definitions (basis: definitions)	Y	
Part B2	Emissions (basis: cumulative increase, BACT, offsets)	Y	
Part B3	Emission reductions (basis: cumulative increase, offsets, bubble	Y	
Part B4	Monitoring	Y	
Part B4A	NSPS Subpart J applicability and H2S CEMS requirements for fuel gas supply for S951, S971, S972, S973, and S974 (basis: NSPS)	Y	
Part B4B	Monitoring – NOx/O2 CEM (basis: cumulative increase, offsets) (S-973 and S-974 only)	Y	
Part B4D	Monitoring per Table D of Appendix to this permit condition (cumulative increase, offsets) (S-917, S-919, S-951, S-973, and S-974 only)	Y	
Part B5	Reporting and Record Keeping (cumulative increase, offsets)	Y	
Part B7A	NOx emission limits (basis: cumulative increase, offsets, BACT) (S-917, S-919, S-971, S-972, S-973, and S-974 only)	Y	
Part B7B	Maximum firing rate (basis: cumulative increase, offsets) (S-973 and S-974 only)	Y	
Part B9	Sulfur Recovery Facilities	Y	
Part B10	Access (cumulative increase, offsets)	Y	
Part B11	Enforcement (basis: cumulative increase, offsets)	Y	
Part B12	Miscellaneous (basis: cumulative increase, offsets)	Y	
Part B12C	Maintain equipment in good working order (basis: cumulative increase, offsets)	Y	
Part B12D	Nothing in this condition shall be construed to allow violation of any	Y	

**Table IV – C.4.3**  
**Source-specific Applicable Requirements**  
**S917 NO. 17 FURNACE, S919 NO. 19 FURNACE, S951 NO. 51 FURNACE, S971–NO. 53**  
**FURNACE, S972–NO. 54 FURNACE, S973–NO. 55 FURNACE, S974–NO. 56 FURNACE,**  
**NSPS SUBPART J BY DATE OF CONSTRUCTION, RECONSTRUCTION, MODIFICATION**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
	other law or regulation (basis: cumulative increase, offsets)		
Part B12E	Emission reductions required by this condition shall not be eligible for banking or credited as emission reductions against cumulative increases (basis: cumulative increase, offsets)	Y	
Part B12F	Annual limits in B2 shall be adjusted consistent with BAAQMD rule changes (basis: cumulative increase, offsets)	Y	
Part B12G	Baseline emissions (basis: cumulative increase, offsets)	Y	
Part B12J	Instrument downtime (basis: cumulative increase, offsets)	Y	
Part B12K	Breakdowns, malfunctions, and other causes for emission exceedances (basis: cumulative increase, offsets)	Y	
Part B12L	Adjustment of CO limits based on modeling (basis: cumulative increase, offsets)	Y	
Part B13	Severability (basis: cumulative increase, offsets)	Y	
Part B14	Environmental Management Plan (basis: cumulative increase, offsets)	Y	
<b>BAAQMD Condition # 16685</b>			
Part 1	Daily Firing rate limitations (basis: cumulative increase, Regulation 2-1-403, Bubble Condition 8077 for S917 via Application 19647)	Y	
<b>BAAQMD Condition 18372</b>			
Part 2	Natural Gas or Refinery Fuel Gas only (Regulation 9-10)	Y	
Part 20	S971 to be abated by A1433, A1433 requires CEM (Regulation 9-10)	Y	
Part 21	S972 to be abated by A1433, A1433 requires CEM (Regulation 9-10)	Y	
Part 22	S971 and S972 ammonia slip limit 20 ppmv (toxics)	Y	
Part 27	Sources subject to the refinery-wide NOx limit and the CO concentration limit in Regulation 9-10 (basis: Regulation 9-10-301, 303, & 305)	Y	
Part 28	O2 monitor and recorder requirement (basis: Regulation 9-10-502)	Y	
Part 29	Operating condition requirements for those sources without CEM (basis: Regulation 9-10-502) (S-917, S-919, and S-951 only)	Y	
Part 30	NOx box establishment requirements (basis: Regulation 9-10-502) (S-917, S-919, and S-951 only)	Y	

**Table IV – C.4.3**  
**Source-specific Applicable Requirements**  
**S917 No. 17 FURNACE, S919 No. 19 FURNACE, S951 No. 51 FURNACE, S971–No. 53**  
**FURNACE, S972–No. 54 FURNACE, S973–No. 55 FURNACE, S974–No. 56 FURNACE,**  
**NSPS SUBPART J BY DATE OF CONSTRUCTION, RECONSTRUCTION, MODIFICATION**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
Part 31	NOx box ranges (basis: Regulation 9-10-502) (S-917, S-919, and S-951 only)	Y	
Part 32	NOx Box Deviations (basis: Regulation 9-10-502) (S-917, S-919, and S-951 only)	Y	
Part 33	Source test requirements (basis: Regulation 9-10-502) (S-917, S-919, and S-951 only)	Y	
Part 34	CO source test (basis: Regulation 9-10-502, 1-522) (S-973, and S-974 only)	Y	
Part 35	CO results requires CEM (basis: Regulation 9-10-502, 1-522) (S-917, S-919, S-951, S-973, and S-974 only)	Y	
Part 36	Source test records (basis: recordkeeping; Regulation 9-10-504)	Y	
<b>BAAQMD Condition 21186</b>	S917 only		
Part 1	Sample fuel gas for total reduced sulfur (TDS) (basis: cumulative increase, BACT, offsets, Regulation 2-1-403)	Y	
Part 2	Analyze and record total reduced sulfur (TDS) (basis: cumulative increase, BACT, offsets, Regulation 2-1-403)	Y	
Part 3	TRS limit of 300 ppmvd (basis: cumulative increase, BACT, offsets, Regulation 2-1-403)	Y	
Part 4	Annual average TRS limit of 281 ppmvd (basis: cumulative increase, BACT, offsets, Regulation 2-1-403)	Y	
Part 7	Recordkeeping	Y	

**Section VI, Conditions.**

**Condition 8077**

Application 27769 The No. 3 HDS Unit (1981)

PERMIT NO. 3318: REFINERY MODERNIZATION PROJECT PERMIT CONDITIONS  
NEW PERMIT CONDITIONS FOR PERMIT NO. 3318

Application 14047: Clarify conditions to allow owner/operator to shutdown ammonia injection to A-31 SCR during both startup and shutdown of S-974 (Part A2A).

Application 19300 (December 2008) Added S-904 No. 6 Boiler House

Application 19647 (March 2009) Consolidate With Condition 4357

Administratively Revised by Application 19874 (July 2009) Updates for Combustion Sources

Administratively Changed by Application 21711 (May 2010) Deleted Parts A10-A14 (redundant or completed items). Revised Part B6B and deleted Part B6D (S848 out of service)

#### Appendices A-D

Hyperlink to Appendix A to go here.

[http://www.baaqmd.gov/~media/Files/Engineering/Title%20V%20Permits/B2758%209/B2758-9\\_2005-08\\_reopen\\_02a.ashx](http://www.baaqmd.gov/~media/Files/Engineering/Title%20V%20Permits/B2758%209/B2758-9_2005-08_reopen_02a.ashx)

Hyperlink to Appendix B to go here.

[http://www.baaqmd.gov/~media/Files/Engineering/Title%20V%20Permits/B2758%209/B2758-9\\_2005-08\\_reopen\\_02b.ashx](http://www.baaqmd.gov/~media/Files/Engineering/Title%20V%20Permits/B2758%209/B2758-9_2005-08_reopen_02b.ashx)

Hyperlink to Appendix C to go here.

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S57 Tank A-57  
S323 Tank A-323  
S850 No. 3 HDS Unit  
S901 No. 7 Boiler  
S904 No. 6 Boiler  
S908 No. 3 Crude Heater (F8)  
S909 No. 1 Feed Prep Heater (F9)  
S912 No. 1 Feed Prep Heater (F12)  
S913 No. 2 Feed Prep Heater (F13)  
S915 Platformer Intermediate Heater  
S916 No. 1 HDS Heater (F16)  
S917 No. 1 HDS Prefract Reboiler (F17)  
S919 No. 2 HDS Depent Reboiler (F19)  
S920 No. 2 HDS Charge Heater (F20)  
S921 No. 2 HDS Charge Heater (F21)  
S928 HDN Reactor A Heater (F28)

S929 HDN Reactor B Heater (F29)  
S930 HDN Reactor C Heater (F30)  
S931 Hydrocracker Reactor 1 Heater (F31)  
S932 Hydrocracker Reactor 2 Heater (F32)  
S933 Hydrocracker Reactor 3 Heater (F33)  
S934 Hydrocracker Stabilizer Reboiler (F34)  
S935 Hydrocracker Splitter Reboiler (F35)  
S937 Hydrogen Plant Heater (F37)  
S951 No. 2 Reformer Aux Reheater (F51)  
S952 Internal Combustion Engine  
S953 Internal Combustion Engine  
S954 Internal Combustion Engine  
S955 Internal Combustion Engine  
S956 Internal Combustion Engine  
S957 Internal Combustion Engine  
S958 Internal Combustion Engine  
S959 Internal Combustion Engine  
S960 Internal Combustion Engine  
S963 Gas Turbine 177  
S971 No. 3 Reformer UOP Furnace (F53)  
S972 No. 3 Reformer Debutanizer Reboiler (F54)  
S973 No. 3 HDS Recycle Gas Heater (F55)  
S974 No. 3 HDS Fract Feed Heater (F56)  
S1009 Alkylation Unit

A2A. For S-974, the total start-up or shutdown period during which S-974 may be operated without ammonia injection at A-31, No. 3 HDS Selective Catalytic Reduction Unit, shall not exceed 72 hours per start-up or shutdown. For S-974, the total combined start-up and shutdown time shall not exceed ~~144~~ 432 hours during any rolling 12 consecutive month period. During the start up or shutdown period for S-974, NOx emissions from S-974 shall not exceed 146 pounds during any rolling 24 consecutive hour period. During the start up or shutdown period for S-974, NOx emissions from S-973 and S-974 combined (when there is one combined emission point for S-973 and S-974) shall not exceed 146 pounds during any rolling 24 consecutive hour period. For S-974, sum total NOx emissions occurring during start up and shutdown shall not exceed ~~876-2628~~ pounds during any rolling 12 consecutive month period. NOx emissions from S-973 and S-974 combined (when there is one combined emission point for S-973 and S-974) shall not exceed ~~2628~~876 pounds during any rolling 12 consecutive month period. (basis: cumulative increase, offsets)

A2B. Permittee/Owner/Operator shall begin ammonia injection at A-31 as soon as the temperature of the exhaust at the inlet of A-31 reaches 530 degrees Fahrenheit. (basis: cumulative increase, offsets)

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[No parts pertinent to S-973, S-974 or A-31.]

- .  
 .
- B4. Monitoring. The following monitoring instruments listed shall be installed, calibrated, maintained and operated by Permittee/Owner/Operator:
- A. An instrument to continuously monitor and record the H<sub>2</sub>S concentrations in fuel gas. being fed to the following new or modified units, which will be required to comply with the New Source Performance Standard for the burning of fuel gas (0.23 grams of H<sub>2</sub>S/dry standard m<sup>3</sup> on a 3-hour average basis):
- No. 3 HDS Recycle Gas Heater, S-973
  - No. 3 HDS Fractionator Feed Heater, S-974
  - Nos. 51, 53, and 54 Furnaces (S-951, S-971, and S-972, respectively)  
 (basis: NSPS)
- B. An instrument to continuously monitor nitrogen oxide emissions and oxygen concentration in the flue gas from the following units:
- No. 3 HDS Recycle Gas Heater, S-973
  - No. 3 HDS Fractionator Feed Heater, S-974
  - No. 3 Crude Unit, No. 8 Furnace, S-908
  - Hydrocracker Stabilizer Reboiler (F34), S-934
  - Hydrocracker Splitter Reboiler (F35), S-935
  - No. 5 Gas Plant Debutanizer Reboiler, S-922  
 (basis: cumulative increase, offsets)

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 .  
 [No parts pertinent to S-973, S-974 or A-31.]  
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 .

B7. Combustion Controls.

- A. Except during periods of startup or shutdown, emissions of nitrogen oxides (calculated as NO<sub>2</sub>) and carbon monoxide shall not exceed the following limits.

NOx (ppmvd)	CO (ppmvd)	Unit(s)
10	50	S-908
40	50	S-973 and S-974
60	50	S-917, S-919, S-922, S-927, S-934 & S-935
75	50	S-971 and S-972

Except for S-908, these limits shall be based on an 8 hour average and corrected to 3% excess oxygen on a dry basis. For S-908, the limit shall be based on a 3 (three) hour average and corrected to 3% excess oxygen.



(basis: cumulative increase, offsets, BACT)

- B. The sum of the maximum firing rates of the first two units listed in B4B above (S-973 and S-974 shall not exceed 123 MMBTU/hr. (basis: cumulative increase, offsets)

**Condition 16685**

AVON REFINERY  
CONDITION ADDED 09/02/99

Application 18739 (November 2008) Removal of S-903 & S-924

Application 19300 (December 2008) Removed S-904 No. 6 Boiler House  
(because S-904 is included in Condition 17322)

Administratively Revised via Application 19647 (March 2009) Consolidation of  
Bubble Condition 4357 with Condition 8077

Administratively Deleted by Application 19874 (July 2009) Updates for  
Combustion Sources – Combined with Condition 18372.

Administratively Reinstated Part 1 by Application 21464 (April 2010)

Part #1:

Permittee/Owner/Operator shall ensure that each combustion source listed below does not exceed its indicated maximum firing rate (higher heating value), expressed in the units of million BTU per day (MMBTU/day). These firing rates are sustainable maximum firing rates. The sustainable hourly firing rates, used for billing purposes, are established by dividing the maximum daily firing rates by 24 hours.

<b>District Source Number (#)</b>	<b>Firing Rate Used for Fees (MMBTU/hr)</b>	<b>Firing Rate Enforceable Limit</b>	<b>District/ Permittee Source (MMBTU/day)</b>	<b>Description</b>
S-904	775	20352	#6 Boilerhouse	
S-908	220	5280	#8 Furnace No. 3 Crude Heater	
S-909	145	3480	#9 Furnace #1 Feed Prep. Heater	
S-912	135	3240	#12 Furnace -#1 Feed Prep. Heater	
S-913	59	1416	#13 Furnace -#2 Feed Prep. Heater	
S-915	20	480	#15Furnace –Plat former Intermediate Heater	
S-916	55	1320	#16 Furnace -#1 HDS Heater	
S-917	18	432	#17 Furnace -#1 HDS Prefractionator Reboiler	
S-919	65	1560	#19Furnace -#2 HDS Depentanizer Reboiler	
S-920	63	1512	#20 Furnace -#2 HDS Charge Heater	
S-921	63	1512	#21 Furnace -#2 HDS Charge Heater	

S-922	130	3120	#22 Furnace -#5 Gas Debutanizer Reboiler
S-926	145	3480	#26 Furnace -#2 Reformer Splitter Reboiler
S-927	280	6720	#27 Furnace -#2 Reformer Heater AND Reheating
S-928	20	480	#28 Furnace -HDN Reactor A Heater
S-929	20	480	#29 Furnace -HDN ReactorB Heater
S-930	20	480	#30 Furnace -HDN Reactor C Heater
S-931	20	480	#31 Furnace -Hydrocracker Reactor 1 Heater
S-932	20	480	#32 Furnace -Hydrocracker Reactor 2 Heater
S-933	20	480	#33 Furnace -Hydrocracker Reactor 3 Heater
S-934	152	3648	#34 Furnace -Hydrocracker Stabilizer Reboiler
S-935	152	3648	#35 Furnace -Hydrocracker Splitter Reboiler
S-937	743	17832	#37 Furnace -Hydrogen Plant Heater
S-950	440	10560	#50 Furnace - 50 Unit Crude Heater
S-951	30	720	#51 Furnace-#2 Reformer Auxiliary Reheater
S-971	300	7200	#53 Furnace -#3 Reformer UOP Furnace
S-972	45	1080	#54 Furnace -#3 Reformer Debutanizer Reboiler
S-973	<u>11055</u>	<u>2640<del>1320</del></u>	#55 Furnace-No 3 HDS Recycle Gas Heater
S-974	<u>55110</u>	<u>1320<del>2640</del></u>	#56 Furnace-No 3 HDS Fractionator Feed Heater

(basis: cumulative increase, Regulation 2-1-403, Bubble  
Condition 4357/8077 for S917 via Application 19647)

**Condition 18372**

Application #2209 and 16484  
Plant #14628  
Application 15682 (April, 2007) Initial establishment of NOx box parameters.  
Delete part 4.  
Application 14752 (January 2007) S-927 modification of Part 18.  
Application 16888 (April 2008) Modification of S-913  
Application 16889 (June 2008) Modification of S-951  
Modified by App. 18739 (Nov 2008) Removal of S924 from Parts 27 and 31  
Application 19300 (December 2008) Removed S-904 Backup CO Boiler Service  
Application 18748 (December 2008) Modification of S-919 Administratively  
Revised via Application 19647 (March 2009) Consolidation of Bubble  
Condition 4357 with Condition 8077  
Administratively Revised by Application 19874 (July 2009) Updates for  
Combustion Sources  
Application 20359 (June 2009) Modification of S-920  
Application 20259 (February 2010) Modification of S-909  
Application 17470 (February 2010) Modification of S-916  
Application 21732 (May 2010) Modification of S-919  
Administratively Reinstated Source List, Part 3 and Part 27 by Application 21464  
(April 2010)

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.  
[No parts pertinent to S-973, S-974 or A-31.]

34. For each source listed in Part 27 with a NOx CEM installed that does not have a CO CEM installed, the owner/operator shall conduct semi-annual district approved CO source tests at as-found conditions. The time interval between source tests shall not exceed 8 months. District conducted CO emission tests associated with District-conducted NOx CEM field accuracy tests may be substituted for the CO semi-annual source tests. (Regulation 9-10-502, 1-522)

**Section VII, Applicable Limits and Compliance Monitoring Requirements**

**Table VII – C.4.3  
 Applicable Limits and Compliance Monitoring Requirements  
 S917 No. 17 FURNACE, S919 No. 19 FURNACE, S951 No. 51 FURNACE, S971–No. 53 FURNACE, S972–No. 54 FURNACE, S973–No. 55 FURNACE, S974–No. 56 FURNACE  
 NSPS SUBPART J BY DATE OF CONSTRUCTION, RECONSTRUCTION, MODIFICATION**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
CO	BAAQMD 9-10-305 BAAQMD Condition 18372, Part 27	N		400 ppmv (dry, 3% O2)	BAAQMD 9-10-502 BAAQMD Condition 18372, Part 20 (S971)	C	CEM
					BAAQMD 9-10-502 BAAQMD Condition 18372, Part 21 (S972)	C	CEM

**Table VII – C.4.3**

**Applicable Limits and Compliance Monitoring Requirements  
 S917 No. 17 FURNACE, S919 No. 19 FURNACE, S951 No. 51 FURNACE, S971–No. 53  
 FURNACE, S972–No. 54 FURNACE, S973–No. 55 FURNACE, S974–No. 56 FURNACE  
 NSPS SUBPART J BY DATE OF CONSTRUCTION, RECONSTRUCTION, MODIFICATION**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
					BAAQMD 9-10-502 BAAQMD Condition 18372, Part 33.A.1 (S917)	P/ Annual	Source Test
					BAAQMD 9-10-502 BAAQMD Condition 18372, Part 33.A.2 (S919, S951)	P/ Twice per Consecutive 12-month period	Source Test
					BAAQMD 9-10-502 BAAQMD Condition 18372, Part 34 (S973, S974)	P/ Semi- annual	Source Test
CO	BAAQMD Condition 8077, Part B7A (S917, S919, S971, S972, S973, S974)	Y		50 ppmvd/ 8-hr avg. corrected to 3% O <sub>2</sub> )	BAAQMD 9-10-502 BAAQMD Condition 18372, Part 20 (S971)	C	CEM
					BAAQMD 9-10-502 BAAQMD Condition 18372, Part 21 (S972)	C	CEM

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FURNACE, S972–No. 54 FURNACE, S973–No. 55 FURNACE, S974–No. 56 FURNACE  
NSPS SUBPART J BY DATE OF CONSTRUCTION, RECONSTRUCTION, MODIFICATION**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit			Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
							BAAQMD Condition 8077, Part B7D (S917, S919)	P/Semi-Annual	Source Test
							BAAQMD 9-10-502 BAAQMD Condition 18372, Part 34 (S973, S974)	P/ Semi-annual	Source Test
FP	BAAQMD 6-1-310	N		0.15 grain/dscf			None	N	N/A
FP	BAAQMD 6-1-310.3	N		0.15 grain/dscf @ 6% O2			None	N	N/A
FP	SIP 6-310	Y		0.15 grain/dscf			None	N	N/A
FP	SIP 6-310.3	N		0.15 grain/dscf @ 6% O2			None	N	N/A
Firing Rate	Title V Permit Table IIA, BAAQMD Condition 16685, Part 1	Y		S-#	MM Btu/hr	MM Btu/day	BAAQMD 9-10-502.2	C	Fuel Flowmeter
				917	18	432			
				919	65	1,560			
				951	30	720			
				971	300	7,200			
				972	45	1,080			
				973	55	1,320			
974	110	2,640							
Firing Rate (S973, S974)	BAAQMD Condition 8077, Part B7B	Y		123 MMBTU/hr (sum of firing rates)			BAAQMD 9-10-502.2	C	Fuel Flowmeter

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FURNACE, S972–No. 54 FURNACE, S973–No. 55 FURNACE, S974–No. 56 FURNACE  
NSPS SUBPART J BY DATE OF CONSTRUCTION, RECONSTRUCTION, MODIFICATION**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Fuel Flow (all)	None	Y		No limit	BAAQMD Condition 8077, Part B4D	C	Fuel flow meter
H2S	40 CFR 60.104(a)(1) 60.105(e)(3)(ii)	Y		160 ppmv, dry, 3 hour rolling average	40 CFR 60.105(a)(4)	C	CEM
H2S (100 psi fuel gas system)	Condition 8077 Part B4A	Y		160 ppmv, dry, 3 hour rolling average	BAAQMD Condition 8077 Parts B4A, B4D	C	H2S analyzer on 100 psi fuel gas mix pot
NH3 slip (S971, S972)	BAAQMD Condition 18372, Part 22	Y		20 ppmv, dry, corrected to 3% O2	None	N	N/A
NOx	BAAQMD 9-10-301	N		Refinery-wide emissions (excluding CO Boilers): 0.033 lb NOx/ MMBTU	BAAQMD 9-10-502 BAAQMD Condition 8077, Parts B4B, B4D (S973, S974)	C	CEM
					BAAQMD 9-10-502 BAAQMD Condition 18372, Part 33.A.1 (S917)	P/Annual	Source Test

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 NSPS SUBPART J BY DATE OF CONSTRUCTION, RECONSTRUCTION, MODIFICATION**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
					BAAQMD 9-10-502 BAAQMD Condition 18372, Part 33.A.2 (S919, S951)	P/ Twice per consecutive 12-month period	Source Test
					BAAQMD 9-10-502 BAAQMD Condition 18372, Part 20 (S971)	C	CEM
					BAAQMD 9-10-502 BAAQMD Condition 18372, Part 21 (S972)	C	CEM
NOx	BAAQMD 9-10-303	Y		Federal interim emissions: Refinery-wide emissions (excluding CO Boilers): 0.20 lb NOx/MMBTU	BAAQMD 9-10-502 BAAQMD Condition 8077, Part B4B (S973, S974)	C	CEM
					BAAQMD 9-10-502 BAAQMD Condition 18372, Part 33.A.1 (S917)	P/Annual	Source Test

**Table VII – C.4.3  
Applicable Limits and Compliance Monitoring Requirements  
S917 No. 17 FURNACE, S919 No. 19 FURNACE, S951 No. 51 FURNACE, S971–No. 53  
FURNACE, S972–No. 54 FURNACE, S973–No. 55 FURNACE, S974–No. 56 FURNACE  
NSPS SUBPART J BY DATE OF CONSTRUCTION, RECONSTRUCTION, MODIFICATION**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
					BAAQMD 9-10-502 BAAQMD Condition 18372, Part 33A2 (S919, S951)	P/ Twice per consecutive 12-month period	Source Test
					BAAQMD 9-10-502 BAAQMD Condition 18372, Part 20 (S971)	C	CEM
					BAAQMD 9-10-502 BAAQMD Condition 18372, Part 21 (S972)	C	CEM
NOx (S917, S919)	BAAQMD Condition 8077, Part B7A	Y		60 ppmvd/ 8-hr avg. corrected to 3% O2	BAAQMD Condition 8077, Part B7D (S917, S919)	P/SA	Y
NOx (S971, S972)	BAAQMD Condition 8077, Part B7A	Y		75 ppmvd/ 8-hr avg. corrected to 3% O2	BAAQMD Condition 18372, Part 20 (S971)	C	CEM
					BAAQMD Condition 18372, Part 21 (S972)	C	CEM



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FURNACE, S972–No. 54 FURNACE, S973–No. 55 FURNACE, S974–No. 56 FURNACE  
NSPS SUBPART J BY DATE OF CONSTRUCTION, RECONSTRUCTION, MODIFICATION**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
NOx (S973, S974)	BAAQMD Condition 8077, Part B7A	Y		40 ppmvd/ 8-hr avg. corrected to 3% O2	BAAQMD Condition 8077, Part B4B	C	CEM
<a href="#">NOx (S973, S974)</a>	<a href="#">BAAQMD Condition 8077, Part A2A</a>	<a href="#">Y</a>		<a href="#">146 lb/rolling 24 hours; limit for S974 SU or SD</a>	<a href="#">BAAQMD Condition 8077, Part B4B</a>	<a href="#">C</a>	<a href="#">CEM</a>
<a href="#">NOx (S973, S974)</a>	<a href="#">BAAQMD Condition 8077, Part A2A</a>	<a href="#">Y</a>		<a href="#">2628 lb/consecutive 12-months; limit for S973/974 SU or SD</a>	<a href="#">BAAQMD Condition 8077, Part B4B</a>	<a href="#">C</a>	<a href="#">CEM</a>
<a href="#">NOx (S973, S974)</a>	<a href="#">BAAQMD Condition 8077, Part A2A</a>	<a href="#">Y</a>		<a href="#">432 hours/ consecutive 12-months; limit for S973/974 unabated operation</a>	<a href="#">BAAQMD Condition 8077, Part B5A</a>	<a href="#">P/E</a>	<a href="#">Ammonia Injection Records</a>
NOx	Condition 18372, Part 3	N		Operate within specified NOx box	Condition 18372, Part 32	P/E (on NOx box deviation)	Source Test
O2	None	N		No limit	BAAQMD 9-10-502.1 BAAQMD Condition 18372, Part 28	C	CEM
O2 (S973, S974)	None	Y		No limit	BAAQMD Condition 8077, Parts B4B, B4D	C	CEM
O2 (S917)	None	Y		No limit	BAAQMD Condition 8077, Parts B4C, B4D	C	CEM

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S917 No. 17 FURNACE, S919 No. 19 FURNACE, S951 No. 51 FURNACE, S971–No. 53  
FURNACE, S972–No. 54 FURNACE, S973–No. 55 FURNACE, S974–No. 56 FURNACE  
NSPS SUBPART J BY DATE OF CONSTRUCTION, RECONSTRUCTION, MODIFICATION**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
O2 (S917, S919)	None	Y		No limit	BAAQMD Condition 8077, Part B4D	C	CEM
TRS (S917)	BAAQMD Condition 21186, Part 3	Y		300 ppmvd, daily	BAAQMD Condition 21186, Part 1	P/ Once per day	TRS Sample
TRS (S917)	BAAQMD Condition # 21186, Part 4	Y		281 ppmvd, annual average	BAAQMD Condition 21186, Part 1	P/ Once per day	TRS Sample
Visible Emissions	BAAQMD 6-1-301	N		≥ Ringelmann No. 1 for no more than 3 minutes/hour	None	N	N/A
Visible Emissions	SIP 6-301	Y		≥ Ringelmann No. 1 for no more than 3 minutes/hour	None	N	N/A
Visible Particles	BAAQMD 6-1-310	N		Prohibition of nuisance	None	N	N/A
Visible Particles	SIP 6-310	Y		Prohibition of nuisance	None	N	N/A

**Application 27395, S1550, S1551, S1553, S1558, S1559 Back-up Boilers**

**ENGINEERING EVALUATION**  
**Tesoro Refining & Marketing Company LLC**  
**PLANT NO. 14628**  
**APPLICATION NO. 27395**

**BACKGROUND**

The Tesoro Refining & Marketing Company LLC. (Tesoro) is applying for an Authority to Construct and/or Permit to Operate the following equipment:

**S-1558 Backup Steam Boiler #4, 99 MM Btu/hr, Natural Gas Fired, Abated by A-1558 SCR**

**S-1559 Backup Steam Boiler #5, 99 MM Btu/hr, Natural Gas Fired, Abated by A-1559 SCR**

and a Change in Conditions for:

**S-1550 Backup Steam Boiler #1, 99 MM Btu/hr, Natural Gas Fired, Abated by A-1550 SCR**

**S-1551 Backup Steam Boiler #2, 99 MM Btu/hr, Natural Gas Fired, Abated by A-1551 SCR**

**S-1553 Backup Steam Boiler #3, 99 MM Btu/hr, Natural Gas Fired, Abated by A-1553 SCR**

Tesoro currently operates 3 backup steam boilers that are permitted to provide steam during planned shutdowns or turnarounds that curtail steam production at S-904 No 6 Boilerhouse and/or S-901 FCCU CO Boiler. These back-up boilers operate subject to Permit Condition 24491. This application is proposing the following changes for Tesoro's Back-up Boilers:

- Increase the number of sources from 3 to 5 boilers, each rated at 99MM Btu/hr.
- Increase the startup/shutdown periods from 192 total hours for all boilers to 384 hours per boiler per year (Condition 24491, Part 4).
- Increase the permitted hours of operation for each boiler from 2160 to 2928 hours per year, including periods of startup and shutdown.
- Change the emission estimates from 100% average firing for 2 boilers to 85% average firing for 5 boilers.
- Increase the total annual fuel usage for all back-up boilers from 427,700 to 1,231,956 MMBtu.
- Remove the 6-month on-site duration limits of Condition 24491, Part 2.

Tesoro has determined that there are times, when S-901 and/or S 904 are removed from service, that more steam is needed than can be supplied by the existing three back-up boilers.

However, there are other times when only two or three back-up boilers are adequate. This application for the use of up to five backup boilers will give Tesoro maximum flexibility.

This application is for a permanent Permit to Operate. The permit will be structured to allow the equivalent of up to four months (122 days = 2928 hours) of operation over a 12-month period for each of the five boilers. The permit will also allow for up to 384 hours per boiler of operation without SCR abatement to allow for startup and shutdown. This represents about 48 hours per SU/SD event, with 8 events per 12 month period).

Tesoro also requests deletion of Part 2 of Permit Condition 24991. This condition limited the boilers to being on-site for no more than 6 consecutive months per 12 consecutive month period based on the BACT determination. However, the BACT determination for the boilers was never based on the BACT for temporary boilers. The boilers will be limited to low fuel usage based on Part 6 of Condition 24991. The reason that Tesoro is asking that the condition for being on-site for more than 6 consecutive months is removed is that in a calendar year, such as in 2015, Tesoro needs to use the boilers in the spring and again in the fall. It is less expensive to leave the boilers on site than to demobilize them and bring them back again.

BACT and Offsets will apply to this application. The emissions limits in the current permit for S-1550, S-1551 and S-1553 were intended to be fully offset in Application 20977.

Therefore, in accordance with Regulation 2-2-605.4, the baseline emissions rates are the levels allowed by Permit Condition 24991.

605.4 Baseline Throughput and Emission Rate - Fully Offset Source: For a source which has, contained in a permit condition, an emission cap or emission rate which has been fully offset by the facility (without using emission reductions from the Small Facility Banking Account), the baseline throughput and baseline emission rate shall be based on the levels allowed by the permit condition.

Unfortunately, for unknown reasons, offsets for Application 20977 were not properly applied. This error is fully addressed in the Offsets section below.

## **EMISSION CALCULATIONS**

### **Emission Factors**

The following emissions factors are used to calculate emissions from Backup Boilers S-1550, S-1551, S-1553, S-1558, and S-1559.

NOx: 7 ppm @ 3% O<sub>2</sub> when abated by SCR (BACT)  
30 ppm @ 3% O<sub>2</sub> without SCR operation (384 hrs/yr per boiler)  
CO: 50 ppm @ 3% O<sub>2</sub> (BACT)  
PM10 7.45E-3 lb/MMBtu  
VOC 5.39E-3 lb/MMBtu (assume to be all POC)  
SO<sub>2</sub> 2.00E-3 lb/MMBtu

Emission factors for PM10 and POC are from Chapter 1, Table 1.4-2 of the EPA Document AP-42, Compilation of Air Pollutant Emission Factors (lb/10<sup>6</sup>scf / 1020). The SO2 emission factor is based on source tests of the existing boilers.

Exhaust flow:  $(8710 \text{ dscf/MMBtu}) \cdot (20.95 / (20.95 - 3)) = 10165.7 \text{ dscf/MMBtu}$  at 3% O<sub>2</sub>

At atmospheric pressure and low temperatures, the ideal gas law will provide the necessary calculation accuracy:  
 $n = PV/RT = (1 \text{ atm} \cdot 10165.7 \text{ dscf/MMBtu}) / ((0.7302 \text{ atm-cf/lb-mol R}) \cdot (68 + 460 \text{ R}))$   
 $= 26.367 \text{ lb-mol/MMBtu}$

NO<sub>x</sub> w/ SCR:  $26.367 \text{ lb-mol/MMBtu} (7 \text{ lb-mol NO}_x / 1 \text{E}6 \text{ lb-mol}) (46 \text{ lb NO}_x / \text{lb-mol NO}_x)$   
 $= 0.00849 \text{ lb/MMBtu}$

NO<sub>x</sub> w/o SCR:  $26.367 \text{ lb-mol/MMBtu} (30 \text{ lb-mol NO}_x / 1 \text{E}6 \text{ lb-mol}) (46 \text{ lb NO}_x / \text{lb-mol NO}_x)$   
 $= 0.0364 \text{ lb/MMBtu}$

CO:  $26.367 \text{ lb-mol/MMBtu} (50 \text{ lb-mol NO}_x / 1 \text{E}6 \text{ lb-mol}) (28 \text{ lb CO} / \text{lb-mol CO})$   
 $= 0.0369 \text{ lb/MMBtu}$

### Annual Emissions:

Annual emissions are based on the temporary boilers operating at 85% of maximum firing rate (99MMBtu/hr) on average.

#### Emissions from S-1550 Backup Boiler:

NO<sub>x</sub> (SCR)  $= (99 \text{ MMBtu/hr}) (0.85) (0.00849 \text{ lb NO}_x / \text{MMBtu}) (2928 - 384 \text{ hrs}) = 1818 \text{ lb}$   
 $= 0.909 \text{ tons}$

NO<sub>x</sub> (w/o SCR)  $= (99 \text{ MMBtu/hr}) (0.85) (0.0364 \text{ lb NO}_x / \text{MMBtu}) (384 \text{ hrs}) = 1177 \text{ lb} =$   
 $0.589 \text{ tons}$

NO<sub>x</sub> (total)  $= 1818 + 1177 = 2995 \text{ lbs} = 1.497 \text{ tons}$

CO  $= (99 \text{ MMBtu/hr}) (0.85) (0.0369 \text{ lb CO} / \text{MMBtu}) (2928 \text{ hrs}) = 9092 \text{ lb} = 4.546$   
tons

PM10  $= (99 \text{ MMBtu/hr}) (0.85) (7.45 \text{E-}3 \text{ lb PM10} / \text{MMBtu}) (2928 \text{ hrs}) = 1836 \text{ lb} = 0.918$   
tons

POC  $= (99 \text{ MMBtu/hr}) (0.85) (5.39 \text{E-}3 \text{ lb POC} / \text{MMBtu}) (2928 \text{ hrs}) = 1328 \text{ lb} = 0.664 \text{ tons}$

SO<sub>2</sub>  $= (99 \text{ MMBtu/hr}) (0.85) (2.00 \text{E-}3 \text{ lb SO}_2 / \text{MMBtu}) (2928 \text{ hrs}) = 493 \text{ lb} = 0.246$   
tons

#### Emissions from S-1551 Backup Boiler:

NO<sub>x</sub> (SCR)  $= (99 \text{ MMBtu/hr}) (0.85) (0.00849 \text{ lb NO}_x / \text{MMBtu}) (2928 - 384 \text{ hrs}) = 1818 \text{ lb}$   
 $= 0.909 \text{ tons}$

NO<sub>x</sub> (w/o SCR)  $= (99 \text{ MMBtu/hr}) (0.85) (0.0364 \text{ lb NO}_x / \text{MMBtu}) (384 \text{ hrs}) = 1177 \text{ lb} =$   
 $0.589 \text{ tons}$

NO<sub>x</sub> (total)  $= 1818 + 1177 = 2995 \text{ lbs} = 1.497 \text{ tons}$

CO  
tons  $= (99 \text{ MMBtu/hr})(0.85)(0.0369 \text{ lb CO/MMBtu})(2928 \text{ hrs}) = 9092 \text{ lb} = 4.546$

PM10  
tons  $= (99 \text{ MMBtu/hr})(0.85)(7.45\text{E-}3 \text{ lb PM10/MMBtu})(2928 \text{ hrs}) = 1836 \text{ lb} = 0.918$

POC  $= (99 \text{ MMBtu/hr})(0.85)(5.39\text{E-}3 \text{ lb POC/MMBtu})(2928 \text{ hrs}) = 1328 \text{ lb} = 0.664 \text{ tons}$

SO2  
tons  $= (99 \text{ MMBtu/hr})(0.85)(2.00\text{E-}3 \text{ lb SO2/MMBtu})(2928 \text{ hrs}) = 493 \text{ lb} = 0.246$

Emissions from S-1553 Backup Boiler:

NOx (SCR)  $= (99 \text{ MMBtu/hr})(0.85)(0.00849 \text{ lb NOx/MMBtu})(2928\text{-}384 \text{ hrs}) = 1818 \text{ lb}$   
 $= 0.909 \text{ tons}$

NOx (w/o SCR)  $= (99 \text{ MMBtu/hr})(0.85)(0.0364 \text{ lb NOx/MMBtu})(384 \text{ hrs}) = 1177 \text{ lb} =$   
 $0.589 \text{ tons}$

NOx (total)  $= 1818 + 1177 = 2995 \text{ lbs} = 1.497 \text{ tons}$

CO  
tons  $= (99 \text{ MMBtu/hr})(0.85)(0.0369 \text{ lb CO/MMBtu})(2928 \text{ hrs}) = 9092 \text{ lb} = 4.546$

PM10  
tons  $= (99 \text{ MMBtu/hr})(0.85)(7.45\text{E-}3 \text{ lb PM10/MMBtu})(2928 \text{ hrs}) = 1836 \text{ lb} = 0.918$

POC  $= (99 \text{ MMBtu/hr})(0.85)(5.39\text{E-}3 \text{ lb POC/MMBtu})(2928 \text{ hrs}) = 1328 \text{ lb} = 0.664 \text{ tons}$

SO2  
tons  $= (99 \text{ MMBtu/hr})(0.85)(2.00\text{E-}3 \text{ lb SO2/MMBtu})(2928 \text{ hrs}) = 493 \text{ lb} = 0.246$

Emissions from S-1558 Backup Boiler:

NOx (SCR)  $= (99 \text{ MMBtu/hr})(0.85)(0.00849 \text{ lb NOx/MMBtu})(2928\text{-}384 \text{ hrs}) = 1818 \text{ lb}$   
 $= 0.909 \text{ tons}$

NOx (w/o SCR)  $= (99 \text{ MMBtu/hr})(0.85)(0.0364 \text{ lb NOx/MMBtu})(384 \text{ hrs}) = 1177 \text{ lb} =$   
 $0.589 \text{ tons}$

NOx (total)  $= 1818 + 1177 = 2995 \text{ lbs} = 1.497 \text{ tons}$

CO  
tons  $= (99 \text{ MMBtu/hr})(0.85)(0.0369 \text{ lb CO/MMBtu})(2928 \text{ hrs}) = 9092 \text{ lb} = 4.546$

PM10  
tons  $= (99 \text{ MMBtu/hr})(0.85)(7.45\text{E-}3 \text{ lb PM10/MMBtu})(2928 \text{ hrs}) = 1836 \text{ lb} = 0.918$

POC  $= (99 \text{ MMBtu/hr})(0.85)(5.39\text{E-}3 \text{ lb POC/MMBtu})(2928 \text{ hrs}) = 1328 \text{ lb} = 0.664 \text{ tons}$

SO2  
tons  $= (99 \text{ MMBtu/hr})(0.85)(2.00\text{E-}3 \text{ lb SO2/MMBtu})(2928 \text{ hrs}) = 493 \text{ lb} = 0.246$

Emissions from S-1559 Backup Boiler:

NOx (SCR) = (99 MMBtu/hr)(0.85)(0.00849 lb NOx/MMBtu)(2928-384 hrs) = 1818 lb  
= 0.909 tons

NOx (w/o SCR) = (99 MMBtu/hr)(0.85)(0.0364 lb NOx/MMBtu)(384 hrs) = 1177 lb =  
0.589 tons

NOx (total) = 1818 + 1177 = 2995 lbs = 1.497 tons

CO = (99 MMBtu/hr)(0.85)(0.0369 lb CO/MMBtu)(2928 hrs) = 9092 lb = 4.546  
tons

PM10 = (99 MMBtu/hr)(0.85)(7.45E-3 lb PM10/MMBtu)(2928 hrs) = 1836 lb = 0.918  
tons

POC = (99 MMBtu/hr)(0.85)(5.39E-3 lb POC/MMBtu)(2928 hrs) = 1328 lb = 0.664 tons

SO2 = (99 MMBtu/hr)(0.85)(2.00E-3 lb SO2/MMBtu)(2928 hrs) = 493 lb = 0.246  
tons

Total Emissions:

NOx = (5)(1818 lb)+(5)(1177 lb) = 14975 lb = 7.487 tons

CO = (5)(9092 lb) = 45460 lb = 22.730 tons

PM10 = (5)(1836 lb) = 9180 lb = 4.589 tons

POC = (5)(1328 lb) = 6640 lb = 3.320 tons

SO2 = (5)(493 lb) = 2465 lb = 1.233 tons

Pollutant	Projected Emissions (tpy)]	Original Emissions (tpy)	Difference in Emissions
PM <sub>10</sub>	4.589	-1.593	2.996
NOx	7.487	-2.346	5.141
POC	3.320	-1.153	2.167
CO	22.730	-7.891	14.839
SO <sub>2</sub>	1.233	-0.126	1.107

**Maximum Daily Emissions from each boiler:**

NOx (SCR) = (99 MMBtu/hr)(0.00849 lb NOx/MMBtu)(24 hrs) = 20 lb

NOx (w/o SCR) = (99 MMBtu/hr)(0.0364 lb NOx/MMBtu)(24 hrs) = 87 lb

CO = (99 MMBtu/hr)(0.0369 lb CO/MMBtu)(24 hrs) = 88 lb

PM10 = (99 MMBtu/hr)(7.45E-3 lb PM10/MMBtu)(24 hrs) = 17.7 lb

POC = (99 MMBtu/hr)(5.39E-3 lb POC/MMBtu)(24 hrs) = 12.8 lb

SO2 = (99 MMBtu/hr)(2.00E-3 lb SO2/MMBtu)(24 hrs) = 4.8 lb

**Toxic Risk Screening**

Tesoro estimated the following toxic emissions for each boiler.

Substance	lb/MMBTU <sup>(1)</sup>	Current Maximum Emissions (lb/Year)		Proposed Maximum Emissions (lb/Year)		Project Increase (lb/Year)		BAAQMD Regulation 2-5 Triggers (lb/Year)		Project TAC Emissions Exceed BAAQMD Trigger for Acute?	Project TAC Emissions Exceed BAAQMD Trigger for Chronic?
		lb/hour	lb/year	lb/hour	lb/year	lb/hour	lb/year	lb/hour	lb/year		
Acenaphthene	2.36E-09	7.0E-07	1.0E-03	1.2E-06	2.9E-03	4.7E-07	1.9E-03				
Acenaphthylene	1.55E-09	4.6E-07	6.6E-04	7.7E-07	1.9E-03	3.1E-07	1.2E-03				
Acetaldehyde	1.53E-05	4.5E-03	6.5E+00	7.6E-03	1.9E+01	3.0E-03	1.2E+01	1.00E+00	3.80E+01	No	No
Antimony	5.17E-07	1.5E-04	2.2E-01	2.6E-04	6.4E-01	1.0E-04	4.2E-01				
Arsenic	8.50E-07	2.5E-04	3.6E-01	4.2E-04	1.0E+00	1.7E-04	6.8E-01	4.40E-04	7.20E-03	No	Yes
Barium <sup>(2)</sup>	0.00E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00				
Benzene	6.47E-05	1.9E-02	2.8E+01	3.2E-02	8.0E+01	1.3E-02	5.2E+01	2.90E+00	3.8E+00	No	Yes
Benzo(a)anthracene	3.21E-08	9.5E-06	1.4E-02	1.6E-05	4.0E-02	6.4E-06	2.6E-02		6.90E-03		Yes
Benzo(a)pyrene	8.96E-08	2.7E-05	3.8E-02	4.4E-05	1.1E-01	1.8E-05	7.2E-02		6.90E-03		Yes
Benzo(b)fluoranthene	4.04E-08	1.2E-05	1.7E-02	2.0E-05	5.0E-02	8.0E-06	3.2E-02		6.90E-03		Yes
Benzo(g,h,i)perylene <sup>(2)</sup>	0.00E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		6.90E-03		No
Benzo(k)fluoranthene	2.41E-08	7.2E-06	1.0E-02	1.2E-05	3.0E-02	4.8E-06	1.9E-02		6.90E-03		Yes
Beryllium <sup>(2)</sup>	0.00E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00				
Cadmium	9.88E-07	2.9E-04	4.2E-01	4.9E-04	1.2E+00	2.0E-04	7.9E-01		2.60E-02		Yes
Chromium (Hex) <sup>(2)</sup>	0.00E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		7.70E-04		No
Chromium (Total)	1.07E-06	3.2E-04	4.6E-01	5.3E-04	1.3E+00	2.1E-04	8.6E-01				
Chrysene	1.63E-09	4.8E-07	7.0E-04	8.1E-07	2.0E-03	3.2E-07	1.3E-03		6.90E-03		No
Copper	4.21E-06	1.3E-03	1.8E+00	2.1E-03	5.2E+00	8.3E-04	3.4E+00	2.20E-01		No	
Dibenz(a,h)anthracene <sup>(2)</sup>	0.00E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		6.90E-03		No
Ethylbenzene	3.02E-05	9.0E-03	1.3E+01	1.5E-02	3.7E+01	6.0E-03	2.4E+01		4.30E+01		No
Fluoranthene	3.06E-09	9.1E-07	1.3E-03	1.5E-06	3.8E-03	6.1E-07	2.5E-03				
Fluorene	1.08E-08	3.2E-06	4.6E-03	5.3E-06	1.3E-02	2.1E-06	8.7E-03				
Formaldehyde	1.11E-04	3.3E-02	4.7E+01	5.5E-02	1.4E+02	2.2E-02	8.9E+01	1.20E-01	1.80E+01	No	Yes
Hydrogen Sulfide <sup>(2)</sup>	0.00E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.30E-02	3.90E+02	No	No
Indeno(1,2,3-cd)pyrene	1.03E-07	3.1E-05	4.4E-02	5.1E-05	1.3E-01	2.0E-05	8.3E-02		6.90E-03		Yes
Lead	4.89E-06	1.5E-03	2.1E+00	2.4E-03	6.0E+00	9.7E-04	3.9E+00		3.2E+00		Yes
Manganese	6.81E-06	2.0E-03	2.9E+00	3.4E-03	8.4E+00	1.3E-03	5.5E+00		3.50E+00		Yes
Mercury	1.80E-07	5.3E-05	7.7E-02	8.9E-05	2.2E-01	3.6E-05	1.4E-01	1.30E-03	2.70E-01	No	No
Naphthalene	3.13E-07	9.3E-05	1.3E-01	1.5E-04	3.9E-01	6.2E-05	2.5E-01		3.2E+00		No
Nickel	9.42E-06	2.8E-03	4.0E+00	4.7E-03	1.2E+01	1.9E-03	7.6E+00	1.30E-02	4.30E-01	No	Yes
Phenanthrene	1.46E-08	4.3E-06	6.2E-03	7.2E-06	1.8E-02	2.9E-06	1.2E-02				
Phenol	5.63E-06	1.7E-03	2.4E+00	2.8E-03	6.9E+00	1.1E-03	4.5E+00	1.30E+01	7.70E+03	No	No
Phosphorus <sup>(2)</sup>	0.00E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00				
Propylene	2.17E-06	6.4E-04	9.3E-01	1.1E-03	2.7E+00	4.3E-04	1.7E+00		1.20E+05		No



Substance	lb/MMBTU <sup>(1)</sup>	Current Maximum Emissions (lb/Year)		Proposed Maximum Emissions (lb/Year)		Project Increase (lb/Year)		BAAQMD Regulation 2-5 Triggers (lb/Year)		Project TAC Emissions Exceed BAAQMD Trigger for Acute?	Project TAC Emissions Exceed BAAQMD Trigger for Chronic?
		lb/hour	lb/year	lb/hour	lb/year	lb/hour	lb/year	lb/hour	lb/year		
Pyrene	2.48E-09	7.4E-07	1.1E-03	1.2E-06	3.1E-03	4.9E-07	2.0E-03				
Selenium	1.96E-08	5.8E-06	8.4E-03	9.7E-06	2.4E-02	3.9E-06	1.6E-02		7.70E+02		No
Silver	1.61E-06	4.8E-04	6.9E-01	8.0E-04	2.0E+00	3.2E-04	1.3E+00				
Thallium <sup>(2)</sup>	0.00E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00				
Toluene	1.07E-04	3.2E-02	4.6E+01	5.3E-02	1.3E+02	2.1E-02	8.6E+01	8.20E+01	1.20E+04	No	No
Xylene (Total)	3.73E-05	1.1E-02	1.6E+01	1.8E-02	4.6E+01	7.4E-03	3.0E+01	4.90E+01	2.70E+04	No	No
Zinc	2.08E-05	6.2E-03	8.9E+00	1.0E-02	2.6E+01	4.1E-03	1.7E+01				

(1) values are from Appendix B of EERC August 14, 1998 document "Air Toxic Emission Factors for Combustion Sources Using Petroleum Based Fuels, Final Report, Vol. II"

(2) emission factors presented in the EERC document for these compounds were all based entirely on non-detect analytical values, therefore an emission factor of zero has been substituted based on CAPCOA health risk assessment guidelines.

However, Tesoro omitted Acrolein, Cobalt, Dichlorobenzene, Hexane, 3-Methylchloranthrene, 2-Methylnaphthalene and Vanadium from its emission estimates. Tesoro also set emission factors for Barium, Benzo(g,h,i)perylene, Beryllium, Hex-Chrome, Dibenz(a,h)anthracene and Phosphorus to zero based on non-detect data (typically the District uses 50% of the detection limit, not zero). For these substances, the default EF's from EPA's Refinery Emissions Protocol (Rev 3) were used. With these adjustments, total toxic emissions for all 5 boilers are estimated as follows:

Substance	Emission Factor (lb/MMBtu)	Emissions (lb/hr) Note 1	Emissions (lb/yr) Note 2
Acenaphthene	2.36E-09	1.17E-06	2.91E-03
Acenaphthylene	1.55E-09	7.67E-07	1.91E-03
Acetaldehyde	1.53E-05	7.57E-03	1.88E+01
Acrolein	1.70E-05	8.42E-03	2.09E+01
Antimony	5.17E-07	2.56E-04	6.37E-01
Arsenic	8.50E-07	4.21E-04	1.05E+00
Barium <sup>(2)</sup>	4.30E-06	2.13E-03	5.30E+00
Benzene	6.47E-05	3.20E-02	7.97E+01
Benzo(a)anthracene	3.21E-08	1.59E-05	3.95E-02
Benzo(a)pyrene	8.96E-08	4.44E-05	1.10E-01
Benzo(b)fluoranthene	4.04E-08	2.00E-05	4.98E-02
Benzo(g,h,i)perylene <sup>(2)</sup>	1.30E-09	6.44E-07	1.60E-03
Benzo(k)fluoranthene	2.41E-08	1.19E-05	2.97E-02
Beryllium <sup>(2)</sup>	1.30E-07	6.44E-05	1.60E-01
Cadmium	9.88E-07	4.89E-04	1.22E+00
Chromium (Hex) <sup>(2)</sup>	2.80E-07	1.39E-04	3.45E-01

Substance	Emission Factor (lb/MMBtu)	Emissions (lb/hr) Note 1	Emissions (lb/yr) Note 2
Chromium (Total)	1.07E-06	5.30E-04	1.32E+00
Chrysene	1.63E-09	8.07E-07	2.01E-03
Cobalt	8.20E-08	4.06E-05	1.01E-01
Copper	4.21E-06	2.08E-03	5.19E+00
Dibenz(a,h)anthracene <sup>(2)</sup>	1.20E-09	5.94E-07	1.48E-03
Dichlorobenzene	1.20E-06	5.94E-04	1.48E+00
Ethylbenzene	3.02E-05	1.49E-02	3.72E+01
Fluoranthene	3.06E-09	1.51E-06	3.77E-03
Fluorene	1.08E-08	5.35E-06	1.33E-02
Formaldehyde	1.11E-04	5.49E-02	1.37E+02
Hexane	1.80E-03	8.91E-01	2.22E+03
Hydrogen Sulfide <sup>(2)</sup>	0.00E+00	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	1.03E-07	5.10E-05	1.27E-01
Lead	4.89E-06	2.42E-03	6.02E+00
Manganese	6.81E-06	3.37E-03	8.39E+00
Mercury	1.80E-07	8.91E-05	2.22E-01
3-Methylchloranthrene	1.80E-09	8.91E-07	2.22E-03
2-Methylnaphthalene	2.40E-08	1.19E-05	2.96E-02
Naphthalene	3.13E-07	1.55E-04	3.86E-01
Nickel	9.42E-06	4.66E-03	1.16E+01
Phenanthrene	1.46E-08	7.23E-06	1.80E-02
Phenol	5.63E-06	2.79E-03	6.94E+00
Phosphorus <sup>(2)</sup>	6.40E-07	3.17E-04	7.88E-01
Propylene	2.17E-06	1.07E-03	2.67E+00
Pyrene	2.48E-09	1.23E-06	3.06E-03
Selenium	1.96E-08	9.70E-06	2.41E-02
Silver	1.61E-06	7.97E-04	1.98E+00
Toluene	1.07E-04	5.30E-02	1.32E+02
Vanadium	2.30E-06	1.14E-03	2.83E+00
Xylene (Total)	3.73E-05	1.85E-02	4.60E+01
Zinc	2.08E-05	1.03E-02	2.56E+01

Notes: 1. Hourly emissions based on 5 boilers firing at 99MMBtu/hr.

2. Annual emissions based on 5 boilers operating for 2928 hrs/yr for an average of 85% of design firing rate.

A risk screen is required for this application since some emissions exceed the chronic risk screening thresholds in Regulation 2-5. The risk screen was conducted and the results transmitted November 25, 2015. The project risk is considered acceptable with a Maximum Cancer Risk of 0.4 chances in a million, the chronic hazard index of 0.01 and the acute hazard index of 0.2.

#### BEST AVAILABLE CONTROL TECHNOLOGY

In accordance with Regulation 2, Rule 2, Section 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, NO<sub>x</sub>, CO, SO<sub>2</sub> or PM<sub>10</sub>. Emissions from S-1550, S-1551, S-1553, S-1558, and S-1559 trigger BACT for the following pollutants: NO<sub>x</sub>, CO, PM<sub>10</sub>, and POC. The 2005 version of 17.3.1 was applied to the 2009 permits for S-1550, S-1551, and S-1553. Both the old version (2005) and the updated version (2010) of 17.3.1 are shown below.

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**  
**Best Available Control Technology (BACT) Guideline**

*Source Category*

<b>Source:</b> <i>Boiler</i>	<b>Revision:</b> <i>4</i>
	<b>Document #:</b> <i>17.3.1</i>
<b>Class:</b> <i>≥ 50 MM BTU/hour Heat Input</i>	<b>Date:</b> <i>9/22/05</i>

*Determination*

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
<b>POC</b>	1. <i>n/d</i> 2. <i>n/s</i>	1. <i>n/d<sup>f</sup></i> 2. <i>Good Combustion Practice (GCP)<sup>a</sup></i>
<b>NO<sub>x</sub></b>	1. <i>7 ppmv @ 3% O<sub>2</sub>, Dry<sup>b, c, d</sup></i> 2. <i>9 ppmv @ 3% O<sub>2</sub>, Dry<sup>a, c, d</sup></i>	1. <i>Selective Catalytic Reduction (SCR) + Low NO<sub>x</sub> Burners (LNB) + Flue Gas Recirculation (FGR)<sup>b, c, d</sup></i> 2. <i>Ultra Low NO<sub>x</sub> Burners (ULNB) + FGR<sup>a, c, d</sup></i>
<b>SO<sub>2</sub></b>	1. <i>Natural Gas or Treated Refinery Gas Fuel w/ &lt;50 ppmv Hydrogen Sulfide and &lt;100 ppmv Total Reduced Sulfur<sup>a, c</sup></i> 2. <i>Natural Gas or Treated Refinery Gas Fuel w/ &lt;100 ppmv Total Reduced Sulfur<sup>a, c</sup></i>	1. <i>Fuel Selection<sup>a, c</sup></i> 2. <i>Fuel Selection<sup>a, c</sup></i>
<b>CO</b>	1. <i>10 ppmv @ 3% O<sub>2</sub> Dry<sup>f</sup></i> 2. <i>50 ppmv @ 3% O<sub>2</sub> Dry<sup>a, c, e</sup></i>	1. <i>Oxidation Catalyst<sup>f</sup></i> 2. <i>Good Combustion Practice in Conjunction with SCR System or Ultra Low NO<sub>x</sub> Burners and FGR<sup>a, c, e</sup></i>
<b>PM<sub>10</sub></b>	1. <i>n/d</i>	1. <i>n/d</i> 2. <i>Fuel Selection<sup>a, c</sup></i>

POLLUTANT	BACT	
	1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	
	2. Natural Gas or Treated Refinery Gas Fuel <sup>a, c</sup>	
NPOC	1. n/a 2. n/a	1. n/a 2. n/a

### References

<p>a. BAAQMD</p> <p>b. SCAQMD. Cost effectiveness evaluations shall be based on emissions from firing primary fuels but not emergency backup fuels.</p> <p>c. BACT limits above apply to all fuels except for emergency backup fuel oil used during natural gas curtailment. For emergency backup fuel oil, BACT(1) for NO<sub>x</sub> and CO (achieved using LNB+ FGR+ SCR and GCP) is 25 ppmvd NO<sub>x</sub> @ 3% O<sub>2</sub>; 100 ppmvd CO @ 3% O<sub>2</sub>, and 5 ppmvd NH<sub>3</sub> @ 3% O<sub>2</sub>; BACT(2) for NO<sub>x</sub> and CO (achieved using ULNB+ FGR and GCP) is 40 ppmvd NO<sub>x</sub> @ 3% O<sub>2</sub> and 100 ppmvd CO @ 3% O<sub>2</sub>; BACT(2) for SO<sub>2</sub> and PM<sub>10</sub> is the use of low sulfur fuel with &lt; 0.05 wt. % S; and BACT(2) for POC is GCP.</p> <p>d. NO<sub>x</sub> determination by Continuous Emission Monitor (3-hour average), or BAAQMD approved equivalent.</p> <p>e. CO determination by Continuous Emission Monitor (3-hour average), or BAAQMD approved equivalent.</p> <p>f. The BACT(1) CO limit does not apply to boilers smaller than 250 MM BTU/hour unless an oxidation catalyst is found to be cost effective or is necessary for TBACT or POC Control.</p>
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### Source Category

Source: Boiler	Revision: 5
	Document #: 17.3.1
Class: ≥ 50 MM BTU/hour Heat Input	Date: 08/04/10

### Determination

POLLUTANT	BACT	
	1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	
POC	1. n/d 2. n/s	1. n/d <sup>f</sup> 2. Good Combustion Practice (GCP) <sup>a</sup>

<b>NO<sub>x</sub></b>	1. n/d <sup>b, c, d</sup> 2. n.d <sup>a, c, d</sup>	1. <i>Selective Catalytic Reduction (SCR) + Low NO<sub>x</sub> Burners (LNB) + Flue Gas Recirculation (FGR)</i> <sup>b, c, d</sup> 2. <i>Ultra Low NO<sub>x</sub> Burners (ULNB) + FGR</i> <sup>a, c, d</sup>
<b>SO<sub>2</sub></b>	1. <i>Natural Gas or Treated Refinery Gas Fuel w/ &lt;50 ppmv Hydrogen Sulfide and &lt;100 ppmv Total Reduced Sulfur</i> <sup>a, c</sup> 2. <i>Natural Gas or Treated Refinery Gas Fuel w/ &lt;100 ppmv Total Reduced Sulfur</i> <sup>a, c</sup>	1. <i>Fuel Selection</i> <sup>a, c</sup> 2. <i>Fuel Selection</i> <sup>a, c</sup>
<b>CO</b>	1. <i>10 ppmv @ 3% O<sub>2</sub> Dry</i> <sup>f</sup> 2. <i>50 ppmv @ 3% O<sub>2</sub> Dry</i> <sup>a, c, e</sup>	1. <i>Oxidation Catalyst</i> <sup>f</sup> 2. <i>Good Combustion Practice in Conjunction with SCR System or Ultra Low NO<sub>x</sub> Burners and FGR</i> <sup>a, c, e</sup>
<b>PM<sub>10</sub></b>	1. n/d 2. <i>Natural Gas or Treated Refinery Gas Fuel</i> <sup>a, c</sup>	1. n/d 2. <i>Fuel Selection</i> <sup>a, c</sup>
<b>NPOC</b>	1. n/a 2. n/a	1. n/a 2. n/a

## References

<p>a. BAAQMD</p> <p>b. SCAQMD. Cost effectiveness evaluations shall be based on emissions from firing primary fuels but not emergency backup fuels.</p> <p>c. BACT limits apply to all fuels except for emergency backup fuel oil used during natural gas curtailment. For emergency backup fuel oil: BACT(1) for NO<sub>x</sub> and CO (achieved using LNB+FGR+SCR and GCP) is 25 ppmvd NO<sub>x</sub> @3%O<sub>2</sub>, 100 ppmvd CO @3%O<sub>2</sub>, and 5 ppmvd NH<sub>3</sub> @ 3%O<sub>2</sub> BACT(2) for NO<sub>x</sub> and CO (achieved using ULNB+FGR and GCP) is 40 ppmvd NO<sub>x</sub> @3%O<sub>2</sub> and 100 ppmvd CO @3%O<sub>2</sub> BACT(2) for SO<sub>2</sub> and PM<sub>10</sub> is the use of low sulfur fuel with &lt; 0.05 wt% S BACT(2) for POC is GCP</p> <p>d. NO<sub>x</sub> determination by Continuous Emission Monitor (3-hr average), or BAAQMD approved equivalent.</p> <p>e. CO determination by Continuous Emission Monitor (3-hr average), or BAAQMD approved equivalent.</p> <p>f. The BACT(1) CO limit does not apply to boilers smaller than 250 MMBTU/hr unless an oxidation catalyst is found to be cost effective for TBACT or POC Control.</p>
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For both documents, POC emissions comply with BACT2 when Good Combustion Practices (GCP) are followed. PM<sub>10</sub> and SO<sub>2</sub> emissions comply with BACT2 by the use of Natural Gas Fuel.

For CO, both BACT guidelines are the same with BACT2 at 50 ppmv @ 3% O2 Dry. BACT1 was assumed to be uneconomic because these boilers have limited operation (2928 hrs/yr) and the 50 ppmv is less than the 100 ppmv BACT2 limit for Rental Boilers (BACT Document 16.1).

For NOx, the prior BACT determination for Applications 20977 and 22169 specified BACT1 at 7 ppmv @ 3% O2 Dry. The current BACT Guideline shows the same control technology, but does not specify a NOx concentration. Therefore, the previous BACT determination will be used – NOx limited to 7 ppm @ 3% O2.

S-1550, S-1551, S-1553, S-1558, and S-1559 are expected to comply with the BACT 1 technology and limits for NOx and the BACT 2 limits for CO.

### OFFSETS

Offsets are required per Regulation 2-2-302 because Tesoro emits more than 35 tpy of POC and 35 tpy of NOx emissions. Regulation 2-2-302 requires that offsets for POC and NOx be provided at a ratio of 1.15 to 1.0. Regulation 2-2-303 requires that a Major Facility must pay offsets for PM10 and SO2 in excess of 1.0 ton per year for new or modified sources. Regulation 2-2-303 requires that offsets for PM10 and SO2 be provided at a ratio of 1.0 to 1.0. POC emission credits will be used to offset both POC and NOx emissions, as allowed by Regulation 2-2-302.2.

A summary of the offsets for this application follows:

Pollutant	Current Emissions (tpy)	Projected Emissions (tpy)	Total Cumulative Increase (tpy)	Original Emissions Previously Offset (tpy) (Note 1)	Difference in Emissions (tpy)	Offset Ratio	Additional Offsets Required (tpy)
PM <sub>10</sub>	0.993	4.589	5.582	0.000	5.582	1.0	5.582
NOx	0.000	7.487	7.487	2.346	5.141	1:15	Note 1
POC	0.000	3.320	3.320	1.152	2.166	1:15	Note 1
CO	14.308	22.730	37.038	0.000	37.038	N/A	N/A
SO <sub>2</sub>	0.000	1.233	1.233	0.000	1.233	1.0	1.233

Note 1: NOx and POC emission offsets for 2009 Application 20977 were requested to be surrendered from Bank 968. However, these offsets were not surrendered as intended.

As indicated in Note 1 to the table above, offsets for these backup-boilers emissions were not surrendered as intended. Therefore, offsets are required for the Total Cumulative Increase. A summary of the required offsets are in the following table.

Pollutant	Current Emissions (tpy)	Project Emissions (tpy)	Total Cumulative Increase (tpy)	Offset Ratio	Additional Offsets Required (tpy)
PM <sub>10</sub>	0.993	4.589	5.582	1.0	5.582
NOx	0.000	7.487	7.487	1:15	8.610
POC	0.000	3.320	3.320	1:15	3.818
CO	14.308	22.730	37.038	N/A	N/A
SO <sub>2</sub>	0.000	1.233	1.233	1.0	1.233

Offsets will be provided per the following table:

Tons/yr	POC	NOx	SO2	CO	PM <sub>10</sub>
Offsets Required	3.818	8.610	1.233	N/A	5.582
Bank 968	3.818				
Bank 1206					4.010
Bank 915		8.610	1.233		
Bank 1144					1.572

#### NSPS

S-1550, S-1551, S-1553, S-1558, and S-1559 are not subject to NSPS Subpart Db (Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units) because the firing rate is less than 100 MMBtu/hr. The Backup Boilers are subject to NSPS Subpart Dc because the boiler firing rate is greater than 10 MMBtu/hr and less than 100 MMBtu/hr. Emission Standards in Subpart Dc do not apply to S-1550, S-1551, S-1553, S-1558, and S-1559 because the boilers are only fired on Natural Gas. S-1550, S-1551, S-1553, S-1558, and S-1559 are only subject to the notification and recordkeeping requirements of 40 CFR 60.48c.

S-1550, S-1551, S-1553, S-1558, and S-1559 are not Subject to NSPS Subpart Ja because they are not Fuel Gas Combustion Devices (natural gas is excluded from the definition of Fuel Gas in 40 CFR 60.101a unless it is commingled with refinery fuel gas).

#### National Emissions Standards for Hazardous Air Pollutants (NESHAP)

The boilers in this application are not subject to any subpart of 40 CFR 61 (NESHAP).

#### Maximum Available Control Technology (MACT)

The boilers in this application are subject to 40 CFR 63 (MACT), Subpart DDDDD. The requirement for natural gas fired boilers of this size are tune-ups, as prescribed in the rule.

#### PREVENTION OF SIGNIFICANT DETERIORATION (PSD)

The Tesoro facility is an existing major stationary source. To determine the applicability of PSD, 40 CFR 52.21(b)(2)(i) requires a two-step evaluation. The first step is to determine if the project will result in a significant emissions increase. If a project will result in a significant emissions increase, the second step is to determine if the project will result in a significant net emissions increase. Both steps need to result in emissions that exceed significance levels for PSD to apply.

The emissions increases need to be determined and compared to the following significance levels [40CFR52.21(b)(23)(i)]:

Carbon monoxide: 100 tons per year (tpy)

Nitrogen oxides: 40 tpy

Sulfur dioxide: 40 tpy  
Particulate matter: 25 tpy of particulate matter emissions  
PM10: 15 tpy  
PM2.5: 10 tpy of direct PM2.5 emissions; 40 tpy of sulfur dioxide emissions; 40 tpy of nitrogen oxide emissions unless demonstrated not to be a PM2.5 precursor under paragraph (b)(50) of this section  
Ozone: 40 tpy of volatile organic compounds or nitrogen oxides  
Sulfuric acid mist: 7 tpy  
Hydrogen sulfide (H<sub>2</sub>S): 10 tpy  
Total reduced sulfur (including H<sub>2</sub>S): 10 tpy  
Reduced sulfur compounds (including H<sub>2</sub>S): 10 tpy

The 'project' for this application is to modify existing and install new backup boilers to provide process steam while the Main Boilers are shutdown. The baseline actual emissions for steam production would decrease since the backup boilers, rated at 99 MMBtu/hr each, are operating while one of the main boilers are shutdown. Even if all five backup boilers are fired a full rate, the 5x99 = 495 MMBtu/hr duty would be less than the duty on the shutdown boiler. Consequently, the net emissions change would be a reduction. Therefore, PSD does not apply.

## STATEMENT OF COMPLIANCE

The owner/operator of S-1550, S-1551, S-1553, S-1558, and S-1559 Backup Boilers shall comply with Regulation 6, Rule 1 (Particulate Matter General Requirements). The owner/operator is expected to comply with Regulation 6, Rule 1 since the unit is only fueled with natural gas. Thus for any period aggregating more than three minutes in any hour, there should be no visible emission as dark or darker than No. 1 on the Ringlemann Chart (Regulation 6-1-301) and no visible emission to exceed 20% opacity (Regulation 6-1-302).

The owner/operator of S-1550, S-1551, S-1553, S-1558, and S-1559 Backup Boilers shall comply with Reg. 9-1-301 (Inorganic Gaseous Pollutants: Sulfur Dioxide for Limitations on Ground Level Concentrations).

The owner/operator is not subject to Regulation 9 Rule 7: Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters as per Regulation 9-7-110.3 since S-1550, S-1551, S-1553, S-1558, and S-1559 will be operated at the Tesoro Refinery.

The owner/operator is not subject to Regulation 9 Rule 10: Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators, and Process Heaters in Petroleum Refineries because the boilers are exempt per Regulation 9-10-110.6:

**9-10-110 Exemptions:** The requirements of this rule shall not apply to the following:

110.6 Boilers, steam generators and process heaters, including CO boilers, that receive an Authority to Construct subject to BACT requirements for NO<sub>x</sub> on or after January 5, 1994.

S-1550, S-1551 and S-1553 were issued Authority to Construct and Permits to Operate in 2009 or 2010 and were subject to BACT for NO<sub>x</sub>. S-1558, and S-1559 will also be issued an Authority to Construct and Permits to Operate with this permit application and both sources are subject to BACT for NO<sub>x</sub>.



The owner/operator is subject to Regulation 8, Rule 18. The natural gas fuel lines and components will be constructed in accordance with the requirements of the 8-18 standards and added to the facility fugitive emissions monitoring program.

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 project is also exempt under District CEQA regulation 2-1-312.11, because it is an alteration of existing facilities with negligible expansion of use (CEQA Guidelines § 15301), and because it is the installation of a limited number of small facilities (CEQA Guidelines § 15303). The applicant has submitted a Form Appendix H in support of the CEQA exemption and a Notice of Exemption will be published per District Policy.

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

*The owner/operator of S-1550, S-1551, S-1553, S-1558, and S-1559 Backup Boilers shall comply with BACT, Offsets, NSPS and the Toxic Risk Management Policy.*

PSD and NESHAPS do not apply.

## PERMIT CONDITIONS

Permit Condition 24491 will be revised as indicated below.

Application 20977 (November 2009)  
Modified by Application 22169 (September 2010). Added S-1553 and deleted Part 3.  
[Modified by Application 27395 \(January 2016\). Added S-1558 and S-1559. Deleted Part 2.](#)

S-1550	Backup Steam Boiler #1, 99 MM Btu/hr, Natural Gas Fired, Abated by A-1550 SCR
S-1551	Backup Steam Boiler #2, 99 MM Btu/hr, Natural Gas Fired, Abated by A-1551 SCR
S-1553	Backup Steam Boiler #3, 99 MM Btu/hr, Natural Gas Fired, Abated by A-1553 SCR
<a href="#">S-1558</a>	<a href="#">Backup Steam Boiler #4, 99 MM Btu/hr, Natural Gas Fired, Abated by A-1558 SCR</a>
<a href="#">S-1559</a>	<a href="#">Backup Steam Boiler #5, 99 MM Btu/hr, Natural Gas Fired, Abated by A-1559 SCR</a>

1. The owner/operator shall ensure that S-1550, S-1551, ~~and S-1553,~~ [S-1558 and S-1559](#) are fired exclusively on natural gas at a rate not to exceed 99 MMBtu/hr each. (Basis: Cumulative Increase, Offsets, Toxics, NSPS, BACT)
2. ~~Deleted. (Application 27395) This part was deleted because the boilers are being permitted as permanent, rather than temporary boilers. The owner/operator shall ensure that S-1550, S-1551 and S-1553 are on site at the refinery for no more than 6 consecutive months per 12 consecutive month period. The 6-month period for each boiler begins upon the initial firing of the boiler.~~ (Basis: BACT)
3. Deleted. (Application 22169)
4. Except for a time period not to exceed ~~4824~~ hours per boiler startup or shutdown, the owner/operator shall ensure that S-1550, S-1551, ~~and S-1553,~~ [S-1558 and S-1559](#) are only operated when abated by SCRs A-1550, A-1551, ~~and A-1553,~~ [A-1558 and A-1559](#), respectively. The total cumulative hours that ~~each of three~~ boilers can be operated without SCR abatement shall not exceed ~~384192~~ hours per consecutive 12-

month period. (Basis: Cumulative Increase, Offsets, Toxics)

5. The owner/operator shall ensure that S-1550, S-1551, ~~S-1553, S-1558 and S-1559~~ and ~~S-1553~~ are not operated unless they are each equipped with a District approved, fuel flow meter that measures the total volume of fuel throughput to S-1550, S-1551, ~~S-1553, S-1558 and S-1559~~ and ~~S-1553~~ in units of standard cubic feet. (Basis: Cumulative Increase, Offsets, Toxics)
6. The owner/operator shall ensure that the total fuel fired in S-1550, S-1551, ~~S-1553, S-1558 and S-1559~~ combined and ~~S-1553~~ shall not exceed ~~12,319,5604,277,000~~ therms in any 12 consecutive month period. (Basis: Cumulative Increase, Offsets, Toxics)
7. Except for periods of startup and shutdown as allowed in Part 4, the owner operator shall not operate S-1550, S-1551, ~~S-1553, S-1558 or S-1559~~ or ~~S-1553~~ unless NOx emissions are less than 7 ppmv, dry, @ 3% O<sub>2</sub>. (Basis: Cumulative Increase, Offsets, BACT)
8. During for periods of startup and shutdown as allowed in Part 4, the owner operator shall not operate S-1550, S-1551, ~~S-1553, S-1558 or S-1559~~ or ~~S-1553~~ unless NOx emissions are less than 30 ppmv, dry, @ 3% O<sub>2</sub>. (Basis: Cumulative Increase, Offsets)
9. The owner operator shall not operate S-1550, S-1551, ~~S-1553, S-1558 or S-1559~~ or ~~S-1553~~ unless CO emissions are less than 50 ppmv, dry, @ 3% O<sub>2</sub>. (Basis: Cumulative Increase, Offsets, BACT)
10. Within 10 days of the first fire date, the owner/operator shall conduct a District approved source test of each S-1550, S-1551, ~~S-1553, S-1558 and S-1559~~ and ~~S-1553~~. The District approved source test shall measure the emission rates of NOx, POC, SO<sub>2</sub>, and PM<sub>10</sub>, from S-1550, S-1551, ~~S-1553, S-1558 and S-1559~~ and ~~S-1553~~ while it is operated at not less than 80 MMBtu/hr. The owner/operator shall ensure that within ~~6045~~ days of the date of completion of the source testing, two identical copies of the source tests results (each referencing permit application #20977, #22169, # ~~27395~~ and plant #14628) are received by the District. One copy shall be sent to Source Testing and the other shall be sent to the Engineering Division. This District approved source test shall be repeated within 5 days of each subsequent boiler startup, (or any operation without SCR abatement) ~~during the 6-month period of boiler operation~~. (Basis: Cumulative Increase, Offsets, BACT)
11. In a District approved log, the owner/operator shall record the manufacturer, make, model, and maximum rated firing rate of each boiler used as S-1550, S-1551, ~~S-1553, S-1558 and S-1559~~ and ~~S-1553~~, and the following information for each calendar day that either S-1550, S-1551, ~~S-1553, S-1558 and S-1559~~ or ~~S-1553~~ fires fuel. The District approved log(s) shall be retained by the owner/operator on site for at least 5 years from the date of the last entry and made available to District staff upon request. (Basis: Cumulative Increase, Offsets, Toxics, BACT)
  - a. The date and hours that each S-1550, S-1551, ~~S-1553, S-1558 and S-1559~~ and ~~S-1553~~ fire fuel.
  - b. The amount of fuel fired at each S-1550, S-1551, ~~S-1553, S-1558 and S-1559~~ and ~~S-1553~~.
  - c. The hours that each S-1550, S-1551, ~~S-1553, S-1558 and S-1559~~ and ~~S-1553~~ operate without abatement by a fully functioning SCR.
  - d. ~~Deleted. The steam production records are not required to demonstrate compliance with the limits in the permit conditions. The amount of steam produced at each boiler S-1550, S-1551 and S-1553.~~

## TITLE V PERMIT

This facility is a Major Facility and currently there is a proposed Title V permit subject to EPA comment. The changes to the Title V permit are included in Appendix A of this evaluation.

## RECOMMENDATION

It is recommended that a Change in Conditions (S-1550, S-1551 and S-1553) and an Authority to Construct (S-1558, S-1559) be granted to Tesoro Refining and Marketing Company for the following sources:

**S-1550 Backup Steam Boiler #1, 99 MM Btu/hr, Natural Gas Fired, Abated by A-1550 SCR**

**S-1551 Backup Steam Boiler #2, 99 MM Btu/hr, Natural Gas Fired, Abated by A-1551 SCR**

**S-1553 Backup Steam Boiler #3, 99 MM Btu/hr, Natural Gas Fired, Abated by A-1553 SCR**

**S-1558 Backup Steam Boiler #4, 99 MM Btu/hr, Natural Gas Fired, Abated by A-1558 SCR**

**S-1559 Backup Steam Boiler #5, 99 MM Btu/hr, Natural Gas Fired, Abated by A-1559 SCR**

By: \_\_\_\_\_

Arthur P Valla  
Senior Air Quality Engineer  
1/26/2016

Appendix A

The proposed changes to tables in sections II, IV, and VII as well as Condition Number 24491. All changes are tracked based on the final "Revision 5" permit.

**Table II A1 - Permitted Sources – Golden Eagle Refinery**

S-#	Description	Make or Type	Model	Capacity	Grandfathered Limit, or Firm Limit and Basis
1550	Backup Steam Boiler No. 1 Natural gas Abated by A1550 SCR	Rental (various)	Various	<= 99 MMBtu/hr <a href="#">Combined firing of S1550, S1551, S1553, S1558 and S1559 will not exceed 12,319,560 therms/consecutive 12 months</a>	Firm Limit Condition 24491, Parts 1 & <del>6</del> New Source Review
1551	Backup Steam Boiler No. 2 Natural gas Abated by A1551 SCR	Rental (various)	Various	<= 99 MMBtu/hr <a href="#">Combined firing of S1550, S1551, S1553, S1558 and S1559 will not exceed 12,319,560 therms/consecutive 12 months</a>	Firm Limit Condition 24491, Parts 1 & <del>6</del> New Source Review
1553	Backup Steam Boiler No. 3 Natural gas Abated by A155 <del>3</del> SCR	Rental (various)	Various	<= 99 MMBtu/hr <a href="#">Combined firing of S1550, S1551, S1553, S1558 and S1559 will not exceed 12,319,560 therms/consecutive 12 months</a>	Firm Limit Condition 24491, Parts 1 & <del>6</del> New Source Review
<a href="#">1558</a>	<a href="#">Backup Steam Boiler No. 4</a> <a href="#">Natural gas</a> <a href="#">Abated by A1558 SCR</a>	<a href="#">Rental (various)</a>	<a href="#">Various</a>	<= 99 MMBtu/hr <a href="#">Combined firing of S1550, S1551, S1553, S1558 and S1559 will not exceed 12,319,560 therms/consecutive 12 months</a>	<a href="#">Firm Limit</a> <a href="#">Condition 24491, Parts 1 &amp; 6</a> <a href="#">New Source Review</a>
<a href="#">1559</a>	<a href="#">Backup Steam Boiler No. 5</a> <a href="#">Natural gas</a> <a href="#">Abated by A1559 SCR</a>	<a href="#">Rental (various)</a>	<a href="#">Various</a>	<= 99 MMBtu/hr <a href="#">Combined firing of S1550, S1551, S1553, S1558 and S1559 will not exceed 12,319,560 therms/consecutive 12 months</a>	<a href="#">Firm Limit</a> <a href="#">Condition 24491, Parts 1 &amp; 6</a> <a href="#">New Source Review</a>

**TABLE II B – ABATEMENT DEVICES**  
**PLANT #B2758 - TESORO REFINING AND MARKETING COMPANY - GOLDEN EAGLE REFINERY**

<b>A-#</b>	<b>Description</b>	<b>Source(s) Controlled</b>	<b>Applicable Requirement</b>	<b>Operating Parameters</b>	<b>Limit or Efficiency</b>
1550	Backup Boiler #1 SCR	S1550	BAAQMD Condition 24491, Parts 4 & 7	Operate at all times except for <u>384+92</u> hours per consecutive 12-months (total for all backup boilers) startup and shutdown.	NOx: 7 ppmvd @ 3% O2 except for:  NOx: 30 ppmvd @ 3% O2 during startup and shutdown unabated operation
1551	Backup Boiler #2 SCR	S1551	BAAQMD Condition 24491, Parts 4 & 7	Operate at all times except for <u>384+92</u> hours per consecutive 12-months (total for all backup boilers) startup and shutdown.	NOx: 7 ppmvd @ 3% O2 except for:  NOx: 30 ppmvd @ 3% O2 during startup and shutdown unabated operation
1553	Backup Boiler #3 SCR	S1553	BAAQMD Condition 24491, Parts 4 & 7	Operate at all times except for <u>384+92</u> hours per consecutive 12-months (total for all backup boilers) startup and shutdown.	NOx: 7 ppmvd @ 3% O2 except for:  NOx: 30 ppmvd @ 3% O2 during startup and shutdown unabated operation
<u>1558</u>	<u>Backup Boiler #4 SCR</u>	<u>S1558</u>	<u>BAAQMD</u> <u>Condition</u> <u>24491, Parts 4</u> <u>&amp; 7</u>	<u>Operate at all</u> <u>times except for</u> <u>384 hours per</u> <u>consecutive 12-</u> <u>months (total</u> <u>for all backup</u> <u>boilers) startup</u> <u>and shutdown.</u>	<u>NOx: 7 ppmvd @ 3%</u> <u>O2 except for:</u>  <u>NOx: 30 ppmvd @</u> <u>3% O2 during startup</u> <u>and shutdown</u> <u>unabated operation</u>
<u>1559</u>	<u>Backup Boiler #5 SCR</u>	<u>S1559</u>	<u>BAAQMD</u> <u>Condition</u> <u>24491, Parts 4</u> <u>&amp; 7</u>	<u>Operate at all</u> <u>times except for</u> <u>384 hours per</u> <u>consecutive 12-</u> <u>months (total</u> <u>for all backup</u> <u>boilers) startup</u> <u>and shutdown.</u>	<u>NOx: 7 ppmvd @ 3%</u> <u>O2 except for:</u>  <u>NOx: 30 ppmvd @</u> <u>3% O2 during startup</u> <u>and shutdown</u> <u>unabated operation</u>

**TABLE IV – C.1.3**  
**SOURCE-SPECIFIC APPLICABLE REQUIREMENTS**  
**S1550, S1551, S1553, S1558 AND S1559~~3~~ BACKUP BOILERS**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
<b>BAAQMD Regulation 1</b>	<b>General Provisions and Definitions (07/19/2006)</b>		
1-523	Parametric Monitoring and Recordkeeping Procedures	N	
1-523.1	Report periods of parametric monitor inoperation	Y	
1-523.2	Limits on periods of parametric monitor inoperation	Y	
1-523.3	Report exceedances	N	
1-523.4	Recordkeeping	Y	
1-523.5	Maintenance and calibration; written policy	N	
<b>SIP Regulation 1</b>	<b>General Provisions and Definitions (06/28/1999)</b>		
1-523	Parametric Monitoring and Recordkeeping Procedures	Y	
1-523.3	Report exceedances	Y	
<b>BAAQMD Regulation 6 Rule 1</b>	<b>Particulate Matter; General Requirements (12/05/2007)</b>		
6-1-301	Ringelmann No. 1 Limitation	N	
6-1-305	Visible Particles	N	
6-1-310	Particle Weight Limitation	N	
6-1-310.3	Heat transfer operations	N	
6-1-601	Particulate Matter, Sampling, Sampling Facilities, Opacity Instruments and Appraisal of Visible Emissions	N	
<b>SIP Regulation 6</b>	<b>Particulate Matter and Visible Emissions (09/04/1998)</b>		
6-301	Ringelmann No. 1 Limitation	Y	
6-305	Visible Particles	Y	
6-310	Particle Weight Limitation	Y	
6-310.3	Heat transfer operations	Y	
6-601	Particulate Matter, Sampling, Sampling Facilities, Opacity Instruments and Appraisal of Visible Emissions	Y	
<b>40 CFR 60 Subpart Dc</b>	<b>Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (1/28/2009)</b>		
60.40c	Applicability and delegation of authority	Y	
60.40c(a)	Applicability: Steam generating units constructed after June 9, 1989 with heat input capacity >= 10 MMBTU/hr and < 100 MMBTU/hr	Y	
60.41c	Definitions	Y	
60.48c	Reporting and recordkeeping requirements	Y	
60.48c(a)	Reporting and recordkeeping: Notifications of construction dates and actual startups per 40 CFR 60.7. Notifications shall include:	Y	

**TABLE IV – C.1.3**  
**SOURCE-SPECIFIC APPLICABLE REQUIREMENTS**  
**S1550, S1551, S1553, S1558 AND S1559 BACKUP BOILERS**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
60.48c(a)(1)	Design heat input capacity and fuels to be combusted	Y	
60.48c(a)(3)	Annual capacity factor anticipated for each fuel	Y	
60.48c(g)(2)	Alternative recordkeeping requirements – monthly natural gas use	Y	
60/48c(i)	Record retention requirements	Y	
<b><u>40 CFR 63 Subpart DDDDD</u></b>	<b><u>National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters</u></b>		
<u>63.7485</u>	<u>Applicability</u>	<u>Y</u>	
<u>63.7490</u>	<u>Affected source is each new industrial boiler located at a major source</u>	<u>Y</u>	
<u>63.7495</u>	<u>Initial compliance dates</u>	<u>Y</u>	
<u>63.7495(a)</u>	<u>Compliance is required upon startup of boiler</u>	<u>Y</u>	
<u>63.7495(d)</u>	<u>Notification requirements of 63.7545 must be met</u>	<u>Y</u>	
<u>63.7500</u>	<u>Emission Limitations and Work Practice Standards</u>	<u>Y</u>	
<u>63.7500(a)</u>	<u>Requirements must be met at all times the affected source is operating, except as provided in paragraph (f).</u>	<u>Y</u>	
<u>63.7500(a)(3)</u>	<u>Operate and maintain affected source in a manner consistent with safety and good air pollution control practices for minimizing emissions.</u>	<u>Y</u>	
<u>63.7500(e)</u>	<u>Boilers and process heaters in the units designed to burn gas 1 fuels subcategory are not subject to the emission limits or the operating limits.</u>	<u>Y</u>	
<u>63.7500(f)</u>	<u>Standards apply at all times the affected unit is operating, except during periods of startup and shutdown during which time you must comply only with Table 3 to this subpart</u>	<u>Y</u>	
<u>63.7505</u>	<u>General Compliance Requirements</u>	<u>Y</u>	
<u>63.7505(a)</u>	<u>Must be in compliance with the emission limits, work practice standards, and operating limits in this subpart.</u>	<u>Y</u>	
<u>63.7510</u>	<u>Initial Compliance Requirements</u>	<u>Y</u>	
<u>63.7510(g)</u>	<u>Demonstrate initial compliance with the applicable work practice standards in Table 3 to this subpart within the applicable annual schedule.</u>	<u>Y</u>	
<u>63.7515(d)</u>	<u>Conduct an annual performance tune-up according. The first annual, tune-up must be no later than 13 months after the initial startup.</u>	<u>Y</u>	
<u>63.7530(d)</u>	<u>Submit a signed statement in the Notification of Compliance Status report that indicates that you conducted a tune-up of the unit.</u>	<u>Y</u>	

**TABLE IV – C.1.3**  
**SOURCE-SPECIFIC APPLICABLE REQUIREMENTS**  
**S1550, S1551, S1553, S1558 AND S1559 BACKUP BOILERS**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
<a href="#">63.7540</a>	<a href="#">Continuous Compliance Requirements</a>	<a href="#">Y</a>	
<a href="#">63.7540(a)</a>	<a href="#">Demonstrate continuous compliance with the work practice standards in Table 3 to this subpart.</a>	<a href="#">Y</a>	
<a href="#">63.7540(a)(10)</a>	<a href="#">Conduct an annual tune-up of the boiler or process heater to demonstrate continuous compliance as specified in paragraphs (a)(10)(i) through (vi) of this section.</a>	<a href="#">Y</a>	
<a href="#">63.7540(b)</a>	<a href="#">Report each instance in which you did not meet each emission limit and operating limit according to the requirements in §63.7550.</a>	<a href="#">Y</a>	
<a href="#">63.7545</a>	<a href="#">Notifications</a>	<a href="#">Y</a>	
<a href="#">63.7545(a)</a>	<a href="#">Submit to the Administrator all of the notifications in §§63.7(b) and (c), 63.8(e), (f)(4) and (6), and 63.9(b) through (h) that apply by the dates specified.</a>	<a href="#">Y</a>	
<a href="#">63.7545(c)</a>	<a href="#">Submit an Initial Notification not later than 15 days after the actual date of startup of the affected source.</a>	<a href="#">Y</a>	
<a href="#">63.7545(e)</a>	<a href="#">Submit a Notification of Compliance Status according to §63.9(h)(2)(ii) before the close of business on the 60th day following the completion of initial compliance demonstrations, containing the information specified in paragraphs (e)(1) and (8).</a>	<a href="#">Y</a>	
<a href="#">63.7550</a>	<a href="#">Reports</a>	<a href="#">Y</a>	
<a href="#">63.7550(b)</a>	<a href="#">Submit only an annual compliance report as specified in paragraphs (b)(1) through (4) of this section, instead of a semi-annual compliance report.</a>	<a href="#">Y</a>	
<a href="#">63.7550(b)(1)-(2)</a>	<a href="#">First compliance report must cover the period beginning on the compliance date that is specified for each boiler or process heater in §63.7495 and ending on July 31 or January 31, whichever date is the first date that occurs at least 1 year after the compliance date that is specified for your source in §63.7495. The first annual compliance report must be postmarked or submitted no later than January 31.</a>	<a href="#">Y</a>	
<a href="#">63.7550(b)(3)-(4)</a>	<a href="#">Annual compliance reports must cover the applicable 1-year period from January 1 to December 31.</a>	<a href="#">Y</a>	
<a href="#">63.7550(c)</a>	<a href="#">Compliance report must contain the information in paragraphs (i), (ii), (iii), (iv), (xiii), (xiv), (xvii).</a>	<a href="#">Y</a>	
<a href="#">63.7550(h)</a>	<a href="#">Submit the reports electronically using CEDRI that is accessed through the EPA's Central Data Exchange (CDX) (<a href="http://www.epa.gov/cdx">www.epa.gov/cdx</a>).</a>	<a href="#">Y</a>	
<a href="#">63.7555</a>	<a href="#">Recordkeeping</a>	<a href="#">Y</a>	



**TABLE IV – C.1.3**  
**SOURCE-SPECIFIC APPLICABLE REQUIREMENTS**  
**S1550, S1551, S1553, S1558 AND S1559 BACKUP BOILERS**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
<a href="#">63.7555(a)(1)</a>	<a href="#">Maintain copy of each notification and report that submitted to comply with this subpart, including all supporting documentation</a>	<a href="#">Y</a>	
<a href="#">63.7555(a)(2)</a>	<a href="#">Maintain records of compliance demonstrations</a>	<a href="#">Y</a>	
<a href="#">63.7555(i)</a>	<a href="#">Maintain records of the calendar date, time, occurrence and duration of each startup and shutdown.</a>	<a href="#">Y</a>	
<a href="#">63.7555(j)</a>	<a href="#">Maintain records of the type(s) and amount(s) of fuels used during each startup and shutdown.</a>	<a href="#">Y</a>	
<a href="#">63.7560(a)</a>	<a href="#">Records must be in a form suitable and readily available for expeditious review.</a>	<a href="#">Y</a>	
<a href="#">63.7560(b)</a>	<a href="#">Keep each record for 5 years.</a>	<a href="#">Y</a>	
<a href="#">63.7560(c)</a>	<a href="#">Keep each record on site or accessible from on site for at least 2 years.</a>	<a href="#">Y</a>	
<a href="#">63.7565</a>	<a href="#">General provisions</a>	<a href="#">Y</a>	
<a href="#">63.7570</a>	<a href="#">Implementation</a>	<a href="#">Y</a>	
<a href="#">63.7575</a>	<a href="#">Definitions</a>	<a href="#">Y</a>	
<b>BAAQMD Condition 24491</b>			
Part 1	Fire only on natural gas. Firing rate limit. (Basis: Cumulative Increase, Offsets, Toxics, NSPS, BACT)	Y	
<del>Part 2</del>	<del>Six consecutive month on site limit per 12 consecutive months (Basis: BACT)</del>	<del>Y</del>	
Part 4	SCR abatement requirements and exceptions for startups and shutdowns. (Basis: Cumulative Increase, Offsets, Toxics)	Y	
Part 5	Continuous fuel flow meter requirements. (Basis: Cumulative Increase, Offsets, Toxics)	Y	
Part 6	Fuel consumption limit per 12 consecutive months. (Basis: Cumulative Increase, Offsets, Toxics)	Y	
Part 7	NOx emission limit (except during allowable startup and shutdown periods). (Basis: Cumulative Increase, Offsets, BACT)	Y	
Part 8	NOx emission limit during allowable startup and shutdown periods. (Basis: Cumulative Increase, Offsets)	Y	
Part 9	CO emission limit. (Basis: Cumulative Increase, Offsets, BACT)	Y	
Part 10	Source test and source test report requirements. (Basis: Cumulative Increase, Offsets, BACT)	Y	
Part 11	Recordkeeping requirements. (Basis: Cumulative Increase, Offsets, Toxics, BACT)	Y	

**Condition 24491**

Application 20977 (November 2009)

Modified by Application 22169 (September 2010). Added S-1553 and deleted Part 3.

[Modified by Application 27395 \(January 2016\). Added S-1558 and S-1559. Deleted Part 2.](#)

S-1550 Backup Steam Boiler #1, 99 MM Btu/hr, Natural Gas Fired,  
Abated by A-1550 SCR

S-1551 Backup Steam Boiler #2, 99 MM Btu/hr, Natural Gas Fired,  
Abated by A-1551 SCR

S-1553 Backup Steam Boiler #3, 99 MM Btu/hr, Natural Gas Fired,  
Abated by A-1553 SCR

[S-1558 Backup Steam Boiler #4, 99 MM Btu/hr, Natural Gas Fired, Abated by A-1558 SCR](#)

[S-1559 Backup Steam Boiler #5, 99 MM Btu/hr, Natural Gas Fired, Abated by A-1559 SCR](#)

1. The owner/operator shall ensure that S-1550, S-1551, ~~and S-1553~~, [S-1558 and S-1559](#) are fired exclusively on natural gas at a rate not to exceed 99 MMBtu/hr each. (Basis: Cumulative Increase, Offsets, Toxics, NSPS, BACT)
2. ~~Deleted. (Application 27395) This part was deleted because the boilers are being permitted as permanent, rather than temporary boilers. The owner/operator shall ensure that S-1550, S-1551 and S-1553 are on site at the refinery for no more than 6 consecutive months per 12 consecutive month period. The 6 month period for each boiler begins upon the initial firing of the boiler.~~ (Basis: BACT)
3. ~~3.~~ Deleted. (Application 22169)
4. Except for a time period not to exceed ~~4824~~ hours per boiler startup or shutdown, the owner/operator shall ensure that S-1550, S-1551, ~~and S-1553~~, [S-1558 and S-1559](#) are only operated when abated by SCRs A-1550, A-1551, ~~and A-1553~~, [S-1558 and S-1559](#), respectively. The total cumulative hours that ~~each all three~~ boiler ~~s~~ can be operated without SCR abatement shall not exceed ~~384192~~ hours per consecutive 12-month period. (Basis: Cumulative Increase, Offsets, Toxics)
5. The owner/operator shall ensure that S-1550, S-1551, ~~and S-1553~~, [S-1558 and S-1559](#) are not operated unless they are each equipped with a District approved, fuel flow meter that measures the total volume of fuel throughput to

S-1550, S-1551, ~~and~~ S-1553, S-1558 and S-1559 in units of standard cubic feet. (Basis: Cumulative Increase, Offsets, Toxics)

6. The owner/operator shall ensure that the total fuel fired in S-1550, S-1551, ~~and~~ S-1553, S-1558 and S-1559 combined shall not exceed 12,319,560,277,000 therms in any 12 consecutive month period. (Basis: Cumulative Increase, Offsets, Toxics)
7. Except for periods of startup and shutdown as allowed in Part 4, the owner operator shall not operate S-1550, S-1551, ~~or~~ S-1553, S-1558 or S-1559 unless NOx emissions are less than 7 ppmv, dry, @ 3% O<sub>2</sub>. (Basis: Cumulative Increase, Offsets, BACT)
8. During for periods of startup and shutdown as allowed in Part 4, the owner operator shall not operate S-1550, S-1551, ~~or~~ S-1553, S-1558 or S-1559 unless NOx emissions are less than 30 ppmv, dry, @ 3% O<sub>2</sub>. (Basis: Cumulative Increase, Offsets)
9. The owner operator shall not operate S-1550, S-1551, ~~or~~ S-1553, S-1558 or S-1559 unless CO emissions are less than 50 ppmv, dry, @ 3% O<sub>2</sub>. (Basis: Cumulative Increase, Offsets, BACT)
10. Within 10 days of the first fire date, the owner/operator shall conduct a District approved source test of each S-1550, S-1551, ~~and~~ S-1553, S-1558 and S-1559. The District approved source test shall measure the emission rates of NOx, POC, SO<sub>2</sub>, and PM<sub>10</sub>, from S-1550, S-1551, ~~and~~ S-1553, S-1558 and S-1559 while it is operated at not less than 80 MMBtu/hr. The owner/operator shall ensure that within 45-60 days of the date of completion of the source testing, two identical copies of the source tests results (each referencing permit application #20977, #22169, #27395 and plant #14628) are received by the District. One copy shall be sent to Source Testing and the other shall be sent to the Engineering Division. This District approved source test shall be repeated within 5 days of each subsequent boiler startup (or any operation without SCR abatement) ~~during the 6 month period of boiler operation~~. (Basis: Cumulative Increase, Offsets, BACT)
11. In a District approved log, the owner/operator shall record the manufacturer, make, model, and maximum rated firing rate of each boiler used as S-1550, S-1551 and S-1553, S-1558 and S-1559, and the following information for each calendar day that either S-1550, S-1551, ~~or~~ S-1553, S-1558 or S-1559 fires fuel. The District approved log(s) shall be retained by the owner/operator on site for at least 5 years from the date of the last entry and made available to District staff upon request. (Basis: Cumulative Increase, Offsets, Toxics, BACT)
  - a. The date and hours that each S-1550, S-1551, ~~and~~ S-1553, S-1558 and S-1559 fire fuel.
  - b. The amount of fuel fired at each S-1550, S-1551, ~~and~~ S-1553, S-1558 and S-1559.

- c. The hours that each S-1550, S-1551, ~~and S-1553, S-1558 and S-1559~~ operate without abatement by a fully functioning SCR.
- d. ~~Deleted. The steam production records are not required to demonstrate compliance with the limits in the permit conditions. The amount of steam produced at each boiler S-1550, S-1551 and S-1553.~~

**Table VII – C.1.3  
Applicable Limits and Compliance Monitoring Requirements  
S1550, S1551, ~~S1553, S1558~~ AND S1559~~3~~ BACKUP BOILERS**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Visible Emissions	BAAQMD 6-1-301	N		≥ Ringelmann No. 1 for no more than 3 minutes/hour	None	N	N/A
Visible Emissions	SIP 6-301	Y		≥ Ringelmann No. 1 for no more than 3 minutes/hour	None	N	N/A
Visible Particles	BAAQMD 6-1-305	N		Prohibition of nuisance	None	N	N/A
Visible Particles	SIP 6-305	Y		Prohibition of nuisance	None	N	N/A
FP	BAAQMD 6-1-310	N		0.15 grain/dscf	None	N	N/A
FP	SIP 6-310	Y		0.15 grain/dscf	None	N	N/A
FP	BAAQMD 6-1-310.3	N		0.15 grain/dscf @ 6% O2	None	N	N/A
FP	SIP 6-310.3	Y		0.15 grain/dscf @ 6% O2	None	N	N/A
Firing Rate	Condition 24491 Part 1	Y		99 MMBTU/hr each Natural gas only	Condition 24491 Part 11	P/E	Records
<del>On-site Residence Time</del>	<del>Condition 24491 Part 2</del>	<del>Y</del>		<del>6 consecutive months each boiler per 12 consecutive month period</del>	<del>Condition 24491 Part 11</del>	<del>P/E</del>	<del>Records</del>

**Table VII – C.1.3**  
**Applicable Limits and Compliance Monitoring Requirements**  
**S1550, S1551, S1553, S1558 AND S1559 BACKUP BOILERS**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Unabated Operation	Condition 24491 Part 4	Y		Operation without SCR limited to <del>38492</del> hours per consecutive 12-month period total for both boilers during SU and SD events ( <del>4824</del> hours per event (SU or SD))	Condition 24491 Part 11	P/E	Records
Fuel Consumption	Condition 24491 Part 6	Y		Total, <u>combined firing of S1550, S1551, S1553, S1558 and S1559 will not exceed 12,319,560</u> <del>both boilers 4,277,000</del> therms in any 12 consecutive month period	Condition 24491 Part 5	C	Fuel Flow CPMS
NOx	Condition 24491 Part 7	Y		< 7ppmvd @ 3% O2 except during startup and shutdown events ( <del>4824</del> hours per boiler per SU or SD event)	Condition 24491 Part 10	P/E	Source test
NOx	Condition 24491, Part 8	Y		< 30 ppmvd @ 3% O2 during startup and shutdown events ( <del>4824</del> hours per boiler per SU or SD event)	Condition 24491, Part 10	P/E	Source test
CO	Condition 24491 Part 9	Y		< 50 ppmvd @ 3% O2	Condition 24491 Part 10	P/E	Source test
SO2				None	Condition 24491 Part 10	P/E	Source test
POC				None	Condition 24491 Part 10	P/E	Source test



## **Application 27564, S-1411 Sulfuric Acid Plant Production Limit**

### **DRAFT ENGINEERING EVALUATION**

**Tesoro Refining & Marketing Company LLC**

**PLANT NO. 14628**

**APPLICATION NO. 27564**

#### **BACKGROUND**

The Tesoro Refining & Marketing Company LLC. (Tesoro) is applying for a Change in Conditions to the Permit to Operate for the following equipment:

#### **S-1411 Sulfuric Acid Plant**

S-1411 is currently subject to Condition 21053, Part 2, requiring monthly monitoring of visible emissions to demonstrate compliance with Regulation 6-1-301 (Ringelmann 1 or 20% opacity). This monitoring was added in response to an EPA comment on Tesoro's Title V Permit in 2003. Tesoro is applying to add firm S-1411 emission limits to the Permit Conditions.

Tesoro originally submitted Permit Application 27058 in March 2015 to alter S-1411 by the following project scope:

1. Adding piping to increase steam flow to main blower turbine driver,
2. Replacing catalyst in Main and Final Converters,
3. Reconfiguring ducts from the Start-up heater to the converters,
4. Replacing X-06 heat exchanger.

This project was intended to reduce SO<sub>2</sub> emissions to 2.4 lbs per ton of acid produced by increasing "dilution air" to the Main Converter to enhance the conversion of SO<sub>2</sub> to SO<sub>3</sub>. However, the main blower of a sulfuric acid production facility is the primary bottleneck of the process. Therefore, increasing the main blower capacity could increase the capacity of acid production. The evaluation of the production capacity would require additional time and there was a benefit to lowering SO<sub>2</sub> emissions promptly. Therefore, it was agreed to process Application 27058 as an alteration, with the provision that a new permit application would be submitted to evaluate S-1411 capacity and add firm emission limits. On 9/17/2015, Tesoro was granted a Temporary Permit to Operate for Application 27058 under the provision of Regulation 2-1-106 Accelerated Permitting Program. This Application 27564 is the new application. Once this application is approved, Application 27058 will be cancelled.

S-1411 was initially operated in 1953 by Monsanto Company (then Plant 14). Tosco acquired S-1411 from Monsanto and it is now owned and operated by Tesoro.

S-1411 is a grandfathered source that was never granted an authority to construct by the District. S-1411 does not have firm emission limits. The capacity limits in Tesoro's Title V Permit are 'soft' limits. This means the limits serve as reporting threshold and are not firm limits that can be used as noncompliance with the permit (as detailed in Title V Standard Condition J.2). Tesoro is applying to 'convert' S-1411 from a grandfathered source with

'soft' limits to a source with firm emissions limits. The method for this 'conversion' is derived from Regulation 2, Rule 2, New Source Review. Sources with firm emission limits derived by the emission calculation requirements detailed in Regulation 2, Rule 2 are commonly referred to as NSR sources, and the term "New Source Review" is used in Tesoro's Title V permit. District regulations do not specifically define the term NSR Source. However, by applying the requirements of Regulation 2, Rule 2 New Source Review, the emissions of S-1411 can be evaluated and the S-1411 can be considered a NSR source with firm NSR emissions limits. This is, in effect, evaluating the 'converted' source S-1411 as if it were a modified source even though S-1411 was not physically modified.

The requirements for evaluating a modified source are detailed in Regulation 2-2-604, Emission Increase Calculation Procedures, New or Modified Sources. The applicable sub-section is 2-2-604.2:

- 2-2-604 Emission Increase Calculation Procedures, New or Modified Sources:** The APCO shall determine the annual emission increase, expressed as tons per year, from:
- 604.1 A new source based on the maximum emitting potential of the new source or the maximum permitted emission level of the new source, approved by the APCO, subject to federally enforceable limiting conditions.
  - 604.2 A modified source by subtracting either the baseline annual emission rate, as calculated using the methodology in Section 2-2-605, from the new maximum permitted emission level of the modified source, approved by the APCO, subject to federally enforceable limiting conditions.

The reference in 2-2-604.2 is the Emission Calculation Procedures, Emission Reduction Credits, in Regulation 2-2-605:

- 2-2-605 Emission Calculation Procedures, Emission Reduction Credits:** The following methodology shall be used to calculate emission reduction credits.
- 605.1 The baseline period consists of the 3 year period immediately preceding the date that the application is complete (or shorter period if the source is less than 3 years old). The applicant must have sufficient verifiable records of the source's operation to substantiate the emission rate and throughput during the entire baseline period.
  - 605.2 Baseline throughput is the lesser of:
    - 2.1 actual average throughput during the baseline period; or
    - 2.2 average permitted throughput during the baseline period, if limited by permit condition.
  - 605.3 Baseline emission rate, expressed in the units of mass of emissions per unit of throughput, is the average actual emission rate during the baseline period. Periods where the actual emission rate exceeded regulatory or permitted limits shall be excluded from the average.
  - 605.4 Baseline Throughput and Emission Rate - Fully Offset Source: For a source which has, contained in a permit condition, an emission cap or emission rate which has been fully offset by the facility (without using emission reductions from the Small Facility Banking Account), the baseline throughput and baseline emission rate shall be based on the levels allowed by the permit condition.
  - 605.5 The adjusted baseline emission rate shall be determined by adjusting the baseline emission rate downward, if necessary, to comply with the most stringent of RACT, BARCT, and District rules and regulations in effect or contained in the most recently adopted Clean Air Plan.
  - 605.6 Emission reduction credits shall be the difference between the adjusted baseline emission rate times the baseline throughput, and the emission cap or emission rate accepted by the applicant as a federally enforceable limiting conditions.

## EMISSION CALCULATIONS

### A. Baseline Emissions



Tesoro provided the following baseline information based on production records and the SO2 CEM:

Month	Production Rate, tons	SO2. lbs
Apr-12	4216	10824.3
May-12	11282	45512.2
Jun-12	10144	35842.1
Jul-12	11815	44016.0
Aug-12	12731	41884.9
Oct-12	12980	59059.2
Nov-12	11463	54382.0
Dec-12	11084	49873.8
Jan-13	10799	39791.9
Feb-13	11017	30544.3
Mar-13	13160	35966.8
Apr-13	12695	21940.8
May-13	8556	10997.0
Jun-13	11135	40840.3
Jul-13	12094	45818.3
Aug-13	12072	44738.1
Sep-13	11583	45045.6
Oct-13	11419	40878.4
Nov-13	9714	31622.6
Dec-13	11412	40769.8
Jan-14	12567	46948.0
Feb-14	10453	34790.4
Mar-14	9953	32003.6
Apr-14	5764	9792.7
May-14	12959	43026.4
Jun-14	10724	34021.5
Jul-14	12331	37481.7
Aug-14	12381	35340.5
Sep-14	6854	18253.3
Oct-14	12506	42767.8
Nov-14	11798	39153.3
Dec-14	12802	49386.2
Jan-15	9043	27487.9
Feb-15	405	569.6
Mar-15	0	28.8
<b>Total</b>	<b>372,825</b>	<b>1,266,841</b>

During the baseline period, several source tests were performed. A summary of these test results are shown in the following table:

Date of Test	8/21/2012	10/2/2013	12/2/2013	9/2/2015	9/4/2015
Ton/day Acid Production	387	389	363.7	395	426.2

CO, lb/hr	0.07	1.02	N/T	0.04	0.19
CO, lb/ton	0.0043	0.0629	N/T	0.00243	0.0107
NOx ,lb/hr	3.53	2.72	N/T	3.74	3.75
NOx ,lb/ton	0.2189	0.1678	N/T	0.2272	0.2112
SAM ,lb/hr	N/T	N/T	0.032	N/T	0.88
SAM, lb/ton	N/T	N/T	0.00211	N/T	0.04955
POC ,lb/hr	N/T	N/T	N/T	N/T	0.13
POC, lb/ton	N/T	N/T	N/T	N/T	0.00732
PM10, lb/hr	N/T	N/T	N/T	N/T	0.6
PM10, lb/ton	N/T	N/T	N/T	N/T	0.03379

SAM = Sulfuric Acid Mist; N/T = not Tested

Based on the results of the source tests summarized above, the following table show the NOx, CO, POC, PM10 and SAM emission during the baseline period.

Month	Production Rate, tons	NOx. lbs	CO. lbs	POC. lbs	PM-10. lbs	H2SO4. lbs
Apr-12	4216	923	18.1	30.8	143	209
May-12	11282	2471	48.5	82.4	381	559
Jun-12	10144	2222	43.6	74.1	343	503
Jul-12	11815	2587	50.8	86.2	399	585
Aug-12	12731	2788	54.7	92.9	430	631
Oct-12	12980	2843	55.8	94.8	439	643
Nov-12	11463	2510	49.3	83.7	387	568
Dec-12	11084	2427	47.7	80.9	375	549
Jan-13	10799	2365	46.4	78.8	365	535
Feb-13	11017	2413	47.4	80.4	372	546
Mar-13	13160	2882	56.6	96.1	445	652
Apr-13	12695	2780	54.6	92.7	429	629
May-13	8556	1874	36.8	62.5	289	424
Jun-13	11135	2439	47.9	81.3	376	552
Jul-13	12094	2648	52.0	88.3	409	599
Aug-13	12072	2644	51.9	88.1	408	598
Sep-13	11583	2537	49.8	84.6	392	574
Oct-13	11419	1918	718.3	83.4	386	566
Nov-13	9714	1632	611.0	70.9	328	481
Dec-13	11412	1917	717.8	83.3	386	565
Jan-14	12567	2111	790.5	91.7	425	623
Feb-14	10453	1756	657.5	76.3	353	518
Mar-14	9953	1672	626.0	72.7	336	493
Apr-14	5764	968	362.6	42.1	195	286
May-14	12959	2177	815.1	94.6	438	642
Jun-14	10724	1802	674.5	78.3	362	531
Jul-14	12331	2072	775.6	90.0	417	611
Aug-14	12381	2080	778.8	90.4	418	613
Sep-14	6854	1151	431.1	50.0	232	340
Oct-14	12506	2101	786.6	91.3	423	620
Nov-14	11798	1982	742.1	86.1	399	585

Month	Production Rate, tons	NOx. lbs	CO. lbs	POC. lbs	PM-10. lbs	H2SO4. lbs
Dec-14	12802	2151	805.3	93.5	433	634
Jan-15	9043	1519	568.8	66.0	306	448
Feb-15	405	68	25.4	3.0	14	20
Mar-15	0	0	0.0	0.0	0	0
Total	372,824	72,821	11,745	2,722	12,602	18,474

NOx EF = 0.219 lb/ton thru Sep13 (8/21/12 source test), 0.168 lb/ton thereafter (10/2/13 source test);  
CO EF = 0.0043 lb/ton thru Sep13 (8/21/12 source test), 0.0629 lb/ton thereafter (10/2/13 source test);  
from 9/4/15 source test: POC EF = 0.00732 lb/ton; PM-10 EF = 0.0338 lb/ton; SAM EF = 0.0496 lb/ton.

#### B. Average Baseline Emissions

The following table summarizes the average annual baseline emissions:

Pollutant	Total 3-yr lbs	Average lb/yr	Average tons/yr	Average lb/day
SO2	1,266,841	422,280	211.140	1157
NOx	72,821	24,723	12.137	66.5
CO	11,745	3,915	1.958	10.7
POC	2,722	907	0.454	2.48
PM-10	12,602	4,200	2.100	11.5
SAM	18,474	6,158	3.079	16.87

Average daily emissions = average annual emissions / 365

#### C. Maximum Permitted Emissions

Tesoro has requested a firm S-1411 NSR limit of 480 tons acid produced per day or an annual throughput limit of 480 x 365 = 175,200 tons/year. Tesoro also requested that the maximum permitted emission level be based on the following emission factors:

Pollutant	EF, lbs/ton
SO2	2.400
NOx	0.490
CO	0.298
POC	0.010
PM-10	0.100
SAM	0.100

Therefore, the maximum annual potential to emit is as follows:

Pollutant	Tons/year	EF, lbs/ton	Lbs/yr	Tons/yr
SO2	175,200	2.400	420,480	210.240
NOx	175,200	0.490	85,848	42.924
CO	175,200	0.298	52,210	26.105
POC	175,200	0.010	1,752	0.876
PM-10	175,200	0.100	17,520	8.760
SAM	175,200	0.100	17,520	8.760

D. Annual Emission Increases

Pollutant	Baseline tons	PTE, tons	Increase, tons
SO2	211.140	210.240	-0.900
NOx	12.137	42.924	30.787
CO	1.958	26.105	24.147
POC	0.454	0.876	0.422
PM-10	2.100	8.760	6.660
SAM	3.079	8.760	5.681

E. Maximum Daily Emissions

The maximum daily emissions are summarized in the following table.

Pollutant	Tons/day	EF, lbs/ton	Lbs/day
SO2	480	2.400	1152
NOx	480	0.490	235.2
CO	480	0.298	143
POC	480	0.010	4.80
PM-10	480	0.100	48.0
SAM	480	0.100	48.0

F. Daily Emissions Increase

The daily emissions increase is summarized in the following table.

Pollutant	PTE lbs/day	Baseline lbs/day	Increase, lbs/day
SO2	1152	1157	-5
NOx	235.2	66.5	168.7
CO	143.0	10.7	132.3
POC	4.80	2.48	2.31
PM-10	48.0	11.5	36.5
SAM	48.0	16.9	31.1

G. Cumulative Increase

The facility cumulative increase for this permit application is as follows:

Pollutant	Current tons/yr	Increase tons/yr	Total tons/yr
SO2	0	0	0.000
NOx	0	30.787	30.787
CO	14.308	24.147	38.455
POC	0	0.422	0.422
PM-10	0	6.660	6.660

**Toxic Risk Screening**

Sulfuric Acid Mist is the toxic compound that is known to be emitted from S-1411.

$$\begin{aligned} \text{Increase in H}_2\text{SO}_4 \text{ emissions} &= 5.681 \text{ tons/year} * 2000 = 11,362 \text{ lb/year} \\ &= 31.1 \text{ lb/day} / 24 = 1.30 \text{ lb/hr} \end{aligned}$$

The toxic triggers for H<sub>2</sub>SO<sub>4</sub> are 39 lb/year and 0.026 lb/hr. Therefore, a toxic risk screen is required.

The risk screen was conducted and the results transmitted April 11, 2016. A conservative approach was taken evaluating the total SAM PTE of 2 lb/hr (48 lb/day / 24) and 17,500 lb/year (8.760 tons/yr \* 2000). The project risk is considered acceptable with a maximum chronic hazard index estimated at 0.078 and a maximum acute hazard index estimated at 0.041.

**BEST AVAILABLE CONTROL TECHNOLOGY**

In accordance with Regulation 2, Rule 2, Section 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, NO<sub>x</sub>, CO, SO<sub>2</sub> or PM<sub>10</sub>. Emissions from S-1411 trigger BACT for the following pollutants: NO<sub>x</sub>, PM<sub>10</sub> and CO. The closest guidance document available is Document # 169.1 for a Sulfur Recovery Plant, and it only addresses SO<sub>2</sub> emissions.

As discussed below, S-1411 is considered to achieve a BACT 2 level of control for NO<sub>x</sub>, PM<sub>10</sub> and CO.

The following table summarizes the Tesoro BACT determination for this permit application.

NO <sub>x</sub> BACT 1 Determination			
Technology	Technically Feasible	Cost Effective	Rationale
Selective Catalytic Reduction (SCR)	No	N/A	SCR operating temperatures range from 650-800F. S-1411 exhaust temperature = 170F.
Selective Non-Catalytic Reduction (SNCR)	No	N/A	SNCR operating temperatures range from 1200-1500F. S-1411 exhaust temperature = 170F.
SCR with Re-heat	Yes	No	The addition of a new fired heater to heat exhaust gases to SCR temperature is technical feasible but will result in secondary

			emissions (including more NOx). Assuming 90% control, the estimated cost for this option is \$31,000/ton.
Regenerative Selective Catalytic Reduction (RSCR)	Yes	No	Assuming 75% control, the estimated cost for this option is \$25,000/ton.
Low NOx Burners (LNB)	No	N/A	LNB control is common for fired heaters where fuel of known compositions (that do not vary significantly) is combusted and heat is transferred to the process indirectly (e.g. through metal tubesheets). In the combustion chamber of S-1411, fuel is mixed with a variety of feed materials (acid gas, spent acid). To make this option technically feasible, the entire combustion chamber would have to be modified or replaced.
Flue Gas Recirculation (FGR)	No	N/A	FGR control is common for fired heaters where fuel of known compositions (that do not vary significantly) is combusted and heat is transferred to the process indirectly (e.g. through metal tubesheets). The combustion chamber of S-1411 is not the same as a fired heater, and FGR has never been demonstrated to be effective for this service.
Wet Scrubber using LoTOx Technology	Yes	No	Assuming 95% control, the estimated cost for this option is \$28,000/ton due to the addition of an ozone generator and a scrubber.
<b>CO BACT 1 Determination</b>			
<b>Technology</b>	<b>Technically Feasible</b>	<b>Cost Effective</b>	<b>Rationale</b>
Thermal Oxidation	Yes	N/A	EPA BACT Clearinghouse review shows that the Tesoro proposed CO emissions (0.298 lbton) is equal to or lower than other published limits.
Catalytic Oxidation	Yes	N/A	

PM <sub>10</sub> BACT 1 Determination			
Technology	Technically Feasible	Cost Effective	Rationale
Cyclone	No	N/A	Due to the entrained sulfuric acid mist and resulting corrosive SAP exhaust gases, cyclones are not considered technically feasible.
Electrostatic Precipitators (ESP)	No	N/A	Due to the entrained sulfuric acid mist and resulting corrosive SAP exhaust gases, ESPs are not considered technically feasible.
Baghouse	No	N/A	Due to the entrained sulfuric acid mist and resulting corrosive SAP exhaust gases, baghouses are not considered technically feasible.
Mist Eliminator	Yes	N/A	EPA BACT Clearinghouse review shows that the Tesoro proposed PM <sub>10</sub> emissions (0.04 lb/ton) is equal to or lower than other published performance limits (0.15 lb/ton). The SAP utilizes an existing mist eliminator for PM <sub>10</sub> control.

For NO<sub>x</sub>, the BACT 1 options reviewed are either not technically feasible or not cost effective.

For CO, the evaluation in the permit application was abbreviated. This is likely because for Oxidizers, fuel gas is often combusted to achieved the required oxidation temperatures, and it does not make sense to control CO emissions by burning fuel gas (creating more CO emissions). Furthermore, CO emissions are a trade-off for NO<sub>x</sub> emissions, there is no cost effectiveness thresholds specified for CO in the BACT handbook (unlike the NO<sub>x</sub> cost effectiveness threshold of \$17,500 lb/ton). So even if there was an assumed control level and comprehensive cost developed for each control technology, there would be nothing to measure the cost effectiveness with in order to complete the BACT 1 determination. For PM<sub>10</sub>, due to the entrained sulfuric acid mist and resulting corrosive SAP exhaust gases, dry add-on control technologies such as cyclones, ESPs, or baghouses are not technically feasible. The performance limits achieved in practice at S-1411 are the same as the limits shown in the EPA BACT Clearinghouse.

Since BACT 1 does not apply, BACT 2 Achieved in Practice is applicable for NO<sub>x</sub>, PM<sub>10</sub> and CO emissions from S-1411.

For NO<sub>x</sub>, the EPA BACT Clearinghouse shows the lowest NO<sub>x</sub> emissions for a Sulfuric Acid Plant without add-on controls is 0.490 lbs/ton. The Tesoro proposed CO emissions of 0.490 lbs/ton is that same as this achieved in practice limit.

For PM<sub>10</sub>, the EPA BACT Clearinghouse shows the lowest PM<sub>10</sub> emissions for a Sulfuric Acid Plant limited to 0.15 lbs/ton citing "High Efficiency Mist Eliminator and H<sub>2</sub>O<sub>2</sub> Scrubber".

Tesoro uses two high efficiency mist eliminators A-1403 and A-1421 and has agreed to meet PM10 emissions based on an emission rate 0.100 lbs/ton as the BACT level.

For CO, the EPA BACT Clearinghouse shows the lowest CO emissions for a Sulfuric Acid Plant limited to 0.298 lbs/ton citing "Good Design and Proper Operation". The Tesoro proposed CO emissions of 0.298 lbs/ton is that same as this achieved in practice limit.

**OFFSETS**

Offsets are required per Regulation 2-2-302 because Tesoro emits more than 35 tpy of POC and 35 tpy of NOx emissions. Regulation 2-2-302 requires that offsets for POC and NOx be provided at a ratio of 1.15 to 1.0. Regulation 2-2-303 requires that a Major Facility must pay offsets for PM10 and SO2 in excess of 1.0 ton per year for new or modified sources. Regulation 2-2-303 requires that offsets for PM10 and SO2 be provided at a ratio of 1.0 to 1.0.

A summary of the offsets for this application follows:

Pollutant	Current Emissions (tpy)	Project Emissions (tpy)	Total Cumulative Increase (tpy)	Offset Ratio	Offsets Required (tpy)
SO2	0	0	0.000	1.0	0.000
NOx	0	30.787	30.787	1.15	35.405
CO	14.308	24.147	38.455	N/A	
POC	0	0.442	0.442	1.15	0.485
PM-10	0	6.660	6.660	1.0	6.660

Offsets will be provided per the following table:

Tons/yr	POC	NOx	PM10
Offsets Required	0.485	35.405	6.660
Bank 968	0.485		
Bank 1144		35.405	6.660

**NSPS**

S-1411 is subject to NSPS 40 CFR 60 Subpart Cd. 60.31d limits sulfuric acid mist to 0.5 lbs per ton of sulfuric acid produced, expressed in terms of 100% sulfuric acid.

**National Emissions Standards for Hazardous Air Pollutants (NESHAP)**

S-1411 is not subject to any subpart of 40 CFR 61 (NESHAP).

**Maximum Available Control Technology (MACT)**

S-1411 is not subject to any subpart of 40 CFR 63 (MACT).



**PREVENTION OF SIGNIFICANT DETERIORATION (PSD)**

The Tesoro facility is an existing major stationary source. To determine the applicability of PSD, 40 CFR 52.21(b)(2)(i) requires a two-step evaluation. The first step is to determine if the project will result in a significant emissions increase. If a project will result in a significant emissions increase, the second step is to determine if the project will result in a significant net emissions increase. Both steps need to result in emissions that exceed significance levels for PSD to apply.

The emissions increases need to be determined and compared to the following significance levels [40CFR52.21(b)(23)(i)]:

- Carbon monoxide: 100 tons per year (tpy)
- Nitrogen oxides: 40 tpy
- Sulfur dioxide: 40 tpy
- Particulate matter: 25 tpy of particulate matter emissions
- PM10: 15 tpy
- PM2.5: 10 tpy of direct PM2.5emissions; 40 tpy of sulfur dioxide emissions; 40 tpy of nitrogen oxide emissions unless demonstrated not to be a PM2.5precursor under paragraph (b)(50) of this section
- Ozone: 40 tpy of volatile organic compounds or nitrogen oxides
- Sulfuric acid mist: 7 tpy
- Hydrogen sulfide (H2S): 10 tpy
- Total reduced sulfur (including H2S): 10 tpy
- Reduced sulfur compounds (including H2S): 10 tpy

The project for this application is to 'modify' existing S-1411 Sulfuric Acid Plant, establish an emissions baseline in accordance with Regulation 2, Rule 2 New Source Review, and to established a firm emissions limit based on the S-1411 potential to emit. As summarized in the table below, the emission increases are all lower than the thresholds listed above. Therefore, PSD does not apply.

Pollutant	Baseline tons	PTE, tons	Increase, tons	PSD threshold, tons
SO2	211.140	210.240	-0.900	40.0
NOx	12.137	42.924	30.787	40.0
CO	1.958	26.105	24.147	100.0
POC	0.454	0.876	0.442	40.0
PM-10	2.100	8.760	6.660	15.0
SAM	3.079	8.760	5.681	7.0

**STATEMENT OF COMPLIANCE**

This permit application does not change the compliance of S-1411 Sulfuric Acid Plant. Tesoro is subject to, and will continue to comply with the following applicable requirements:

- Regulation 6, Rule 1 (Particulate Matter General Requirements).
- Regulation 9, Rule 1 (Sulfur Dioxide).
- Regulation 12, Rule 6 (Acid Mist from Sulfuric Acid Plants).
- 40 CFR 60 Subpart Cd (Emission Guidelines and Compliance Times for Sulfuric Acid Production Units)

Since all calculated emission increases are required to be offset, this permit application qualifies for “No Net Emissions Increase” and it does not involve any physical modifications to S-1411. Therefore, this application is Exempt from CEQA under the District’s CEQA regulation 2-1-312.1, and therefore is not subject to CEQA review. The project is also exempt under District CEQA regulation 2-1-312.11, because it is an existing facility with negligible expansion of use (CEQA Guidelines § 15301). The applicant has submitted a Form Appendix H in support of the CEQA exemption and a Notice of Exemption will be published per District Policy.

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

***The owner/operator of S-1411 Sulfuric Acid Plant shall comply with BACT, Offsets, NSPS and the Toxic Risk Management Policy.***

PSD and NESHAPS do not apply.

## **PERMIT CONDITIONS**

Permit Condition 26266 will be added as indicated below.

Tesoro Refining & Marketing Company, LLC  
Application 27564  
S-1411 Sulfuric Acid Plant

1. The Owner/Operator of S-1411 shall not exceed 480 tons of sulfuric acid produced per calendar day. (basis: cumulative increase)
2. The Owner/Operator of S-1411 shall not exceed 175,200 tons of sulfuric acid produced in any consecutive 12 month period. (basis: cumulative increase, offsets)
3. The Owner/Operator shall ensure that SO<sub>2</sub> emissions from S-1411 do not exceed 2.4 pounds per ton of acid production, on average for any consecutive 12 month period. (basis: cumulative increase)
4. The Owner/Operator shall ensure that PM-10 emissions from S-1411 do not exceed 0.100 pounds per ton of acid production, on a 3-hour average basis (basis: cumulative increase, offsets, BACT)
5. The Owner/Operator shall ensure that POC emissions from S-1411 do not exceed 0.010 pounds per ton of acid production, on a 3-hour average basis. (basis: cumulative increase, offsets)
6. The Owner/Operator shall ensure that NO<sub>x</sub> emissions from S-1411 do not exceed 0.490 pounds per ton of acid production, on a 3-hour average basis. (basis: cumulative increase, offsets, BACT)
7. The Owner/Operator shall ensure that Sulfuric Acid Mist (SAM) emissions from S-1411 do not exceed 0.100 pounds per ton of acid production, on a 3-hour average basis. (basis: PSD, Regulation 2-2-306, Toxics)
8. The Owner/Operator shall ensure that CO emissions from S-1411 do not exceed 0.298 pounds per ton of acid production, on a 3-hour average basis. (basis: cumulative increase, BACT)
9. Deleted. SO<sub>2</sub> CEMS required by Regulations 1-520.3, 9-1-502.
10. To determine compliance with the limits in Parts 4,5,6,7 and 8, within 90 days of the granting of the Permit to Operate for Application 27564, the Owner/Operator of S-1411 shall conduct District approved source tests while producing sulfuric acid at a rate of at least 80% of the maximum permitted production (i.e., 380 tons/day or higher). The District approved source test shall measure the emission rates of SAM, POC, PM-10, CO and NO<sub>x</sub> from S-1411. For purposes of PM-10, the applicant shall also test for, and report condensable PM-10. This source test shall be repeated annually. Emission factors for S-1411 (lb/ton acid production) will be developed from these tests and included in the source test report  
The owner/operator shall ensure that within 60 days of the date of completion of the source testing, two identical

copies of the source tests results (each referencing permit application #27564 and plant #14628) are received by the District. One copy shall be sent to the Source Test Section of the Technical Division and the other shall be sent to the Engineering Division. If the report copy is sent electronically, the subject of the message shall identify that the enclosed report is for Plant 14628, S-1411 Sulfuric Acid Plant, and Permit Application 27564. (Basis: Cumulative Increase, Offsets, BACT)

11. The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall notify the District's Source Test Section in writing of the source test protocols and projected test dates at least 7 days prior to the testing date(s). As indicated above, the Owner/Operator shall measure the contribution of condensable PM (back half) to the total PM10 emissions. However, the Owner/Operator may propose alternative measuring techniques to measure condensable PM such as the use of a dilution tunnel or other appropriate method used to capture semi-volatile organic compounds. (basis: source test compliance verification).

12. The Owner/Operator shall maintain a District-approved record containing all measurements, calculations and other data required to demonstrate compliance with the throughput and mass emission limits of this condition. This record shall include, but is not limited to, the daily production of each H2SO4 product produced by S-1411 (100% H2SO4 basis) summarized on a monthly basis, the monthly SO2 mass emissions from S-1411, and the monthly average SO2 emissions expressed in lb/ton of acid production (100% H2SO4 basis). This information shall be kept available for District inspection for a period of at least 5 years following the date on which such measurements, records or data are made or recorded. (basis: recordkeeping)

## **TITLE V PERMIT**

This facility is a Major Facility and currently there is a proposed Title V permit subject to EPA comment. The changes to the Title V permit are included in Appendix A of this evaluation.

## **RECOMMENDATION**

It is recommended that a Change in Conditions be granted to Tesoro Refining and Marketing Company for the following source:

### **S-1411 Sulfuric Acid Plant**

By: \_\_\_\_\_  
Arthur P Valla  
Senior Air Quality Engineer  
6/16/2016

Appendix A

The proposed changes to tables in sections II, IV, and VII as well as Condition Number 24491. All changes are tracked based on the final "Revision 5" permit.

**Table II A1 - Permitted Sources – Golden Eagle Refinery**

S-#	Description	Make or Type	Model	Capacity	Grandfathered Limit, or Firm Limit and Basis
1411	Sulfuric Acid Mfg Plant Abated by A-1403 Mist Eliminator Abated by A-1417 Dual Absorption Abated by A-1421 Mist Eliminator			Sulfuric Acid Production 480 ton/day 175,200 ton/yr	<a href="#">Firm Limit Condition #26266, parts 1 &amp; 2</a> <a href="#">New Source Review Grandfathered Limit</a>

**TABLE II B – ABATEMENT DEVICES**

**PLANT #B2758 - TESORO REFINING AND MARKETING COMPANY - GOLDEN EAGLE REFINERY**

A-#	Description	Source(s) Controlled	Applicable Requirement	Operating Parameters	Limit or Efficiency
1403	Brink Mist Eliminator, Sulfuric Acid Plant	S1411	BAAQMD 6-1-301 SIP 6-301	none	Ringelmann No. 1 < 3 min/hr
<a href="#">1403</a>	<a href="#">Brink Mist Eliminator, Sulfuric Acid Plant</a>	<a href="#">S1411</a>	<a href="#">BAAQMD Condition #26266, part 4</a>	<a href="#">none</a>	<a href="#">PM-10 emissions do not exceed 0.100 lb/ton of acid produced, 3-hr average</a>
<a href="#">1403</a>	<a href="#">Brink Mist Eliminator, Sulfuric Acid Plant</a>	<a href="#">S1411</a>	<a href="#">BAAQMD Condition #26266, part 7</a>	<a href="#">none</a>	<a href="#">SAM emissions do not exceed 0.100 lb/ton of acid produced, 3-hr average</a>
1417	Final Converter/Absorber, Sulfuric Acid Plant, Dual Absorber	S1411	BAAQMD 6-1-301 SIP 6-301	none	Ringelmann No. 1 < 3 min/hr
1417	Final Converter/Absorber, Sulfuric Acid Plant, Dual Absorber	S1411	BAAQMD 6-1-320 SIP 6-320	none	SO <sub>3</sub> and/or H <sub>2</sub> SO <sub>4</sub> expressed as 100% H <sub>2</sub> SO <sub>4</sub> : 92 mg/dscm or 0.04 gr/dscf of exhaust gas
1421	Final Mist Eliminator, Sulfuric Acid Plant	S1411	BAAQMD 6-1-301 SIP 6-301	none	Ringelmann No. 1 < 3 min/hr

**TABLE II B – ABATEMENT DEVICES**  
**PLANT #B2758 - TESORO REFINING AND MARKETING COMPANY - GOLDEN EAGLE REFINERY**

<b>A-#</b>	<b>Description</b>	<b>Source(s) Controlled</b>	<b>Applicable Requirement</b>	<b>Operating Parameters</b>	<b>Limit or Efficiency</b>
<a href="#">1421</a>	<a href="#">Final Mist Eliminator, Sulfuric Acid Plant</a>	<a href="#">S1411</a>	<a href="#">BAAQMD Condition #26266, part 4</a>	<a href="#">none</a>	<a href="#">PM-10 emissions do not exceed 0.100 lb/ton of acid produced, 3-hr average</a>
<a href="#">1421</a>	<a href="#">Final Mist Eliminator, Sulfuric Acid Plant</a>	<a href="#">S1411</a>	<a href="#">BAAQMD Condition #26266, part 7</a>	<a href="#">none</a>	<a href="#">SAM emissions do not exceed 0.100 lb/ton of acid produced, 3-hr average</a>

**Table IV – H.5**  
**Source-specific Applicable Requirements**  
**S1411-SULFURIC ACID MANUFACTURING PLANT (SAP)**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
<b>BAAQMD Regulation 1</b>	<b>General Provisions and Definitions (07/19/2006)</b>		
1-520	Continuous Emission Monitoring	Y	
1-520.3	SO2 from Sulfuric Acid Plants	Y	
1-520.8	Monitors required by Regulations 10, 12 and 2-1-403	Y	
1-522	Continuous Emission Monitoring and Recordkeeping Requirements	N	
1-522.1	approval of plans and specifications	Y	
1-522.2	scheduling requirements	Y	
1-522.3	CEM performance testing	Y	
1-522.4	reporting of inoperative CEMs	Y	
1-522.5	CEM calibration requirements	Y	
1-522.6	CEM accuracy requirements	Y	
1-522.7	emission limit exceedance reporting requirements	N	
1-522.8	monitoring data submittal requirements	Y	
1-522.9	recordkeeping requirements	Y	
1-522.10	monitors required by Sections 1-521 or 2-1-403 shall meet the requirements specified by the APCO	Y	
1-523	Parametric Monitoring and Recordkeeping Procedures	N	
1-523.1	Report periods of parametric monitor inoperation	Y	
1-523.2	Limits on periods of parametric monitor inoperation	Y	
1-523.3	Report exceedances	N	
1-523.4	Recordkeeping	Y	
1-523.5	Maintenance and calibration; written policy	N	
1-602	Area and Continuous Emission Monitoring Requirements	N	

**Table IV – H.5**  
**Source-specific Applicable Requirements**  
**S1411-SULFURIC ACID MANUFACTURING PLANT (SAP)**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
<b>SIP Regulation 1</b>	<b>General Provisions and Definitions (06/28/1999)</b>		
1-522	Continuous Emission Monitoring and Recordkeeping Requirements	Y	
1-522.7	Excesses	Y	
1-523	Parametric Monitoring and Recordkeeping Procedures	Y	
1-523.3	Report exceedances	Y	
<b>BAAQMD Regulation 6 Rule 1</b>	<b>Particulate Matter; General Requirements (12/05/2007)</b>		
6-1-301	Ringelmann Number 1 Limitation	N	
6-1-305	Visible Particles	N	
6-1-310	Particulate Weight Limitation	N	
6-1-311	General Operations	N	
6-1-320	Sulfuric Acid Manufacturing Plants	N	
6-1-401	Appearance of Emissions	N	
6-1-601	Particulate Matter, Sampling, Sampling Facilities, Opacity Instruments and Appraisal of Visible Emissions	N	
<b>SIP Regulation 6</b>	<b>Particulate Matter and Visible Emissions (09/04/1998)</b>		
6-301	Ringelmann Number 1 Limitation	Y	
6-305	Visible Particles	Y	
6-310	Particulate Weight Limitation	Y	
6-311	General Operations	Y	
6-320	Sulfuric Acid Manufacturing Plants	Y	
6-401	Appearance of Emissions	Y	
6-601	Particulate Matter, Sampling, Sampling Facilities, Opacity Instruments and Appraisal of Visible Emissions	Y	
<b>BAAQMD Regulation 9 Rule 1</b>	<b>Inorganic Gases – Sulfur Dioxide (03/15/1995)</b>		
9-1-309	Emission Limitations for Sulfuric Acid Plants	Y	
9-1-502	Emission Monitoring Requirements	Y	
9-1-601	Sampling and Analysis of Gas Streams	Y	
9-1-603	Averaging Times	Y	
9-1-605	Emission Monitoring	Y	
<b>BAAQMD Regulation 12 Rule 6</b>	<b>Acid Mist from Sulfuric Acid Plants (12/6/78)</b>		

**Table IV – H.5**  
**Source-specific Applicable Requirements**  
**S1411-SULFURIC ACID MANUFACTURING PLANT (SAP)**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
12-6-101	Applicability	N	
12-6-301	Acid Mist limit for sulfuric acid production unit	N	
12-6-501	Production Rate and Hours of Operation	N	
12-6-601	Testing Procedures	N	
<b>40 CFR 60 Subpart Cd</b>	<b>Emission Guidelines and Compliance Times for Sulfuric Acid Production Units (12/19/1995)</b>		
60.30d	Designated facilities – sulfuric acid production units	Y	
60.31d	Emissions guidelines – sulfuric acid production units	Y	
60.32d	Compliance times – sulfuric acid production units	Y	
<b>40 CFR 64</b>	<b>Compliance Assurance Monitoring (10/22/1997)</b>		
64.2(a)	General Applicability	Y	
64.2(a)(1)	General Applicability: Subject to an emission limitation or standard for regulated air pollutant	Y	
64.2(a)(2)	General Applicability: Uses a control device to achieve compliance with emission limitation	Y	
64.2(a)(3)	General Applicability: Has pre-control device potential to emit $\geq$ major source threshold	Y	
<b>BAAQMD Condition # 19528</b>			
Part 20	Annual SAM Source Test (Basis Regulation 6-1-330, Regulation 2-1-403, Regulation 2-6-503; 40 CFR 64)	Y	
Part 20A	Annual SAM Source Test Report (Basis Regulation 6-1-330, Regulation 2-1-403, Regulation 2-6-503; 40 CFR 64)	Y	
<b>BAAQMD Condition 21053</b>			
Part 2	Monitoring to demonstrate compliance with 6-1-301 (Ringelmann 1 or 20% opacity) (basis: Regulation 6-1-301)	Y	
<b><u>BAAQMD Condition 26266</u></b>			
<b><u>Part 1</u></b>	<b><u>Daily production limit (basis: cumulative increase)</u></b>	<b><u>Y</u></b>	
<b><u>Part 2</u></b>	<b><u>Annual production limit (basis: cumulative increase, offsets)</u></b>	<b><u>Y</u></b>	
<b><u>Part 3</u></b>	<b><u>SO2 emissions limit (basis: cumulative increase)</u></b>	<b><u>Y</u></b>	
<b><u>Part 4</u></b>	<b><u>PM-10 emissions limit (basis: cumulative increase, offsets, BACT)</u></b>	<b><u>Y</u></b>	
<b><u>Part 5</u></b>	<b><u>POC emissions limit (basis: cumulative increase, offsets)</u></b>	<b><u>Y</u></b>	
<b><u>Part 6</u></b>	<b><u>NOx emissions limit (basis: cumulative increase, offsets, BACT)</u></b>	<b><u>Y</u></b>	

**Table IV – H.5**  
**Source-specific Applicable Requirements**  
**S1411-SULFURIC ACID MANUFACTURING PLANT (SAP)**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
<a href="#">Part 7</a>	<a href="#">Sulfuric Acid Mist emissions limit (basis: PSD, Regulation 2-2-306, toxics)</a>	<a href="#">Y</a>	
<a href="#">Part 8</a>	<a href="#">CO emissions limit (basis: cumulative increase, BACT)</a>	<a href="#">Y</a>	
<a href="#">Part 10</a>	<a href="#">Annual Source Test requirements (basis: cumulative increase, offsets, BACT)</a>	<a href="#">Y</a>	
<a href="#">Part 11</a>	<a href="#">Source Test procedure approval requirements (basis: source test compliance verification)</a>	<a href="#">Y</a>	
<a href="#">Part 12</a>	<a href="#">Recordkeeping requirements (basis: recordkeeping)</a>	<a href="#">Y</a>	

**Condition 19528 [Part 20 and 20A for S-1411]**

Modified by App 18739 (Nov 2008) Removal of S924 from Part 6

Administratively Modified by Application 19326 (Feb2009), Removed Part 2 and 2A

Administratively changed by Application 19419 (June 2009). Updated to remove parts 7 and 7A redundant with District regulations.

Administratively Revised by Application 19874 (July 2009) Updates for Combustion Sources

Administratively Revised by Application 18261 Title V Renewal. Added Parts 20 and 20A for S-1411 SAP CAM.

Administratively Changed by Application 21711 (May 2010). Deleted Parts 8/8A. Deleted S1416 from Part 10/10A. Renumbered Part 11C.

Administratively Changed by Application 23232 (April 2012). Added 40 CFR 64 CAM requirements for S963 Gas Turbine.

1. Deleted. (Redundant with Title V Standard Conditions I.J.1 and I.J.2.)
- 2) Deleted. [The source test requirements in Regulation 8-44-601 are more stringent.]
- 2A) Deleted. [Part 2 source test requirements replaced by Regulation 8-44-601.]



- 3) Deleted. (Source Test not required. S-901 now has a CO CEM.)
- 3A) Deleted. (Source Test not required. S-901 now has a CO CEM.)
- 4) For each of S-909, S-912, S-913, S-915, S-916, S-919, S-920, and S-921, Permittee/Owner/Operator shall ensure that not less frequently than twice each calendar year a District approved source test is conducted for each source measuring its NOx and CO emission rate using a District approved source test method and that each test is conducted in compliance with the District's Manual of Procedures. Permittee/Owner/Operator shall ensure that the first District approved source for each of S909, S912, S913, S915, S916, S919, S920, and S921 is completed before July 31, 2004.  
(basis: Regulation 2-1-403; Regulation 9-10, Regulation 2-6-503)
- 4A) Permittee/Owner/Operator shall ensure that within 60 days of the date of completion of the (each) District approved source test required by condition 19528 part 4, two identical copies of the results of the source test along with supporting documentation, each referencing the subject source number, condition 19528 part 4 and part 4A, and plant # B12758 are received by the District and that both copies are addressed to the District's Engineering Division.  
(basis: Regulation 2-1-403; Regulation 9-10, Regulation 2-6-503)
- 5) Deleted. (Sources either have a CEM or the Source Tests requirements are included in Condition 18372, Parts 33A2 or 34.)
- 5A) Deleted. (Sources either have a CEM or the Source Tests requirements are included in Condition 18372, Parts 33A2 or 34.)
- 6) Deleted. (Source Test Requirements now included in Condition 18372, Part 33A1.)
- 6A) Deleted. (Source Test Requirements now included in Condition 18372, Part 33A1.)
- 7) Deleted. (Monitoring requirements for S-952, S-953, S-954, S-955, S-956, S-957, and S-960 are required quarterly per Regulation 9-8-503)
- 7A) Deleted. (Monitoring requirements for S-952, S-953, S-954, S-955, S-956, S-957, and S-960 are required quarterly per Regulation 9-8-503)
- 8) Deleted. (Monitoring requirements for S-955, S-956, S-957, S-958, S-959, and S-960 are required quarterly per Regulation 9-8-503)
- 8A) Deleted. (Monitoring requirements for S-955, S-956, S-957, S-958, S-959, and S-960 are required quarterly per Regulation 9-8-503)

- 9) For S1401, Permittee/Owner/Operator shall ensure that not less frequently than once each calendar year a District approved source test is conducted for S-1401 measuring its SO<sub>3</sub> and H<sub>2</sub>S<sub>04</sub> emission rate per dry standard foot of exhaust volume, expressed as 100% H<sub>2</sub>S<sub>04</sub>. This monitoring requirement shall become effective April 1, 2004.  
(basis: Regulation 6-1-330, Regulation 2-1-403, Regulation 2-6-503)
- 9A) Permittee/Owner/Operator shall ensure that within 60 days of the date of completion of the (each) District approved source test required by condition 19528 part 9, two identical copies of the results of the source test and supporting documentation, each referencing S-1401, condition 19528 part 9 and part 9A, and plant #14628 are received by the District and that both copies are addressed to the District's Engineering Division.  
(basis: Regulation 2-1-403; Regulation 6-1-330, Regulation 2-6-503)
- 10) For S-1415, Permittee/Owner/Operator shall ensure that not less frequently than once every 60 months, a District approved source test is conducted in compliance with the District's Manual of Procedures, measuring the POC emission rate and carbon concentration in ppm, dry.  
(basis: Regulation 8-2; Regulation 2-1-403, Regulation 2-6-503)
- 10A) Permittee/Owner/Operator shall ensure that within 60 days of the date of completion of the (each) District approved source test required by condition 19528 part 10, two identical copies of the results of the source test along with supporting documentation, each referencing the subject source number, condition 19528 part 10 and part 10A, and plant #14628 are received by the District and that both copies are addressed to the District's Engineering Division .  
(basis: Regulation 2-1-403; Regulation 8-2, Regulation 2-6-503)

Conditions for monitoring smoking flares :

11. Deleted. (See Discussion in Rev. 3 Statement of Basis.)
- 11A) Deleted. (See Discussion in Rev. 3 Statement of Basis.)
- 11B) For the purposes of these conditions, a flaring event is defined as a flow rate of vent gas flared in any consecutive 15 minutes period that continuously exceeds 330 standard cubic feet per minute (scfm). If during a flaring event, the vent gas flow rate drops below 330 scfm and then increases above 330 scfm within 30 minutes, that shall still be considered a single flaring event, rather than two separate events. For each flaring event during daylight hours (between sunrise and sunset), the owner/operator shall inspect the flare within 15 minutes of determining the flaring event, and within 30 minutes of the last inspection thereafter, using video monitoring or visible inspection following the procedure described in Part 11C of this condition.  
(basis: Regulation 2-6-409.2)

- 11C) The owner/operator shall use the following procedure for the initial inspection and each 30-minute inspection of a flaring event.
- a). If the owner/operator can determine that there are no visible emissions using video monitoring, then no further monitoring is necessary for that particular inspection.
  - b). If the owner/operator cannot determine that there are no visible emissions using video monitoring, the owner/operator shall conduct a visual inspection outdoors using either:
    - (i) EPA Reference Method 9; or
    - (ii) Survey the flare by selecting a position that enables a clear view of the flare at least 15 feet, but not more than 0.25 miles, from the emission source, where the sun is not directly in the observer's eyes.
  - c). If a visible emission is observed, the owner/operator shall continue to monitor the flare for at least 3 minutes, or until there are no visible emissions, whichever is shorter.
  - d). The owner/operator shall repeat the inspection procedure for the duration of the flaring event, or until a violation is documented in accordance with Part 11D. After a violation is documented, no further inspections are required until the beginning of a new calendar day. (basis: Regulation 6-1-301, 2-1-403)
- 11D) The owner/operator shall comply with one of the following requirements if visual inspection is used:  
If EPA Method 9 is used, the owner/operator shall comply with Regulation 6-1-301 when operating the flare.  
If the procedure of 4.b.ii is used, the owner/operator shall not operate a flare that has visible emissions for three consecutive minutes.  
(basis: Regulation 2-6-403)
- 11E) The owner/operator shall keep records of all flaring events, as defined in Part 11B. The owner/operator shall include in the records the name of the person performing the visible emissions check, whether video monitoring or visual inspection (EPA Method 9 or visual inspection procedure of Part 11C of this condition) was used, the results of each inspection, and whether any violation of this condition (using visual inspection procedure in Part 11C of this condition) or Regulation 6-1-301 occurred (using EPA Method 9). (basis: Regulation 2-6-501; 2-6-409.2)
- 12) This condition applies to each organic liquid storage tank that is exempt from Regulation 8, Rule 5, Storage of Organic Liquids, due to Permittee/Owner/Operator's assertion or belief that the tank's contents comply with the exemption in Regulation 8-5-117 for storage of organic

liquids with a true vapor pressure of less than or equal to 25.8 mm Hg (0.5 psia). Whenever the type of organic liquid in the tank is changed, the Permittee/Owner/Operator shall verify that the true vapor pressure at the storage temperature is less than or equal to 25.8 mm Hg (0.5 psia). The Permittee/Owner/Operator shall use Lab Method 28 from Volume III of the District's Manual of Procedures, Determination of the Vapor Pressure of Organic Liquids from Storage Tanks. For materials listed in Table 1 of Regulation 8 Rule 5, the Permittee/Owner/Operator may use Table 1 to determine the material's true vapor pressure, rather than Lab Method 28. If the results are above 25.8 mm Hg (0.5 psia), Permittee/Owner/Operator shall report non-compliance in accordance with Standard Condition I.F and shall submit a complete permit application to the District to obtain a new Permit to Operate for the tank not more than 180 days from discovery that the true vapor pressure of the material in the tank is greater than 25.8 mm Hg (0.5 psia). This monitoring requirement shall take effect on April 1, 2004. (basis: Regulation 8-5, Regulation 2-1-403, Regulation 2-6-503)

- 12.1) Deleted (basis: Initial testing/data collection completed).
- 12A) When laboratory testing is conducted to determine the true vapor pressure of the material stored in a tank subject to condition 19528 part 12, in a District-approved log, Permittee/Owner/Operator shall record the results of the testing, the laboratory method used, along with the identity of tank by District assigned source number where the material was sampled/stored. Permittee shall retain the log for not less than five years from the date of the recording in the log. Permittee/Owner/Operator shall ensure that the log is made available to District staff upon request. (basis: Regulation 8-5, Regulation 2-1-403, Regulation 2-6-503)
- 13.) With a frequency not less than once per month, Permittee/Owner/Operator shall visually inspect the outlet at A-4 while it is abating any of the catalyst hoppers S-97, S-98, and/or S-99 and Permittee/Owner/Operator shall note whether any visible emissions are present at the A-4 exhaust point venting to atmosphere. If there are visible emissions, Permittee/Owner/Operator shall immediately take corrective action to eliminate the visible emissions. Upon completion of each inspection, in a District approved log, Permittee/Owner/Operator shall record whether there are visible emissions or not and, when visible emissions are detected, the corrective action taken to eliminate the visible emissions. During each month that S-97, S-98, and S-99 is not in operation for the entire month, Permittee/Owner/Operator need not complete this inspection for S-97, S-98, and S-99. (basis: Regulation 2-1-403, Regulation 2-6-503)
- 13A.) The owner/operator of S97, S98, S99 abated by A-4 Cyclone and Baghouse shall inspect the A-4 baghouse annually to ensure it is in good operating condition. The annual inspection and any filter bag changes shall be recorded in a District approved log. The logs in part 13 and 13A shall be kept for a minimum of five years and shall be made available to

District personnel upon request. (basis: Regulation 2-1-403, Regulation 2-6-503)

- 14.) With a frequency not less than once per day, Permittee/Owner/Operator shall visually inspect S-810, S-821 and Permittee/Owner/Operator shall note whether any visible emissions are present at S-810, S-821. If there are visible emissions, Permittee/Owner/Operator shall immediately take corrective action to eliminate the visible emissions. Upon completion of each inspection, in a District approved log, Permittee/Owner/Operator shall record whether there are visible emissions or not and, when visible emissions are detected, the corrective action taken to eliminate the visible emissions. During each month that S-821 is not in operation for the entire month and when there is no petroleum coke stored at S-821, Permittee/Owner/Operator need not complete this inspection for S-821. This monitoring requirement shall take effect on April 1, 2004. (basis: Regulation 2-1-403, Regulation 2-6-503)
- 14a. Effective June 1, 2004, Permittee/Owner/Operator shall conduct a daily visual inspection at A-9 Coke Silo Precipitator for any emission that is greater than or equal to 20% opacity for more than 3 minutes in any hour. (basis: Regulation 6-1-302)
- 15.) Deleted. A-1420 was removed from service in 2006 when S-1405 became abated by S-1411 or S-1401.)
16. Deleted. (Moved to Title V Standard Condition I.J.3.)
17. Deleted. (63 Subpart UUU requirements have been completed.)
18. Deleted. (63 Subpart UUU requirements have been completed.)
19. The Owner/Operator of S963 shall conduct an annual District-approved source test to demonstrate compliance with Regulation 9-9-301.1 (NO<sub>x</sub> not to exceed 42 ppmv, dry, at 15% O<sub>2</sub>, fired on natural gas. The test results shall be provided to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. [Basis: Regulation 9-9-301.1]
20. For S1411, Permittee/Owner/Operator shall ensure that not less frequently than once each calendar year a District approved source test is conducted for S-1411 measuring its SO<sub>3</sub> and H<sub>2</sub>S<sub>04</sub> emission rate per dry standard foot of exhaust volume, expressed as 100% H<sub>2</sub>S<sub>04</sub>. (basis: Regulation 6-1-330, Regulation 2-1-403, Regulation 2-6-503; 40 CFR 64)

20A Permittee/Owner/Operator shall ensure that within 60 days of the date of completion of the (each) District approved source test required by condition 19528 part 20, two identical copies of the results of the source test and supporting documentation, each referencing S-1411, condition 19528 part 20 and part 20A, and plant #14628 are received by the District and that both copies are addressed to the District's Engineering Division. (basis: Regulation 2-1-403; Regulation 6-1-330, Regulation 2-6-503, 40 CFR 64)

### **Condition 21053**

Tesoro Refining and Marketing Company  
150 Solano Way  
Martinez, CA 94533

Application 17928 (October 2008) Removed demolished sources S317, S324, S431, S457, S46, S21, and S991.

Application 19328/19329 (June 2009) Removal of S700 from Part 6

Administratively Changed by Application 24362 (June 2012) Removed S-913 from the source test requirements of Part 4 since no longer fired with 40# fuel gas.

1. Deleted. (See discussion of Compliance with Regulation 9-1-313.2 in the Revision 2 Statement of Basis).
2. The Owner/Operator shall monitor and record on a monthly basis the visible emissions from Sources S-1401, S-1404, and S-1411 to demonstrate compliance with Regulation 6-1-301 (Ringelmann 1 or 20% opacity). These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. [Basis: Regulation 6-1-301]

### **Condition 26266**

Tesoro Refining & Marketing Company, LLC  
Application 27564  
S-1411 Sulfuric Acid Plant

1. The Owner/Operator of S-1411 shall not exceed 480 tons of sulfuric acid produced per calendar day. (basis: cumulative increase)

2. The Owner/Operator of S-1411 shall not exceed 175,200 tons of sulfuric acid produced in any consecutive 12 month period. (basis: cumulative increase, offsets)

3. The Owner/Operator shall ensure that SO<sub>2</sub> emissions from S-1411 do not exceed 2.4 pounds per ton of acid production, on average for any consecutive 12 month period. (basis: cumulative increase)
4. The Owner/Operator shall ensure that PM-10 emissions from S-1411 do not exceed 0.100 pounds per ton of acid production, on a 3-hour average basis (basis: cumulative increase, offsets, BACT)
5. The Owner/Operator shall ensure that POC emissions from S-1411 do not exceed 0.010 pounds per ton of acid production, on a 3-hour average basis. (basis: cumulative increase, offsets)
6. The Owner/Operator shall ensure that NO<sub>x</sub> emissions from S-1411 do not exceed 0.490 pounds per ton of acid production, on a 3-hour average basis. (basis: cumulative increase, offsets, BACT)
7. The Owner/Operator shall ensure that Sulfuric Acid Mist (SAM) emissions from S-1411 do not exceed 0.100 pounds per ton of acid production, on a 3-hour average basis . (basis: PSD, Regulation 2-2-306, Toxics)
8. The Owner/Operator shall ensure that CO emissions from S-1411 do not exceed 0.298 pounds per ton of acid production, on a 3-hour average basis. (basis: cumulative increase, BACT)
9. Deleted. SO<sub>2</sub> CEMS required by Regulations 1-520.3, 9-1-502.
10. To determine compliance with the limits in Parts 4,5,6,7 and 8, within 90 days of the granting of the Permit to Operate for Application 27564, the Owner/Operator of S-1411 shall conduct District approved source tests while producing sulfuric acid at a rate of at least 80% of the maximum permitted production (i.e., 380 tons/day or higher). The District approved source test shall measure the emission rates of SAM, POC, PM-10, CO and NO<sub>x</sub> from S-1411. For purposes of PM-10, the applicant shall also test for, and report condensible PM-10. This source test shall be repeated annually. Emission factors for S-1411 (lb/ton acid production) will be developed from these tests and included in the source test report  
The owner/operator shall ensure that within 60 days of the date of completion of the source testing, two identical copies of the source tests results (each referencing permit application #27564 and plant #14628) are received by the District. One copy shall be sent to the Source Test Section of the Technical Division and the other shall be sent to the Engineering Division. If the report copy is sent electronically, the subject of the message shall identify that the enclosed report is for Plant 14628, S-1411 Sulfuric Acid Plant, and Permit Application 27564. (Basis: Cumulative Increase, Offsets, BACT)
11. The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall notify the District's Source Test Section in writing of the source test protocols and projected test dates at least 7 days prior to the testing date(s). As indicated above, the Owner/Operator shall measure the contribution of condensable PM (back half) to the total PM<sub>10</sub> emissions. However, the Owner/Operator may propose alternative measuring techniques to measure condensable PM such

as the use of a dilution tunnel or other appropriate method used to capture semi-volatile organic compounds. (basis: source test compliance verification).

12. The Owner/Operator shall maintain a District-approved record containing all measurements, calculations and other data required to demonstrate compliance with the throughput and mass emission limits of this condition. This record shall include, but is not limited to, the daily production of each H2SO4 product produced by S-1411 (100% H2SO4 basis) summarized on a monthly basis, the monthly SO2 mass emissions from S-1411, and the monthly average SO2 emissions expressed in lb/ton of acid production (100% H2SO4 basis). This information shall be kept available for District inspection for a period of at least 5 years following the date on which such measurements, records or data are made or recorded. (basis: recordkeeping)

**Table VII-H.5  
S1411-SULFURIC ACID MANUFACTURING PLANT (SAP)**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
NOx	<a href="#">BAAQMD Condition 26266, Part 6</a>	Y		$\leq 0.490$ lb/ton of acid produced, 3-hour average	<a href="#">BAAQMD Condition 26266, Part 10</a>	P/A	Source Test
CO	<a href="#">BAAQMD Condition 26266, Part 8</a>	Y		$\leq 0.298$ lb/ton of acid produced, 3-hour average	<a href="#">BAAQMD Condition 26266, Part 10</a>	P/A	Source Test
PM10	<a href="#">BAAQMD Condition 26266, Part 4</a>	Y		$\leq 0.100$ lb/ton of acid produced, 3-hour average	<a href="#">BAAQMD Condition 26266, Part 10</a>	P/A	Source Test
POC	<a href="#">BAAQMD Condition 26266, Part 5</a>	Y		$\leq 0.010$ lb/ton of acid produced, 3-hour average	<a href="#">BAAQMD Condition 26266, Part 10</a>	P/A	Source Test
SO2	BAAQMD 9-1-309	Y		$\leq 300$ ppm @ 12% oxygen	BAAQMD 9-1-502 9-1-605 1-520.3	C	CEM
SO2	<a href="#">BAAQMD Condition 26266, Part 3</a>	Y		$\leq 2.4$ lb/ton of acid produced, consecutive 12-month average	<a href="#">BAAQMD 9-1-502 9-1-605 1-520.3</a>	C	CEM
Acid mist (SAM)	BAAQMD 12-6-301	N		$\leq 0.15$ g/kg (0.3 lb/ton) of acid produced	BAAQMD Condition 19528, Part 20	P/A	Source Test
Acid mist (SAM)	40 CFR 60.31d	Y		Guideline: 0.25 g/kg (0.5 lb/ton) of acid produced	BAAQMD Condition 19528, Part 20	P/A	Source Test
Acid mist (SAM)	<a href="#">BAAQMD Condition 26266, Part 7</a>	Y		$\leq 0.010$ lb/ton of acid produced, 3-hour average	<a href="#">BAAQMD Condition 26266, Part 10</a>	P/A	Source Test



**Table VII-H.5**  
**S1411-SULFURIC ACID MANUFACTURING PLANT (SAP)**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
SO <sub>3</sub> and H <sub>2</sub> SO <sub>4</sub>	BAAQMD 6-1-320	N		0.04 grain/dscf	BAAQMD Condition 19528, Part 20	P/A	Source Test
SO <sub>3</sub> and H <sub>2</sub> SO <sub>4</sub>	SIP 6-320	Y		0.04 grain/dscf	BAAQMD Condition 19528, Part 20	P/A	Source Test
Visible Emissions	BAAQMD 6-1-301	N		≥ Ringelmann No. 1 for no more than 3 minutes/hour	BAAQMD Condition 21053, Part 2	P/M	Visible Inspection
Visible Emissions	SIP 6-301	Y		≥ Ringelmann No. 1 for no more than 3 minutes/hour	BAAQMD Condition 21053, Part 2	P/M	Visible Inspection
FP	BAAQMD 6-1-310	N		0.15 grain/dscf	None	N	N/A
FP	SIP 6-310	Y		0.15 grain/dscf	None	N	N/A
FP	BAAQMD 6-1-311	N		4.10 P <sup>0.67</sup> lb/hr particulate, where P is process weight rate in ton/hr	None	N	N/A
FP	SIP 6-311	Y		4.10 P <sup>0.67</sup> lb/hr particulate, where P is process weight rate in ton/hr	None	N	N/A
Visible Particles	BAAQMD 6-1-305	N		Prohibition of nuisance	None	N	N/A
Visible Particles	SIP 6-305	Y		Prohibition of nuisance	None	N	N/A

**Application 27791, S-963 Alkylation Unit Gas Turbine Revised CAM Plan**

**ENGINEERING EVALUATION**  
**Tesoro Refining and Marketing Company**  
PLANT NO. 14628  
**APPLICATION NO. 27791**

**BACKGROUND**

The Tesoro Refining and Marketing Company (Tesoro) is applying for an Administrative Change in Conditions to their Permit to Operate to revise the requirements of 40 CFR 64, Compliance Assurance Monitoring (CAM), for the following equipment:

**S-963 Alkylation Plant Gas Turbine 177, Natural Gas Fired, 113MM Btu/hr**

This permit application was deemed complete August 17, 2016.

Permit Application 23232 was approved in 2012 for the original CAM plan for S-963 NOx emissions. 40 CFR 64.6(c) lists the minimum requirements that are required to be included in permit conditions. The requirements were added to Condition 19528.

The original CAM requirements for S-963 NOx emissions will continue to be satisfied with the fuel gas and steam monitoring already in place. Condition 19528, Part 21 requires the steam-to-fuel ratio to be equal to or greater than 30:1 to ensure NOx emissions are in compliance with the Regulation 9, Rule 9 limit of 42 ppm @ 15% O2. However, Tesoro discovered that the derivation of the 30:1 ratio was in error. The steam-to-fuel ratio is on a weight basis. The measurement of each stream is on a volumetric flow basis. The conversion of fuel rate from volumetric flow to mass flow includes the molecular weight of the fuel, which is close to methane, or about 16 lb/lb-mole. A 30:1 ratio corrected =  $30/16 = 1.873$ . Tesoro has requested the corrected steam-to-fuel ration to be 2.0:1.

This application is to correct this steam-to-fuel ratio, and Tesoro has requested the change of other items, as summarized in the following table:

Description	Change	Justification
Defining Normal Operation	Delete language that defines Normal Operation as periods where fuel flow rate exceeds 100 lb/hr.	Normal operation is anytime the gas turbine is not in an active startup or shutdown period, or when there is a malfunction.
Steam to Fuel Ratio	Revise ratio from 30:1 to 2:1.	Calculation error in the original derivation of the ratio
Averaging Period	Revise averaging period from 1 hour to 3 hours.	Consistent with Regulation 9-9-603

The requirements of 40 CFR 64 are listed in the table appended at the end of this engineering evaluation.

## **EMISSION CALCULATIONS**

There are no emission increases associated with this application. This application simply corrects a computational error in the previous permit application that incorporated the requirements of 40 CFR 64 into the Permit to Operate conditions.

## **STATEMENT OF COMPLIANCE**

This application does not change the compliance of S963 Gas Turbine. S963 is expected to remain in compliance with the following:

Regulation 6, Rule 1, Particulate Matter General Requirements.

Regulation 9 Rule 9, Nitrogen Oxides from Stationary Gas Turbines.

NESHAPS Subpart YYYYY, National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines.

The project is exempt from CEQA pursuant to Regulation 2-1-312.1:

312.1 Applications to modify permit conditions for existing or permitted sources or facilities that do not involve any increases in emissions or physical modifications.

The applicant has provided a Form Appendix H in support of this CEQA exemption.

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

PSD, BACT, Offsets, and Toxics do not apply.

## **PERMIT CONDITIONS**

Permit Condition 19528, Part 21, will be revised as follows:

### **Condition 19528**

Modified by App 18739 (Nov 2008) Removal of S924 from Part 6

Administratively Modified by Application 19326 (Feb2009), Removed Part 2 and 2A

Administratively changed by Application 19419 (June 2009). Updated to remove parts 7 and 7A redundant with District regulations.

Administratively Revised by Application 19874 (July 2009) Updates for  
Combustion Sources

Administratively Revised by Application 18261 Title V Renewal. Added Parts 20  
and 20A for S-1411 SAP CAM.

Administratively Changed by Application 21711 (May 2010). Deleted Parts  
8/8A. Deleted S1416 from Part 10/10A. Renumbered Part 11C.

Administratively Changed by Application 23232 (April 2012). Added 40 CFR 64  
CAM requirements for S963 Gas Turbine.

Revised by Application 27030 (November 2015). Removal of Part 14a. A-9 was  
demolished.

Administratively Changed by Application 27791 (October 2016). Corrected Part  
21, 40 CFR 64 CAM requirements for S963 Gas Turbine.

[No change to Parts 1 through 20]

21. For S963 Gas Turbine, the Owner/Operator shall install, calibrate, maintain and operate a continuous monitoring system to monitor and record the fuel consumption, steam injection and ratio of steam injection to fuel being fired in the turbine. When the turbine is in normal operation, ~~as indicated by a fuel flow rate greater than 100 lb/hr (1-hour average)~~, the steam to fuel ratio calculated by the monitoring system shall be greater than or equal to ~~302.0~~:1 steam to fuel (~~1-3~~-hour average) to ensure compliance with the NOx limit in SIP Regulation 9, Rule 9. During normal operation a steam to fuel ratio less than ~~32.0~~:1 (~~1-3~~-hour average) shall be considered an excursion under the CAM 40 CFR 64 rule and an exceedance of SIP Regulation 9, Rule 9 NOx limit for S963. (Basis: Regulations 2-1-403, 2-6-503, 40 CFR 64)
22. For S963 Gas Turbine, the Owner/Operator shall keep the following records in a District approved log:
  - a. The rate of fuel consumption, steam injection, and the steam to fuel ratio.
  - b. Monitor performance data and corrective actions taken for monitor downtime.
  - c. Written Quality Improvement Plan(s) as required by 40 CFR 60.8 and activities undertaken to implement such plans.
  - d. Other supporting information as needed.(Basis: Regulations 2-1-403, 2-6-503, 40 CFR 64)
23. For S963 Gas Turbine, the Owner/Operator shall submit a semiannual monitoring report that includes the following information:
  - a. Summary of the number, duration and cause of the steam to fuel ratio excursions and exceedances.

- b. Corrective actions taken for each excursion or exceedance.
- c. Summary of the number, duration and cause of monitor downtime incidents for the S963 fuel and steam monitors.
- d. Description of actions taken to implement a Quality Improvement Plan (QIP) during the reporting period.
- e. Documentation that the implementation of the QIP has been completed and reduced the likelihood of similar excursions or exceedances occurring.

(Basis: Regulations 2-1-403, 2-6-503, 40 CFR 64.9)

## RECOMMENDATION

It is recommended that an Administrative Change in Conditions to the Permit to Operate be granted to Tesoro for the following equipment:

**S-963 Alkylation Plant Gas Turbine 177, Natural Gas Fired, 113MM Btu/hr**

By: \_\_\_\_\_  
Arthur P Valla  
Senior Air Quality Engineer  
October 6, 2016

CAM Checklist

Application: 27791

Plant: 14628 Tesoro

Source and Emission: S963 Gas Turbine, NOx Emissions

Emission Limit: BAAQMD Regulation 9-9-301.2 – NOx emission limit of 42 ppm at 15% O2

Averaging Period: BAAQMD Regulation 9-9-603 – 3-hour averaging period

Date: 07Jun2016, based on Tesoro letter 17May2016.

<u>Citation 40 CFR 64</u>	<u>Description</u>	<u>Satisfied?</u>	<u>Where</u>	<u>Notes</u>
64.3	Design Criteria			
64.3(a)	General	N/A		
64.3(a)(1)	Select Emission or Parameters	Yes	Table A	Fuel and Steam rates similar to the monitoring in 60KKKK. Pressure and Humidity are part of the NOx reduction correlation, but are not included based on the presumption that 60KKKK monitoring is acceptable for CAM.
64.3(a)(2)	Select Monitor Ranges	Yes	Table A only selects key values	Fuel range >= 100 lb/hr, Steam- Fuel ratio >=2.0
	Bypass Operation	Yes	17May2016 letter, based on 16May2011 letter, #5	There is no bypass operation. Steam injection is integral to turbine operation, and is only limited during startup and shutdown, by automatic turbine controls.
64.3(a)(3)	Suggested Range Basis	N/A		
64.3(b)	Performance Criteria	N/A		
64.3(b)(1)	Detector Location and Specs	Yes	Excerpt of P&ID provided in 17May2016 letter.	Fuel monitoring shown on P&ID, steam monitoring shown on schematic provided in 16May2011 letter, Attachment 3.
64.3(b)(2)	Verification Procedures for New/Modified Monitoring	Yes	17May2016 letter	Existing Monitoring of fuel and steam rates

<b>Citation 40 CFR 64</b>	<b>Description</b>	<b>Satisfied?</b>	<b>Where</b>	<b>Notes</b>
64.3(b)(3)	QA practices	Yes	Inspection and PM Plan section, 28Jul11 letter, #7, updated in 17May2016 letter	Plan meets or exceeds recommendations of Steam Injection system manufacturer Turbine Technology Services Corporation.
64.3(b)(4)	Monitoring Frequency	Yes	17May2016 letter	Frequency is more often than the 4/hr requirement of (b)(4)(ii).
64.3(c)	Evaluation Factors to consider site-specific situation	Yes	Proposal uses existing monitoring. 28Jul11 letter #8.	Confirmed monitoring is existing.
64.3(d)	Consider other continuous monitoring requirements	N/A		S963 has no other requirement.
<b>64.4</b>	<b>Submittal Requirements</b>			
64.4(a)	Satisfies 64.3, Including:			
64.4(a)(1)	Indicators	Yes	17May2016 letter	Fuel gas and steam
64.4(a)(2)	Ranges	Yes	17May2016 letter	Fuel range >= 100 lb/hr, Steam-Fuel ratio >=2.0
64.4(a)(3)	Performance Criteria per 64.3(b)	Yes	See 64.3(b)	
64.4(a)(4)	Continuous Monitoring Range and Performance	N/A		Only applies for 64.3(d) continuous monitoring required by other regulations
64.4(b)	Justification of Monitoring	Yes	16May11 letter #3. 17May2016 letter	$NO_x = 10.54(P_{cd})^{1/2} * e^{(19(.0063 - H))}$ $SREF1 = Q \ln(NO_x) - 3.738$
64.4(c)(1)	Operating parameter data	Yes	16May11 letter #3.	17May2016 letter: Correlation data unchanged
64.4(c)(2)	No changes since data	Yes	16May11 letter #3. 17May2016 letter	Confirmed no changes.

<b>Citation 40 CFR 64</b>	<b>Description</b>	<b>Satisfied?</b>	<b>Where</b>	<b>Notes</b>
64.4(d)	If Operating Data missing	N/A		
64.4(d)(1)	Provide Test Plan	N/A	17May2016 letter	Testing completed March 2014
64.4(d)(2)	Engineering assessments can be used in lieu of data	N/A		Owner can propose when addressing test plan.
64.4(e)	Implementation Plan	N/A		Monitoring is existing.
64.4(f)	Common Control Device	N/A		
64.4(g)	Multiple Control Device	N/A		
64.5	Deadlines	N/A		
<b>64.6</b>	<b>Approval of Monitoring</b>			
64.6(a)	Permits shall approve	N/A		
64.6(b)	Conditions allowed to confirm performance	Yes		Performance confirmed in March 2014 source tests.
64.6(c)	Minimum Conditions include:			
64.6(c)(1)	Approved Monitoring	Yes	12May12 letter #2, and Attachment 3 Updated in 2016 Application 27791	All included in proposed revision to Condition 19528.
64.6(c)(1)(i)	Indicator Monitored			
64.6(c)(1)(ii)	Device used to Monitor			
64.6(c)(1)(iii)	Performance Requirements			
64.6(c)(2)	Define an exceedance			
64.6(c)(3)	Operation, QIP, Records			
64.6(c)(4)	Minimum Data Collection			
64.6(d)	Schedule of compliance	N/A	28Jul11 letter #8	Monitoring is existing.
64.6(e)	Disapproval	N/A		
<b>64.7</b>	<b>Operation</b>			
64.7(a)	Commencement of operation	N/A		Monitoring is existing.
64.7(b)	Proper maintenance	Yes	In Inspection	



<b>Citation 40 CFR 64</b>	<b>Description</b>	<b>Satisfied?</b>	<b>Where</b>	<b>Notes</b>
			and PM Plan section	
64.7(c)	Operate monitoring at all times	Yes	Implied	Also required in permit conditions per 64.6(c)(3)
64.7(d)(1)	Response to Excursion	Yes	Operator response cited on Page 1 of plan.	
64.7(d)(2)	Determination of acceptable performance	Yes	Application 27791	Performance confirmed in March 2014 initial test and by periodic source tests.
64.7(e)	Improved Monitoring	N/A		Applicable if existing monitoring inadequate Existing Monitoring Adequate
<b>64.8</b>	<b>Quality improvement Plan</b>			
64.8(a)	QIP required when triggered by 64.7(d)(2)	N/A		
<b>64.9</b>	<b>Reporting and Recordkeeping</b>			
64.9(a)(1)	Reporting per 70.6(a)(3)(iii)	Yes	Permit Condition 19528	Include in Permit Conditions per 64.6(c)(3) Included in proposed revision to Condition 19528-23.
64.9(a)(2)	Include 70.6(a)(3)(iii) requirements plus:	Yes	Permit Condition 19528	Include in Permit Conditions per 64.6(c)(3) Included in proposed revision to Condition 19528.
64.9(a)(2)(i)	Excursions and Exceedances	Yes	Permit Condition 19528	Include in Permit Conditions per 64.6(c)(3) Included in proposed revision to Condition 19528-23a.
64.9(a)(2)(ii)	Monitor downtime	Yes	Permit Condition 19528	Include in Permit Conditions per 64.6(c)(3) Included in proposed revision to Condition 19528-23c
64.9(a)(2)(iii)	QIP Actions	Yes	Permit Condition 19528	Include in Permit Conditions per 64.6(c)(3) Included in proposed revision to Condition 19528-23d.
64.9(b)(1)	Recordkeeping per 70.6(a)(3)(ii)	Yes	Permit Condition 19528	Include in Permit Conditions per 64.6(c)(3) Included in proposed revision to Condition 19528-22.
64.9(b)(2)	Alternative to paper records	N/A		



## **Application 27799, Reformate Upgrade Project**

### **ENGINEERING EVALUATION TESORO REFINING & MARKETING COMPANY LLC PLANT NO. 14628 APPLICATION NO. 27799 REFORMATE UPGRADE PROJECT**

#### **BACKGROUND:**

Tesoro Refining & Marketing Company LLC's Golden Eagle Refinery (Tesoro) is applying for an Authority to Construct for the following equipment:

**S-638 Tank A-638**  
**S-926 No. 2 Reformate Splitter Reboiler (F26)**  
**S-1464 Tank A-868**  
**S-1555 Reformate Splitter**

The project will include piping and pump changes and/or additions that will impact several storage tanks in Tract 3 and Tract 6. To ensure these physical changes are alterations, a review of the throughput capacities of the following tanks is included.

**S-26 Tank A-26, External Floating Roof Tank**  
**S-33 Tank A-33, External Floating Roof Tank**  
**S-637 Tank A-637, External Floating Roof Tank**  
**S-638 Tank A-638, External Floating Roof Tank**  
**S-639 Tank A-639, External Floating Roof Tank**  
**S-640 Tank A-640, External Floating Roof Tank**  
**S-641 Tank A-641, External Floating Roof Tank**  
**S-692 Tank A-692, External Floating Roof Tank**  
**S-711 Tank A-711, External Floating Roof Tank**

The results show S-637, S-638, S-639, S-640 and S-641 will have revised (reduced) grandfathered limits.

This permit application was deemed complete August 30, 2016 so this evaluation is based on the requirements of Regulation 2 that was effective at that time.

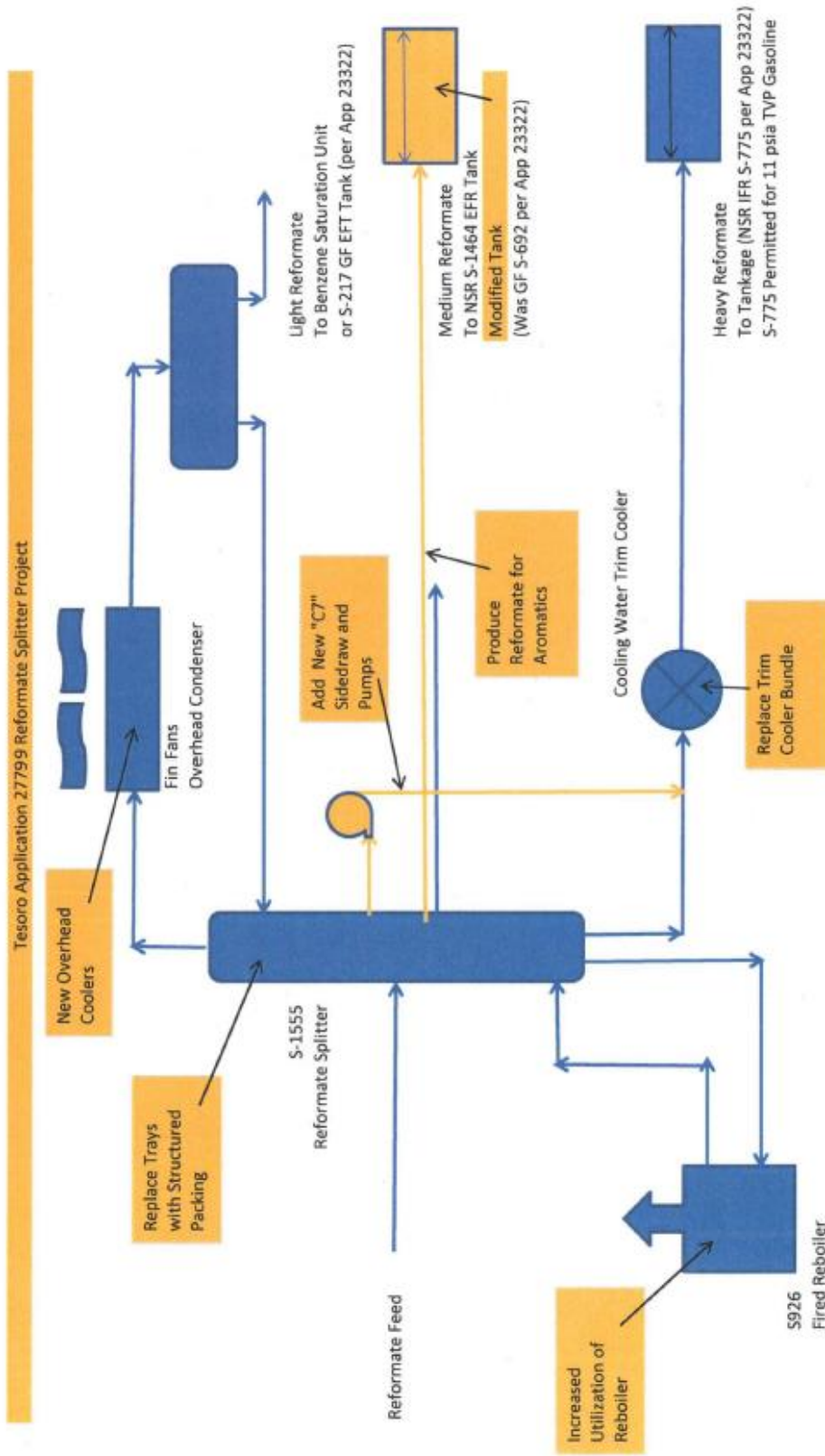
#### **PROJECT DESCRIPTION**

The existing Reformate Splitter (S-1555) tower separates reformate into three streams: light, medium and heavy reformate. The light reformate is drawn overhead. The light reformate contains approximately 90% of the benzene present in the feed, so it is routed to S-1038, the Benzene Saturation Unit, to remove the benzene. The treated light reformate is then used in gasoline blending. Heavy reformate is the bottom product, which goes to storage and then is blended to gasoline. The medium reformate is a side-cut. S-1555 was modified in Clean Fuels Project NSR Application 10912 where the permitted throughput was increased to 40,000 BPD.

The proposed project will modify the S-1555 Reformate Splitter for the purpose of increasing the concentration of C8 (hydrocarbons that have chains of 8 carbon molecules or less) aromatic components in the existing medium reformate side draw. This will be accomplished by adding a new "C7" side draw to the column (that will contain hydrocarbons that have chains of 7 carbon molecules or less) above the medium reformate side draw. The modifications will allow S-1555 to operate with higher vapor and liquid loadings, improving the column fractionation process by

changing the column heat and material balance. However, no increase in permitted throughput is proposed at S-1555.

The project elements are detailed below.



### **S-1555 Reformate Splitter**

The modifications to the Reformate Splitter include:

- New Overhead Air Coolers
- Replacing the column trays with new RFS column structured packing
- Feed and draw nozzle relocations
- New C7 Side Draw Nozzle
- New C7 Side Draw Pumps
- New C7 Side Draw Cooler
- Replacement Heavy Reformate Trim Cooler bundle

### **S-926 Reformate Splitter Reboiler**

Utilization of the Reformate Splitter Reboiler (S-926) will be increased to achieve the additional fractionation. S-926 has a Title V limit of 130 MMBtu per hour. This limit was recently demonstrated and confirmed in Application 25523. No physical alterations will be made to the reboiler and it will continue to operate within its permitted grandfathered capacity. Therefore, S-926 is altered by this project.

### **S-1464 Tank A-868**

The Refinery has many tanks that are in gasoline blending service. Gasoline and gasoline blending products include, but are not limited to naphtha, reformate, alkylate and gasoline. While there is no proposed increase in reformate production for storage and blending, the need to store medium reformate separately created a demand for another reformate storage tank. Therefore, Tank A-868 (S-1464) currently in diesel service will be modified for reformate/gasoline blending service. S-1464 was permitted in 2000 under NSR Application 669 to store Jet A, Diesel or Kerosene. This change in operation is a modification because the current S-1464 Condition 17477 restricts the service to less than 0.2 psi vapor pressure material.

The existing S-1464 external floating roof tank will not be physically modified, but the Potential to Emit will increase. A change in conditions is proposed that allows for storing gasoline blending materials, including reformate, with a vapor pressure less than 3 psia. This vapor pressure requirement will meet the Best Available Control Technology (BACT) determination in the BAAQMD BACT handbook for external floating roofs storing materials with a vapor pressure less than 3 psia (thus avoiding the BACT requirement for a domed tank for vapor pressures  $\geq 3$  psia). No additional controls will be required for this S-1464 change in operation.

### **S-638 Tank A-638**

Tank A-638 (S-638) is an external floating roof tank, currently in reformer feed service, and will remain in this service. This tank is currently equipped with a single line to the tank located at the bottom, so the tank is designed to either be filled or emptied. Any water that accumulates in the tank will collect in the bottom and will be part of the reformer feed stream. This project proposes a minor physical change to the tank. The tank design will be improved by separating the fill and suction lines and by adding a floating suction arm. This will eliminate water contamination in the reformer feed. Since emissions are based on tank level changes, it is unlikely that there will be a change in emissions from the tank. If there is a change, it is likely to be a reduction in emissions. In addition, S-638 will be included in the grandfathered limit review and permit conditions will be imposed that ensure the S-638 grandfathered limit will not be exceeded (see next section). Therefore, S-638 is an altered source.

### **Other Project Tanks (Grandfathered Limit Review)**



Tesoro proposes piping changes and new pumps in Tract 3 and Tract 6. Tract 6 is south of the main refinery process block and includes the primary refinery gasoline blending equipment. Tract 3 is north of the main refinery process block and includes the gasoline storage tanks that provide the finished product for the S-1025 Bulk Plant that loads the gasoline and other product trucks.

Reformate from the Reformate Splitter is currently routed for rundown to storage in Tract 6. In future operation, it could be routed to Tract 3. A new line will be tied in upstream of the existing Reformate battery limit block valve at the Reformate Splitter, and a new battery limit block valve will be added for the new destination. This new line will be routed along the existing pipe rack and tie into the 67 Line, which runs up to Tract 3. Reformate product is lined up to a new transfer pump which discharges to an existing line.

Reformate is also stored in Tract 6. Only S-1464 (Tank A-868) in Tract 6 will be modified. However, for flexibility, new piping and pumps are added. There is no change in pumping rate upstream of the tanks. Two new pumps will be installed to send the gasoline components to blending. Suction to these pumps comes via a new line. Discharge from the new pumps ties into an existing block valve in the 66 line, from which it is routed to gasoline blending and distributed via pipeline.

The impacted tanks in Tract 3 are S-26, S-33, S-692 and S-711. The impacted tanks in Tract 6 are S-637, S-638, S-639, S-640 and S-641. To ensure that all of the piping and pumping changes will not modify these tanks (i.e., these tanks are altered), an analysis of the current physical limitations was conducted to determine the grandfathered capacities of the tanks. By limiting the throughputs of the tanks to the grandfathered capacity, emissions will not increase and the tanks can be considered altered.

Pre-construction design drawings that demonstrate the capacity of each tank, including tank bottlenecks such as pump capacities and hydraulic constraints were evaluated. Table 1 shows the summary of the current and proposed inlet and outlet pump rates. All pump rates were verified using the pump curves.

**Table 1. Tank Pump Rates**

Tank	Inlet Pump(s)	Inlet Capacity (BPD)	Outlet Pump(s)	Outlet Capacity (BPD)	Comments/Notes
26	P-8074 (exist) P-8103 (exist)	165,000	P-9828 (exist)	96,000	P-9828 and P-9829 were installed after 1979 so are not pertinent in the GF limit evaluation.
		240,000	P-9829 (exist)	96,000	
33	P-8074 (exist) P-8103 (exist) P-9567 (exist) P-9568 (exist)	165,000	P-10196 (exist)	62,000	P-10196,97,99 discharge to S-1025 which is limited to 64,457 BPD
		240,000	P-10197 (new)	62,000	
		24,000	P-10199 (exist)	62,000	
		24,000	P-10560 (new)	43,000	
637	Drawdown Light Hydrocrackate and BSU Drawdown or 4 HDS gasoline blend	30,000	P-8639 (exist) P-3735 (exist) P-10561 (new) P-10652(new)	25,000 15,000 43,000 43,000	New Pumps increase outlet capacity



Tank	Inlet Pump(s)	Inlet Capacity (BPD)	Outlet Pump(s)	Outlet Capacity (BPD)	Comments/Notes
638	Drawdown from Heavy Hydrocrackate and 1HDS or 4 HDS gasoline blend	45,000	P-8759 (exist) P-8639 (exist) P-3735 (exist) P-10561 (new) P-10652(new)	41,000 25,000 15,000 43,000 43,000	New Pumps increase outlet capacity
639	Drawdown from 4 HDS gasoline blend P-9567 (exist) P-9568 (exist)	30,000 24,000 24,000	P-8639 (exist) P-10561 (new) P-10562 (new)	25,000 43,000 43,000	New Pumps increase outlet capacity
640	Drawdown from 4 HDS gasoline blend P-9567 (exist) P-9568 (exist)	30,000 24,000 24,000	P-8639 (exist) P-10561 (new) P-10562 (new)	25,000 43,000 43,000	New Pumps increase outlet capacity
641	Drawdown from Heavy Hydrocrackate and 1HDS or 4 HDS gasoline blend P-9567 (exist) P-9568 (exist)	45,000 24,000 24,000	P-8759 (exist) P-8639 (exist) P-10561 (new) P-10562 (new)	41,000 25,000 43,000 43,000	New Pumps increase outlet capacity
692	P-8074 (exist) P-8103 (exist)	165,000 240,000	P-9828 (exist) P-9829 (exist) P-10196 (exist) P-10197 (new) P-10199 (exist) P-10560 (new)	96,000 96,000 62,000 62,000 62,000 43,000	P-9828 and P-9829 were installed after 1979 so are not pertinent in the GF limit evaluation.  P-10196,97,99 discharge to S-1025 which is limited to 64,457 BPD
711	P-8074 (exist) P-8103 (exist)	165,000 240,000	P-9828 (exist) P-9829 (exist) P-10196 (new) P-10197 (exist) P-10199 (new) P-10560 (new)	96,000 96,000 62,000 62,000 62,000 43,000	

Table 2 summarizes the current maximum inlet and outlet pumps that will be used to determine the correct grandfathered tank capacity (highlighted in Table 1).

**Table 2. Tank Current Maximum Inlet and Outlet Pump Rates**

Tank	Current Max Inlet Capacity (BPD)	Current Max Outlet Capacity (BPD)
26	240,000	64,457
33	240,000	64,457
637	30,000	25,000
638	45,000	41,000
639	30,000	25,000
640	30,000	25,000
641	45,000	41,000

Tank	Current Max Inlet Capacity (BPD)	Current Max Outlet Capacity (BPD)
692	240,000	64,457
711	240,000	64,457

The maximum rates shown above are used to establish the grandfathered limits. Calculations for the maximum possible annual pump rate are shown in Table 3.

**Table 3. Calculations of Maximum Annual Pump Rate**

Tank ID	S-26	S-33	S-692	S-711	S-637	S-638	S-639	S-640	S-641
Tank size (gal)	4,536,000	4,536,000	3,276,000	3,360,000	3,360,000	3,360,000	3,360,000	3,360,000	3,360,000
Tank size (bbl)	108,000	108,000	78,000	80,000	80,000	80,000	80,000	80,000	80,000
Fill rate (bpd)	240,000	240,000	240,000	240,000	30,000	45,000	30,000	30,000	45,000
Empty rate(bpd)	64457	64457	64457	64457	25,000	41,000	25,000	25,000	41,000
Empty days	288.9	288.9	288.8	288.8	201.1	192.4	201.1	201.1	192.4
Fill days	77.1	77.1	77.2	77.2	164.9	173.6	164.9	164.9	173.6
Max annual fill amount (kbb/yr)	18,512	18,512	18,535	18,534	4,947	7,810	4,947	4,947	7,810
<b>Max annual empty (throughput) amount (kbb/yr)</b>	18,569	27,656	27,646	27,647	<b>5,014</b>	<b>7,869</b>	<b>5,014</b>	<b>5,014</b>	<b>7,869</b>
<b>Current Rev 5 Title V limit (kbb/yr)</b>	<b>10,375</b>	<b>10,375</b>	<b>10,000</b>	<b>12,800</b>	7,300	11,000	11,000	11,000	11,000

**Calculation:**

$$[\text{Fill Rate (BPD)}] \times [\text{Fill days}] + [\text{Tank size (bbl)}] = [\text{Empty Rate (BPD)}] \times [\text{Empty days}]$$

$$[\text{Fill days}] = 366 - [\text{Empty days}]$$

$$[\text{Fill Rate (BPD)}] \times ([366 \text{ days}] - [\text{Empty days}]) + [\text{Tank size (bbl)}] = [\text{Empty Rate (BPD)}] \times [\text{Empty days}]$$

$$[366 \text{ days}] \times [\text{Fill Rate (BPD)}] - [\text{Fill Rate (BPD)}] \times [\text{Empty days}] + [\text{Tank size (bbl)}] = [\text{Empty Rate (BPD)}] \times [\text{Empty days}]$$

$$[\text{Empty days}] = ([366 \text{ days}] \times [\text{Fill Rate (BPD)}] + [\text{Tank size (bbl)}]) / ([\text{Fill Rate (BPD)}] + [\text{Empty Rate (BPD)}])$$

$$[\text{Max annual empty amount (kbb/yr)}] = [\text{Empty days}] \times [\text{Empty Rate (BPD)}] = [\text{Empty Rate (BPD)}] \times ([366 \text{ days}]$$

$$\times [\text{Fill Rate (BPD)}] + [\text{Tank size (bbl)}]) / ([\text{Fill Rate (BPD)}] + [\text{Empty Rate (BPD)}]) / [1000 \text{ bbl/kbb}]$$

The evaluation of the Tract 6 tanks (S-637, S-638, S-639, S-640 and S-641) demonstrates that the tank capacities are lower than those specified in the Title V permit. Tesoro has agreed to revise these limits and to operate these tanks at or under these new capacities. Therefore, even though the new pumps and piping associated with this project has potential to increase the capacity of these tanks, permit conditions will ensure there is no capacity increase and no increase in emissions. Therefore, S-637, S-638, S-639, S-640 and S-641 are not modified by this project.

The evaluation of the Tract 3 tanks (S-26, S-33, S-692 and S-711) demonstrates that the tank capacities are potentially higher than the Title V limits. However, in order to increase the Title V limits, a comprehensive review of the determination of the existing limits is necessary. These limits were determined by Tesoro, and reviewed by the District, in 2002 and/or 2003, in support of the initial Title V permit issued December 1, 2003. These existing limits could be based on other limiting parameters such as hydraulic constraints. To review the 2002/2003 determinations would require retrieving records over a decade old. This effort would delay the processing of this

permit application. In order to expedite the approval of this project, Tesoro has agreed to keep the existing Title V grandfathered limits, and to operate these tanks at or below these capacities. Therefore, even though the new pumps and piping associated with this project has potential to increase the capacity of these tanks, permit conditions will ensure there is no capacity increase and no increase in emissions.

**Upstream and Downstream Review**

This permit application was deemed complete on August 30, 2016. Therefore, the requirements of a previous version of Regulation 2, Rule 1 are applicable. In accordance with the Regulation 2-1-234.3.2 of this previous version, the effect of the project on upstream and downstream units is evaluated to determine if any sources are being debottlenecked by the project. An analysis was conducted and no debottlenecking was found in any upstream or downstream process units.

The project does not increase throughput of any process units at the Refinery. The Reformate Splitter (S-1555) has a throughput limit of 40,000 barrels per day reformate permitted in New Source Review Application 10912. No increase in the permitted throughput limit at S-1555 is proposed in this project. Downstream of S-1555 is the Benzene Saturation Unit (S-1038). This unit has a throughput limit established in New Source Review Application 14894. Also, downstream of S-1555 and S-1038 is reformate, gasoline and gasoline blending storage. While there is no increase in reformate production for storage and blending, the need to store medium reformate separately created a demand for another reformate tank. As discussed above, S-1464 (Tank A-868) will be modified to store gasoline blending materials, rather than diesel. No other downstream tanks have increased throughput or emissions through a material storage change. In conclusion, there is no upstream or downstream debottlenecking resulting from this project.

**EMISSION CALCULATIONS:**

The sources of emissions increases with the project include the following:

- Precursor Organic Compounds (POC) emissions from the S-1464 tank modification
- POC emissions from new fugitive components associated with the Reformate Splitter modification.

**S-1464 (Tank A-868) External Floating Roof Storage Tank**

S-1464 (Tank A-868) is currently permitted to store materials with less than 0.2 psi, such as diesel and kerosene. The tank is proposed to be repurposed to store reformate or other gasoline blending products less than 3 psi in true vapor pressure. There will be no physical modification of the tank. The tank characteristics will remain the same and throughput will remain limited to 10,000,000 barrels during any 12-consecutive month period. Emissions estimates from the tank were provided by Tesoro using TANKS 4.09d. The printouts from the TANKS estimates are included in the application file folder. The following table summarizes the results.

Material (Max TVP=2.99 psia)	Emissions, lb/year			
	Rim Seal Losses	Withdrawal Losses	Roof Fitting Losses	Total Losses
Heavy Reformate	1793	772	6931	9447
Medium Reformate	1921	766	7426	10114
Naphtha	2510	625	9704	12839
Gasoline	1539	704	5941	8182

The peak daily estimate is derived from the TANKS estimates for July, divided by 31 days.

Material	July Emissions, lb/mo
----------	-----------------------

(Max TVP=2.99 psia)	Rim Seal Losses	Withdrawal Losses	Roof Fitting Losses	Total Losses
Heavy Reformate	197	60	850	1108
Medium Reformate	211	64	911	1186
Naphtha	275	52	1190	1519
Gasoline	168	59	729	959

The highest emissions occur for Naphtha storage.

Highest daily emissions =  $1519/31 = 49$  lb/day

Highest hourly emissions =  $49/24 = 2.042$  lb/hr

Emissions from tank roof landings are not estimated because they are expected to be infrequent (periods between roof landings are expected to be 5 years or longer).

The total criteria pollutant emissions from the tank are summarized in Table 4.

**Table 4. POC Emissions from Modified S-1464 (Tank A-868)**

	lb/hour	lb/day	lb/year	tpy
<b>POC</b>	2.042	49	12,839	6.420

**Process Units – Fugitive POC Emissions**

The project includes installing new equipment and piping with new fugitive components. There will be new fugitive components associated with the following areas:

- S-1555 Reformate Splitter
- Tract 3 Tank Farm
- Tract 6 Tank Farm

Table 5 includes a summary of the fugitive component counts for the project:

**Table 5. Summary of Fugitive Component Counts**

	Reformate Splitter	Tract 3	Tract 6	Total
<b>Valves:</b>				
Gas/Vapor	27	0	0	27
Light Liquid	90	55	24	169
Heavy Liquid	0	0	0	0
<b>Equipment:</b>				
Flanges/Connectors	410	193	84	687
PSV's	0	0	0	0
Compressors	0	0	0	0
Pumps (Light Liquids)	2	1	2	5
Pumps (Heavy Liquids)	0	0	0	0
Process Drains	0	0	0	0

Table 6 below summarizes the fugitive component emissions.

**Table 6. POC Emissions from Fugitive Components**

	CAPCOA Emission Factor (kg/hour/source)	Reformatte Splitter VOC (lb/year)	Tract 3 VOC (lb/year)	Tract 6 VOC (lb/year)	VOC Total: (lb/hr)	VOC Total: (tpy)
<b>Valves:</b>						
Gas/Vapor	7.08E-05	36.92	0.00	0.00	0.0042	0.018
Light Liquid	7.08E-05	123.06	75.20	32.81	0.0264	0.116
Heavy Liquid	7.08E-05	0.00	0.00	0.00	0.00	0.00
<b>Equipment:</b>						
Flanges/ Connectors	1.17E-04	926.22	436.00	189.76	0.1772	0.776
PSV's	4.70E-04	0.00	0.00	0.00	0.00	0.00
Compressors	4.70E-04	0.00	0.00	0.00	0.00	0.00
Pumps (Light Liquids)	2.42E-03	93.46	46.73	93.46	0.0267	0.117
Pumps (Heavy Liquids)	2.42E-03	0.00	0.00	0.00	0.00	0.00
Process Drains	1.67E-04	0.00	0.00	0.00	0.00	0.00
<b>Totals</b>		<b>1180</b>	<b>558</b>	<b>316</b>	<b>0.234</b>	<b>1.027</b>
<b>Total lb/day</b>		<b>3.23</b>	<b>1.53</b>	<b>0.86</b>		

Daily fugitive emissions = 0.234 \* 24 = 5.63 lb/day.

Table 7 summarizes the emissions from the new sources and fugitive components associated with the project.

**Table 7. Total Criteria Pollutants from the Project**

Pollutants	POC Emissions Increase			
	Lb/hr	Lb/day	Lb/yr	TPY
S-1464	2.042	49	12839	6.420
Fugitives	0.234	5.6	2054	1.027
Total	2.276	54.6	14893	7.447

**Toxic Air Contaminants**

Tesoro's TANKS estimates provided speciated emissions including toxic air contaminants (TAC). The following table summarizes the TAC emissions.

Material:	Future Medium Reformate < 3 psi	Future Heavy Reformate < 3 psi	Naphtha < 3 psi	Gasoline < 3 psi	Worst Case Material	
	Lb/yr	Lb/yr	Lb/yr	Lb/yr	Lb/yr	Wt %
VOC	10,114.24	9,446.72	12,839.48	8,182.60	12,839.48	N/A
Toluene	151.74	845.69	465	619.31	845.69	6.587%
Ethylbenzene	144.18	2.73	83.24	57.78	144.18	1.123%
Xylene (Total)	633.84	9.11	383.31	324.15	633.84	4.937%
Benzene	2.38	130.46	329.36	71.16	329.36	2.565%
Naphthalene	0	0	0	35.67	35.67	0.278%
Hexane, n-	0.92	0.81	3,105.60	63.64	3,105.60	24.188%

The toxic air contaminant emissions from all sources are summarized in the following tables.

Chemical	Worst Case Material	S-1464	S-1555 Fugitives	Tract 3 Fugitives	Tract 6 Fugitives	Total TAC	Chronic Toxic Trigger	Exceed Trigger?
	Wt %	Lb/yr	Lb/yr	Lb/yr	Lb/yr	Lb/yr	lb/yr	
VOC	N/A	12,839	1,180.00	558.00	316.00	N/A	N/A	N/A
Toluene	6.587%	845.69	77.72	36.75	20.81	980.98	12,000	No
Ethylbenzene	1.123%	144.18	13.25	6.27	3.55	167.25	33.00	Yes
Xylene (Total)	4.937%	633.84	58.25	27.55	15.60	735.24	27,000	No
Benzene	2.565%	329.36	30.27	14.31	8.11	382.05	2.90	Yes
Naphthalene	0.278%	35.67	3.28	1.55	0.88	41.38	2.40	Yes
Hexane, n-	24.188%	3105.60	285.42	134.97	76.43	3,602.42	270,000	No

Chemical	Worst Case Material	S-1464	S-1555 Fugitives	Tract 3 Fugitives	Tract 6 Fugitives	Total TAC	Acute Toxic Trigger	Exceed Trigger?
	Wt %	Lb/hr	Lb/hr	Lb/hr	Lb/hr	Lb/hr	Lb/hr	
VOC	N/A	2.042	0.13	0.064	0.036	N/A	N/A	N/A
Toluene	6.587%	0.1345	0.0089	0.0042	0.0024	0.17	82	No
Ethylbenzene	1.123%	0.0229	0.0015	0.0007	0.0004	0.03	N/A	N/A
Xylene (Total)	4.937%	0.1008	0.0066	0.0031	0.0018	0.13	49	No
Benzene	2.565%	0.0524	0.0035	0.0016	0.0009	0.07	0.06	Yes
Naphthalene	0.278%	0.0057	0.0004	0.0002	0.0001	0.01	N/A	N/A
Hexane, n-	24.188%	0.4939	0.0326	0.0154	0.0087	0.62	N/A	N/A

The Health Risk Assessment was conducted September 12, 2017. The project risk is considered acceptable with a Maximum Cancer Risk of 0.4 in a million, the chronic hazard index of 0.004 and the acute hazard index of 0.16. These results demonstrate the project meets the requirements of Regulations 2-5-301 and 2-5-302.

**BEST AVAILABLE CONTROL TECHNOLOGY (BACT)**

In accordance with Regulation 2, Rule 2, any new or modified source that has the potential to emit 10.0 pounds or more per highest day of precursor organic compounds (POC), non-precursor organic compounds (NPOC), nitrogen oxides (NOx), sulfur dioxide (SO2), PM10 or carbon monoxide (CO) is required to use Best Available Control Technology as defined in Regulation 2-2-206 Best Available Control Technology (BACT).

The modified storage tank S-1464 Tank A-868 has the potential to emit 49 pounds per day, so the tank is subject to BACT. The modified S-1555 Reformate Splitter has the potential to emit an increase of 3.23 lb/day from additional fugitive components. Therefore, S-1555 is not subject to BACT. The total increase in fugitive emissions from this project is 5.63 lbs/day, so the fugitive components are not subject to BACT. However, Tesoro has a policy of installing only BACT compliant fugitive components.

**S-1464 Storage Tank BACT**

Tesoro has provided the following BACT 1 analysis for S-1464.

POC BACT 1 Determination			
Technology	Technically Feasible	Cost Effective	Rationale
Refrigerated Condensers	No	N/A	VOC emissions from the proposed storage tank will be very low (< 6.4 Ton/yr). As a result, VOC concentrations in the vapors collected would be very low and concentration are expected to be below levels at which a refrigerated condenser system could recover any hydrocarbon vapors or meet a 98% control efficiency. Therefore, a refrigerated condenser system should be considered technically infeasible in this application.

POC BACT 1 Determination			
Technology	Technically Feasible	Cost Effective	Rationale
Thermal Oxidation	Yes	No	More equipment would be required to collect tank vapors and route them to a thermal oxidizer than routing the tank vapors to the existing vapor recovery system. Therefore, control costs for thermal oxidation will be same or higher than the \$76,000 per ton control costs for connecting Tank A-868 to the existing vapor recovery system (see below). In addition, a thermal oxidation system will require natural gas for heat in the thermal oxidizer, further increasing the emission control cost. Therefore, thermal oxidation is not considered cost effective for Tesoro's proposed storage tank.



Vapor Recovery System	Yes	No	<p>Tesoro’s existing A-14 vapor recovery system has sufficient capacity to handle the additional vapors from Tank A-868 if it were connected to the recovery system. To connect Tank A-868 to the vapor recovery system, Tesoro would need to:</p> <ul style="list-style-type: none"> <li>• Install a domed cover on Tank A-868 to enable capture of POC and NPOC emissions from the tank. Tank A-868 currently has an external floating roof. Based on the vapor pressure of the liquids stored in Tank A-868 (<math>\leq</math> RVP 3), a domed cover is not required to meet BACT 2 requirements. Therefore, the cost of installing a domed cover on Tank A-868 to collect POCs and NPOC emissions must be included in the cost of routing these vapors to the A-14 vapor recovery system.</li> <li>• Install one-half mile of new vapor recovery system piping from the tank to the nearest connection point in the existing vapor collection system piping. The piping would be used to transport the POCs and NOCs from Tank A-868 to the A-14 vapor recovery system.</li> <li>• Install one-half mile of new natural gas piping to the tank from the nearest connection point in the refinery. The natural gas would be used to purge the tank and keep the space under the dome oxygen-free. The natural gas purge is required to ensure safe operation of the tank and is currently used on existing storage tanks connected to the vapor recovery system.</li> <li>• The emission control cost is \$76,000 per ton of POC. The BACT/TBACT workbook “Maximum Cost Guidelines for BACT” currently specifies that controls for POC cost less than \$17,500 per ton removed to be cost effective. Therefore, use of the vapor recovery system to control emissions from Tank A-868 (S-1464) is not cost effective.</li> </ul>
Carbon Adsorption	Yes	No	More equipment would be required to collect tank vapors and route them to an

POC BACT 1 Determination			
Technology	Technically Feasible	Cost Effective	Rationale
			activated carbon absorber than routing the tank vapors to the existing vapor recovery system. Therefore, control costs for carbon adsorption will be same or higher than the \$76,000 per ton control costs for connecting Tank A-868 to the existing vapor recovery. Therefore, carbon adsorption is not considered cost effective for Tesoro's proposed storage tank.

A vapor recovery system is technically feasible. Therefore a cost effective analysis is needed. Tesoro estimated the following costs for connecting Tank A-868 to the existing vapor recovery system:

- \$397,000 for the cost of a domed roof
- \$100,000 for the cost of engineering and construction support
- \$1,800,000 installing the vapor recovery and natural gas purge piping.

The capital recovery factor, based on a 3% interest rate (10 Year Treasury Bond rate + 2, rounded up), and a 10 year equipment life, the capital recovery factor is 0.1172.

Simplified BAAQMD cost factors are 0.01 for Tax, 0.01 for Insurance, and 0.02 General and Administrative Expenses. This totals to a 0.04 simplified factor.

Simplified BAAQMD Annual Operating and Maintenance cost factor is 0.05.

US EPA's TANKS emission estimation software, Version 4.09d, was used to estimate volatile organic compound (VOC) emissions from the proposed storage tank. The estimated annual VOC emissions for S-1464 are 12,839 pounds per year. A 98% abatement factor is equivalent to a 12,582 pounds POC reduction, or 6.29 tons.

The capital cost for the installation is \$397,000 for the cost of a domed roof, \$100,000 for the cost of engineering and construction support and \$1,800,000 installing the vapor recovery and natural gas purge piping, or a total of \$2,297,000. Applying the 0.2072 capital recovery factor results in annual cost of \$476,000.

The annualized cost of this installation and cost effectiveness are summarized in the following table.

Description	Calculation	Amount
Capital	Capital Cost X Recovery Factor	\$269,208
Tax, Insurance, and Administrative Expenses	Capital Cost X 0.04	\$92,000

Operating and Maintenance	O & M X 0.05	\$115,000
Total Annualized Cost		\$476,000
Annual POC Reduction, tons		6.291
Control Cost Effectiveness, \$/ton		\$76,000
BACT Cost Effectiveness Limit, \$/ton		\$17,500
Is Vapor Recovery Cost Effective?		No

The emission control cost is about \$76,000 per ton of POC. The BACT/TBACT workbook “Maximum Cost Guidelines for BACT” currently specifies that controls for POC cost less than \$17,500 per ton removed to be cost effective. Therefore, the BACT1 use of vapor recovery, thermal oxidizers or carbon adsorption to control emissions from S-1464 is not cost effective.

Since BACT1 is not cost effective, BACT2 Achieved in Practice is required. The BAAQMD BACT Handbook Document Number 167.2.1 covers External Floating Roof Organic Liquid Tanks with capacities greater than or equal to 19,815 gallons and located at a facility with greater than 20 tpy VOC emissions since the year 2000. The BACT2 requirements for an organic liquid storage tank with external floating roof storing material with a vapor pressure less than 3 psia is specified as follows:

Approved roof with liquid mounted primary seal and zero gap secondary seal, all meeting the design criteria of BAAQMD Regulation 8 Rule 5. The floating roof may not have any ungasketed roof penetrations, no slotted pipe guide poles unless equipped with float and wiper seals, and no adjustable roof legs unless the legs are fitted with vapor seal boots or equivalent.

S-1464 satisfies the BACT2 requirements with a liquid mounted primary seal and zero gap secondary seal, complying with the design criteria of Regulation 8, Rule 5, equipped with unslotted pipe guide poles, and the adjustable roof legs are fitted with vapor seal boots.

Permit Conditions will limit the true vapor pressure of the S-1464 material to less than 3 psia. Therefore, the BACT 2 requirement for a domed tank is not applicable.

## OFFSETS

Offsets are required per Regulation 2-2-302 because Tesoro emits more than 35 tpy of POC emissions. Regulation 2-2-302 requires that offsets for POC be provided at a ratio of 1.15 to 1.0. The following table summarizes the offset requirements for this application:

Pollutants	Emissions Increase	Offsets
	TPY	(Ratio 1.15:1) TPY
POC	7.447	8.564
Bank 1609		5.930
Bank 1615		0.836
Bank 1614		1.798

## Prevention of Significant Deterioration (PSD) (SECTION 2-2-304)

New major facilities and major modifications at major facilities must meet modeling requirements of Regulation 2-2-304 PSD Requirement. Tesoro is not a new major facility; nor is this project a major modification of a major facility. The emissions increases are below the major modification threshold for POC and POC is not a PSD pollutant in the BAAQMD.

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

S-638 is a grandfathered tank and is not subject to any provisions of NSPS.

S-926 is subject to 40 CFR 60 Subpart J [Standards of Performance for Petroleum Refineries]

S-1464 is subject to 40 CFR 60 Subpart Kb [Standards of Performance for Storage Vessels for Petroleum Liquids for which Construction, Reconstruction, or Modification Commence After May 18, 1978, and Prior to July 23, 1984]

S-1555 is not subject to any provisions of NSPS.

### **National Emission Standards for Hazardous Air Pollutants (NESHAPS)**

S-638 is subject to 40 CFR 63 Subpart CC [NESHAPS for Source Categories - Petroleum Refineries (MACT)]. 63.646(a) specifies requirements of 63.119 through 63.121 of 40 CFR 63 Subpart G [NESHAPS for Source Categories: SOCOMI HON].

S-926 is subject to 40 CFR 60 Subpart DDDDD [National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters]

S-1464 is subject to 40 CFR 63 Subpart CC [NESHAPS for Source Categories - Petroleum Refineries (MACT) (06/30/2013)]. However, since S-1464 is subject to NSPS Subpart Kb, 63.640(n)(1) "MACT Overlap" only requires compliance with Subpart Kb. Hence S-1464 is not subject to any provisions of 40 CFR 63 Subpart G.

S-1555 is not subject to any provisions of NESHAPS.

### **STATEMENT OF COMPLIANCE**

S-638 Tank A-638 will be subject to the same requirements to which it is currently subject and Tesoro will continue to comply with the following requirements:

BAAQMD Regulation 8 Rule 5 (Organic Compounds - Storage of Organic Liquids)  
40 CFR 63 Subpart CC (NESHAPS for Source Categories - Petroleum Refineries (MACT))  
40 CFR 63 Subpart G (NESHAPS for Source Categories: SOCOMI HON), as required by CC

S-926 Furnace 26 will be subject to the same requirements to which it is currently subject and Tesoro will continue to comply with the following requirements:

Regulation 6 Rule 1 (Particulate Matter; General Requirements)  
Regulation 9 Rule 10 (Inorganic Gaseous Pollutants – Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators, and Process Heaters in Petroleum Refineries)

40 CFR 60 Subpart J (Standards of Performance for Petroleum Refineries)  
40 CFR 60 Subpart DDDDD (National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters)

S-1464 Tank A-868 will be subject to the same requirements to which it is currently subject and Tesoro will continue to comply with the following requirements:

BAAQMD Regulation 8 Rule 5 (Organic Compounds - Storage of Organic Liquids)  
40 CFR 60 Subpart Kb (Standards of Performance for Storage Vessels for Petroleum Liquids for which Construction, Reconstruction, or Modification Commence After May 18, 1978, and Prior to July 23, 1984)  
40 CFR 63 Subpart CC (NESHAPS for Source Categories - Petroleum Refineries (MACT))

S-1555 Reformate Splitter will be subject to the same requirements to which it is currently subject and Tesoro will continue to comply with the following requirements:

BAAQMD Regulation 8 Rule 10 (Organic Compounds - Process Vessel Depressurization)  
BAAQMD Regulation 8 Rule 18 (Organic Compounds - Equipment Leaks)

The project is exempt from CEQA review because it is a ministerial project as defined in Regulation 2-1-311. The project included the evaluation of storage tanks and fugitives, covered by Permit Handbook chapters 4.0 and 3.4, respectively. A Notice of Exemption will be filed with Contra Costa County.

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

## PERMIT CONDITIONS

Permit conditions 17477 and 25476 will be revised as follows:

Condition 17477

APPLICATION 669 TANK RECONFIGURATION PROJECT TRACTS 4 & 6 (2000-2001)

APPLICATION 17537/17538 (2008) REMOVE COMPLETED AND REDUNDANT TANK CONDITIONS

ADMINISTRATIVELY CHANGED BY APPLICATION 21711 (MAY 2010). DELETED PARTS B1 THROUGH B6.

MODIFIED BY APPLICATION 27799 (OCTOBER 2017). REFORMATE UPGRADE PROJECT. CHANGED CONDITIONS FOR S-1464.

[Sections A, B, C and E for other sources not included because they are unchanged]

S-1464 External Floating Roof Tank, Capacity: 100,000 BBL,  
Storing: Jet A, ~~or~~ Diesel, ~~or~~ Kerosene, Reformate, Gasoline, Gasoline Blendstocks, Naphtha, Alkylate

- D1) The total throughput of all VOC/petroleum materials to S-1464 shall not exceed 10,000,000 barrels (420,000,000 gallons) during any 12 consecutive month period. (basis: cumulative increase, toxics)
- D2) The true vapor pressure of each and all VOC/petroleum materials throughput to and/or stored in S-1464 shall be less than ~~or equal to~~ 3.00-2 psia. (basis: cumulative increase, toxics, BACT)
- D3) Deleted. Final fitting count was verified for S-1464 in a 2008 audit. Offsets were adjusted in August 2002 via Application 669.
- D4) VOC/petroleum material other than Jet A, Diesel, Kerosene, Gasoline, Gasoline Blendstock, Reformate, Naphtha, or Alkylate ~~or Diesel or Kerosene~~ may be throughput to or stored at S-1464, if all of the following are satisfied:
- a) the storage of each material complies with all other conditions applicable this source
  - b) the storage of each material complies with all other applicable regulatory requirements
  - c) the Permittee/Owner/Operator creates and maintains District approved records which demonstrate to the District's satisfaction that no toxin listed in Table 2-5-1 is emitted from S-1464 in an amount in excess of the toxin's respective trigger level set forth in Table 2-5-1. (basis: cumulative increase, toxics)
- D5) On a monthly basis, the Permittee/Owner/Operator shall record the throughput of each VOC/petroleum material throughput to S-1464, in gallon or barrel units, by name (e.g., Kerosene, Crude Oil, Jet A), and the material true vapor pressure, in a District approved log for each month and each rolling 12 consecutive month period. The District approved log shall be retained on site for not less than 5 years from date of last entry and be made available to District staff upon request. (basis: cumulative increase, toxics)

#### Condition 25476

Tesoro Refinery and Marketing Company  
Plant 14628, Application 23322  
No 3 Reformer Capacity Increase

[Application 27799, Reformate Upgrade Project \(October 2017\). Added Parts 30 through 41](#)

[Reformate Upgrade Project:](#)

[Modification of S-1555 Reformate Splitter:](#)

[New Overhead Air Coolers](#)

[Replacing the column trays with new RFS column structured packing](#)

[Feed and draw nozzle relocations](#)

[New C7 Side Draw Nozzle](#)

[New C7 Side Draw Pumps](#)

[New C7 Side Draw Cooler](#)

[Replacement Heavy Reformate Trim Cooler bundle](#)  
[Modification of S-1464 Reformate Storage Tank](#)  
[Alteration of S-926 Reboiler](#)  
[Alteration of Tract 3 Gasoline Tanks S-26, S-33, S-692 and S-711](#)  
[Alteration of Tract 6 Gasoline/Naphtha Tanks S-637, S-638, S-639, S-640 and S-641](#)

1. The Owner/Operator shall ensure that the S-1020 No. 3 Reformer Unit throughput rate does not exceed 26,000 barrels per day based on a rolling 365-day average and that the throughput does not exceed 9,490,000 barrels during each 12 consecutive month period. (basis: cumulative increase).
2. The Owner/Operator shall ensure that the combined product reformates produced by both S-1004 No 2 Reformer and S-1020 No. 3 Reformer does not exceed 40,000 barrels per calendar day The throughput of S-1555 Reformate Splitter shall not exceed 40,000 barrels per calendar day. (basis: cumulative increase).
3. The Owner/Operator of S-971 shall not exceed 300MM Btu/hr, 7,200 MM Btu per day, and 2,628,000 MM Btu of firing in any consecutive 12-month period. (basis: cumulative increase, toxics)
4. The Owner/Operator of S-972 shall not exceed 45MM Btu/hr, 1,080 MM Btu per day, and 394,200 MM Btu of firing in any consecutive 12-month period. (basis: cumulative increase, toxics)
5. The Owner/Operator of S-908 shall not exceed 220MM Btu/hr of firing, on a calendar day basis, and 1,927,200 MMBtu/yr. (basis: Regulation 2-1-233)
6. The Owner/Operator of S-926 shall not exceed 130MM Btu/hr of firing, on a calendar day basis, and 1,138,800 MMBtu/yr. [The requirements for submitting the permit application for S-926 were completed.] (basis: Regulation 2-1-233)

[Parts 7 through 29 omitted because they are unchanged.]

[Reformate Upgrade Project](#)

[Modification of S-1555 Reformate Splitter](#)

[30. Not more than 30 days after the start-up of S-1555 following the project, the owner/operator shall provide the District's Engineering Division with a final count of fugitive components installed for S-1555, the Tract 3 tanks, and the Tract 6 tanks. The owner/operator has been permitted for a total increase in the following fugitive components:](#)

[27 valves in gas service](#)

[169 valves in liquid service](#)

[5 pumps in light liquid service](#)

[687 connectors/flanges](#)

[\(basis: Cumulative Increase, offsets\)](#)

[The owner/operator shall not exceed 1.027 tons per year of POC emissions measured as C1 from the total fugitive component count installed in TOC services as part of Application 27799.](#)

[31. If there is an increase in the total fugitive component emissions, the plant's cumulative emissions for the project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The owner/operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after submittal of the final POC fugitive count. If the actual component count is less than the predicted, the total will be adjusted accordingly and all emission offsets applied by the owner/operator in excess of the actual total fugitive emissions will be credited back to the owner/operator. \(basis: offsets\)](#)

Alteration of Tract 3 Tanks.

32. The owner/operator of S-26 shall not exceed a throughput of 10,375,000 barrels of gasoline in any consecutive 12-month period (Basis: Regulation 2-1-233)
33. The owner/operator of S-33 shall not exceed a throughput of 10,375,000 barrels of gasoline in any consecutive 12-month period (Basis: Regulation 2-1-233)
34. The owner/operator of S-692 shall not exceed a throughput of 10,000,000 barrels of gasoline in any consecutive 12-month period (Basis: Regulation 2-1-233)
35. The owner/operator of S-711 shall not exceed a throughput of 12,800,000 barrels of gasoline or crude oil in any consecutive 12-month period (Basis: Regulation 2-1-233)

Alteration of Tract 6 Tanks.

36. The owner/operator of S-637 shall not exceed a throughput of 5,014,000 barrels of naphtha in any consecutive 12-month period (Basis: Regulation 2-1-233)
37. The owner/operator of S-638 shall not exceed a throughput of 7,869,000 barrels of naphtha, gas oil or gasoline in any consecutive 12-month period (Basis: Regulation 2-1-233)
38. The owner/operator of S-639 shall not exceed a throughput of 5,014,000 barrels of naphtha in any consecutive 12-month period (Basis: Regulation 2-1-233)
39. The owner/operator of S-640 shall not exceed a throughput of 5,014,000 barrels of gasoline or distillate oil in any consecutive 12-month period (Basis: Regulation 2-1-233)
40. The owner/operator of S-641 shall not exceed a throughput of 7,869,000 barrels of gasoline or distillate oil in any consecutive 12-month period (Basis: Regulation 2-1-233)
41. To determine compliance with Parts 32-40 above, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:
  - a. Quantities of each type of liquid stored at this source on a monthly basis.
  - b. If a material other than those specified above are stored, POC/NPOC and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with all requirements, on a monthly basis;
  - c. Monthly throughput and/or emission calculations shall be totaled for each consecutive twelve-month period.

All records shall be retained on-site for five years, from the date of entry, and made available for inspection by District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District Regulations. (Basis: Cumulative Increase; Toxics)

## **RECOMMENDATION**

It is recommended that an Authority to Construct be granted to Tesoro Refining & Marketing Company LLC for the following sources:

### **S-638 Tank A-638**

**Additions of a new tank suction line and a floating suction arm**



**S-1464 Tank A-868**

**Change in Operation storing liquids with true vapor pressure less than 3.0 psia**

**S-1555 Reformate Splitter**

**New Overhead Air Coolers**

**Replacing the column trays with new RFS column structured packing**

**Feed and draw nozzle relocations**

**New C7 Side Draw Nozzle**

**New C7 Side Draw Pumps**

**New C7 Side Draw Cooler**

**Replacement Heavy Reformate Trim Cooler bundle**

It is also recommended that an Authority to Construct be approved for the piping and pump changes that will Alter the following sources:

**S-26 Tank A-26, External Floating Roof Tank**

**S-33 Tank A-33, External Floating Roof Tank**

**S-637 Tank A-637, External Floating Roof Tank**

**S-639 Tank A-639, External Floating Roof Tank**

**S-640 Tank A-640, External Floating Roof Tank**

**S-641 Tank A-641, External Floating Roof Tank**

**S-692 Tank A-692, External Floating Roof Tank**

**S-711 Tank A-711, External Floating Roof Tank**

**S-926 No. 2 Reformate Splitter Reboiler (F26)**

By: \_\_\_\_\_

Arthur P Valla  
Senior Air Quality Engineer  
10/16/2017

**Application 27990, Avon Wharf MOTEMS Project  
ENGINEERING EVALUATION  
Tesoro Refining & Marketing Company LLC  
PLANT NO. 14628  
APPLICATION NO. 27990  
AVON WHARF MOTEMS PROJECT**

**BACKGROUND**

The Tesoro Refining & Marketing Company LLC. (Tesoro) is applying for an Authority to Construct and Permit to Operate for the Avon Wharf MOTEMS Project, including the following equipment:

<b>S-1560</b>	<b>Avon Wharf Berth 1A, abated by</b>
<b>A-1560</b>	<b>Vapor Recovery System for Avon Wharf Berth 1A</b>
<b>S-1561</b>	<b>Emergency Diesel Generator, Caterpillar Model C9, 398 Bhp</b>
<b>S-1562</b>	<b>East Avon Wharf Emergency Diesel Firewater Pump, Caterpillar Model C18, 700 Bhp</b>
<b>S-1563</b>	<b>West Avon Wharf Emergency Diesel Firewater Pump, Caterpillar Model C18, 700 Bhp</b>
<b>S-1564</b>	<b>Recovered Oil Fixed Roof Tank A-938, 3800 gallons</b>
<b>S-1567</b>	<b>East Diesel Tank, 1000 gallons, exempt per Regulation 2-1-123.3.2</b>
<b>S-1568</b>	<b>West Diesel Tank, 1000 gallons, exempt per Regulation 2-1-123.3.2</b>

This Project also includes the following permitted equipment:

<b>S-100</b>	<b>Avon Wharf Loading Berth 1 (to be decommissioned)</b>
<b>S-108</b>	<b>Avon Wharf Berth 5 (to be demolished)</b>
<b>S-1469</b>	<b>Avon Wharf Firewater Pump Engine, 400 HP (to be demolished)</b>
<b>S-1508</b>	<b>Avon Berth 1 Recovered Oil Tank (to be decommissioned)</b>
<b>S-1509</b>	<b>Avon Berth 5 Recovered Oil Tank (to be demolished)</b>

**PROJECT DESCRIPTION**

The existing Avon Wharf consists of 2 loading berths - Berth 1 (S-100) and Berth 5 (S-108). Berth 5 has not been operated since June, 2009. The Avon Wharf is required to undergo seismic upgrades to meet the higher building standards requirements of the US Coast Guard Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS). These requirements also include upgrading the fire suppression system at the Wharf and health and safety improvements. This project does not change the Wharf loading/unloading operations, the current loading capacity or marine cargo carrier traffic. Existing refinery pumps and pipeline hydraulic limitations dictate loading capacity. There will be no increase in pump flow rates or in the hydraulic limitations on the pipelines.

The piping manifold with the loading hoses is being relocated approximately 60 feet to the east, adjacent to the existing Wharf structure. The District considers this to be a new loading berth, pursuant to Regulation 2-1-232, and therefore is treating cargo carrier emissions associated with this berth as new emissions subject to offsets. Cargo carrier emissions are calculated based on a throughput limit of 30 million barrels per year. This is the same limit as the existing grandfathered throughput limit for Berth 1, which is being decommissioned. The existing vapor recovery system will be demolished and replaced with a new vapor

recovery system to capture emissions from loading operations at the Wharf. The project also includes one new emergency generator and two new fire water pumps. A new recovered oil tank will replace the existing recovered oil tank on Berth 5. The new tank will collect oil retained in the loading hoses and collect rainfall during the rainy season.

Berth 1 (S-100) will be decommissioned, and Berth 5 (S-108) will be demolished. The Recovered Oil Tanks A-906 (S-1508) will be decommissioned, and A-907 (S-1509) will be demolished. These permits will be surrendered and archived. The Avon Wharf Diesel Firewater Pump (S-1469) will be demolished. The S-1469 permit will be surrendered once demolition is complete.

### **Avon Wharf Berth 1A (S-1560)**

The existing Avon Wharf (Berths 1 and 5) are grandfathered sources that were never granted an authority to construct by the District. The capacity limits in Tesoro's Title V Permit are limits that serve as reporting thresholds and are not firm limits that can be used as noncompliance with the permit (as detailed in Title V Standard Condition J.2).

The BAAQMD considers the seismic upgrade of the Avon Wharf to be a new source because Tesoro is constructing a new Berth 1A, adjacent to the existing Berth 1. Thus source S-1560 Avon Berth 1A is subject to Regulation 2, Rule 2, New Source Review. Emissions specific to the S-1560 Avon Berth 1A source are new fugitive components, loading emissions and marine cargo carrier emissions (per the 2-2-215 definition of Facility). Marine cargo carrier emissions are subject to BAAQMD 2-2-302 and 2-2-303 (Offsets). Marine cargo carrier emissions are not subject to BACT, TBACT or PSD per 2-2-206, 2-2-244 and 2-2-215.2, respectively. Tesoro will be offsetting the marine cargo carrier emissions estimated from product transfer at the Avon Wharf at a rate of 30,000,000 barrels per year. This capacity is equivalent to the current grandfathered capacity of Avon Wharf Berth 1, which will be decommissioned. Upon issuance of this permit, the Avon Wharf Berth 1A will have a fully offset federally enforceable product transfer limit of 30,000,000 barrels per year.

There are 12 existing pipelines from the refinery to the Avon Wharf. Nine of the 12 existing lines are in hydrocarbon service. The end of each pipeline will be demolished, and approximately 350 feet of the 12 existing pipelines will be constructed from Isolation Station 1 to the new Berth 1A.

### **Marine Vapor Recovery (A-1560)**

The existing marine vapor recovery system, A-14, will be replaced by a new Marine Vapor Recovery System, A-1560. The vapor recovery system recovers hydrocarbon vapors during the loading of gasoline and other volatile compounds into marine cargo carriers. The recovered vapors will continue to be sent to the existing vapor recovery system at the No. 1 Gas Plant (A-14), and are used in Tesoro's 40-pound fuel gas system. There will be no change to the size or to the compression capacity or compressing rates and there will be no changes to the tie in to No. 1 Gas Plant or the 40-pound fuel gas system. The abatement device will be as efficient, or more efficient than, the abatement device being replaced.

The A-1560 Vapor Recovery System includes a displaced gas enrichment system that injects a propane/propylene mixture into the displacement gases when the cargo carrier tank being loaded contains vapors that will adversely impact the fuel gas system (e.g., high oxygen content).

The replacement vapor recovery system will be skid mounted. The components are the same as in the current system and include the following equipment and safety devices:

- Oxygen Analyzer
- Detonation Arrestor
- Electronic Control Panel
- Vapor Piping, instruments and valves
- Enrichment Gas Piping and Instruments
- Pressure/Vacuum Relief Valve with Flame Screen

### **Emergency Standby Diesel IC Engine Generator Set (S-1561)**

The Emergency Standby Diesel IC Engine Generator Set at the Avon Wharf will be a permanent stationary source. The engine will only be used when power is lost to the Wharf facilities. The proposed engine is a Caterpillar Model C9 with a 2015 engine rated at 398 brake horsepower (bhp). The engine is 4-stroke-cycle, in-line, 6-cylinder. The aspiration is turbocharged and air-to-air aftercooled. The engine is EPA certified and the Reference EPA Standard Engine Family is FCPXL08.8NZS. The proposed new emergency standby IC engine will have a maximum fuel usage of approximately 19.4 gallons of diesel fuel per hour. Testing and maintenance operation will be limited to 50 hours per year per year, based on the PM10 standard in the Airborne Toxic Control Measure for Stationary Compression Ignition Engines (ATCM). The new engine complies with the Airborne Toxic Control Measure for Stationary Compression Ignition Engines (ATCM), NSPS Subpart III, MACT Subpart ZZZZ, and will meet the Best Available Control Technology (BACT).

### **East and West Fire Water Pumps (S-1562 and S-1563)**

The two new emergency fire water pumps with diesel IC engine drivers at the Avon Wharf will be permanent stationary sources. The engines are identical and will be used for emergency operation. The proposed engines are Caterpillar Model C-18, model year 2012, rated at 700 bhp. The engines are 4-stroke-cycle, in-line, 6-cylinder. The aspiration is turbocharged and air-to-air aftercooled. The engines are EPA certified and the Reference EPA Standard Engine Family is CCPXL18.1NZS. The proposed IC engines will each have a maximum fuel usage of approximately 35.9 gallons of diesel fuel per hour. Testing and maintenance will be limited to 70 hours per year per IC engine, based on the direct-drive firewater pump provisions of the Airborne Toxic Control Measure for Stationary Compression Ignition Engines (ATCM). The new engines will comply with the Airborne Toxic Control Measure for Stationary Compression Ignition Engines (ATCM), NSPS Subpart III, MACT Subpart ZZZZ, and will meet the Best Available Control Technology (BACT) for this IC engine.

### **Recovered Oil Tank (S-1564)**

S-1564, Recovered Oil Tank (Tank A-938) is a double walled fixed roof tank. The new tank will be 6 feet in width, 16 feet long and 5.5 feet tall, with a capacity of 3,800 gallons. Tank S-1564 will contain water runoff and recovered oil from the Avon Wharf. The proposed throughput will be 250 thousand gallons (kgal)/year. While most of the throughput will be water, recovered oil at the Avon Wharf would be clean product, predominantly gasoline and diesel. Therefore the vapor pressure can vary. The tank will be at ambient temperature (approximately 70 degrees F). Since the new tank will have submerged fill, Tesoro requests that the tank be permitted to contain materials with true vapor pressure less than 11 pounds per square inch (psia).

The installation of the tank will include new piping and fugitive components. Welded piping will be used, to minimize the number of flanges and connectors for the project.

### **Diesel Tanks (S-1567 and S-1568)**

Each Firewater Pump will be serviced by a Diesel fuel tank. Each tank has a diameter of 4 feet, and a height of 9.4 feet, for a total capacity of 880 gallons. Diesel fuel has an initial boiling point above 302°F and emission calculations demonstrate that emissions of naphthalene and xylene are below the Regulation 2, Rule 5 trigger levels. Therefore, pursuant to Regulation 2-1-123.3.2, these tanks are exempt from the permitting requirements of Regulations 2-1-301 and 2-1-302.

## **EMISSION CALCULATIONS**

The requirements for evaluating a new source are detailed in Regulation 2-2-604, Emission Increase Calculation Procedures, New or Modified Sources. The applicable sub-section is 2-2-604.1:

- 2-2-604 Emission Increase Calculation Procedures, New or Modified Sources:** The APCO shall determine the annual emission increase, expressed as tons per year, from:
- 604.1 A new source based on the maximum emitting potential of the new source or the maximum permitted emission level of the new source, approved by the APCO, subject to federally enforceable limiting conditions.
  - 604.2 A modified source by subtracting either the baseline annual emission rate, as calculated using the methodology in Section 2-2-605, from the new maximum permitted emission level of the modified source, approved by the APCO, subject to federally enforceable limiting conditions.

Emissions for this project are estimated for each of the following new sources:

- A. S-1560 Avon Wharf Berth 1A
- B. S-1561 Emergency Diesel Generator
- C. S-1562 and S-1563 East and West Avon Wharf Emergency Diesel Firewater Pump
- D. S-1564 Recovered Oil Fixed Roof Tank A-938
- E. Project Fugitive Emissions

Additional emission calculations are included to determine contemporaneous emissions reductions for the shutdown of Berth 1, including the following:

- F. Berth 1 Marine Cargo Carrier Emissions
- G. Berth 1 Loading Operations Emissions
- H. Berth 1 Vapor Recovery System

There are no contemporaneous emissions reductions associated with the shutdown of Berth 5 because Berth 5 was not operated during the 3-year period that is evaluated to determine the emissions.

**A. S-1560 Avon Wharf Berth 1A**

Emissions for S-1560 are Marine Cargo Carrier Emissions and Product Loading Emissions.

**1. Marine Cargo Carrier Emissions**

Marine cargo carrier emissions are calculated based on the methodology and assumptions included in Appendix A of this evaluation (which are based on the ARB, Port of Long Beach and Port of Los Angeles inventory methodologies).

Emissions were calculated using a three-year baseline from August 2013 through July 2016.

Emissions were estimated for each call. The baseline is used to calculate contemporaneous emissions reductions that will be achieved when the existing Berth 1 is decommissioned. The baseline emission calculations are also used to derive overall emission factors used to calculate S-1560 permitted emissions and offset requirements. This approach for calculating future permitted emissions assumes that the future operation of S-1560 Berth 1A will be similar to the operation of Berth 1 during the 3-year baseline (i.e., the same ratio of tankers to barges, the same ratio of material loaded/unloaded to the barge/tanker material storage capacity, the same ratio of material loading to material unloading, and the same mix of products that were loaded at Berth 1).

Tesoro has provided a cargo carrier emissions workbook that summarizes the quantity of material throughput and estimates emissions from tankers, barges and the required tug boats for the baseline period of August 2013 through July 2016. These emissions are summarized in the following table.

Year	Month	Total Barrels Throughput	Emissions Total, Lbs				
			NO <sub>x</sub>	CO	POC	PM <sub>10</sub>	SO <sub>2</sub>
2013	August		8,549.79	1,472.75	497.20	261.39	1,153.61
2013	September		6,100.78	1,055.77	345.84	178.76	775.06
2013	October		6,833.38	964.13	365.00	213.44	1,042.95
2013	November		10,385.91	1,733.58	577.25	309.47	1,386.73
2013	December		14,340.70	2,308.44	805.04	434.21	1,982.76
2014	January		10,221.23	1,999.18	616.38	230.09	258.18
2014	February		9,267.36	1,585.26	495.13	192.22	223.10
2014	March		12,635.21	2,268.44	755.93	284.17	334.37
2014	April		14,720.62	3,006.69	854.23	328.32	337.00
2014	May		7,894.48	2,692.51	556.47	211.05	137.28
2014	June		8,867.91	1,731.45	531.93	199.68	219.15

Year	Month	Total Barrels Throughput	Emissions Total, Lbs				
			NO <sub>x</sub>	CO	POC	PM <sub>10</sub>	SO <sub>2</sub>
2014	July		12,136.87	1,680.95	640.83	244.37	317.89
2014	August		6,740.00	1,249.51	388.88	146.70	166.63
2014	September		7,980.54	1,208.26	456.97	171.06	211.42
2014	October		9,530.00	1,507.91	535.26	197.58	239.06
2014	November		7,686.63	2,505.04	538.42	204.15	150.40
2014	December		11,093.49	1,792.38	649.83	254.05	320.68
2015	January		5,928.09	2,064.79	402.51	162.89	89.77
2015	February		8,809.42	3,224.47	621.97	257.80	109.50
2015	March		9,304.27	2,563.07	578.96	230.56	160.76
2015	April		5,388.30	969.91	337.08	125.11	148.50
2015	May		5,703.16	869.55	347.65	130.89	171.92
2015	June		2,769.96	413.50	155.42	56.37	69.69
2015	July		7,394.39	1,477.44	448.23	171.97	180.96
2015	August		2,592.25	405.27	142.04	56.49	72.56
2015	September		1,334.12	193.94	73.38	28.39	37.10
2015	October		0.00	0.00	0.00	0.00	0.00
2015	November		0.00	0.00	0.00	0.00	0.00
2015	December		2,411.88	319.76	127.75	50.52	68.67
2016	January		5,055.83	824.93	288.57	109.19	126.84
2016	February		486.54	336.54	52.63	19.64	0.45
2016	March		1,186.71	178.40	67.02	25.02	31.58
2016	April		2,042.56	304.07	129.68	53.21	75.98
2016	May		13,699.74	2,152.99	722.66	285.50	352.99
2016	June		7,783.99	1,387.19	450.56	168.19	189.21
2016	July		5,851.16	1,719.08	385.05	145.25	110.27
<b>Baseline Total</b>			<b>252,727</b>	<b>50,167</b>	<b>14,942</b>	<b>6,138</b>	<b>11,253</b>
<b>Baseline Totals, tons</b>			<b>126.364</b>	<b>25.084</b>	<b>7.471</b>	<b>3.069</b>	<b>5.627</b>



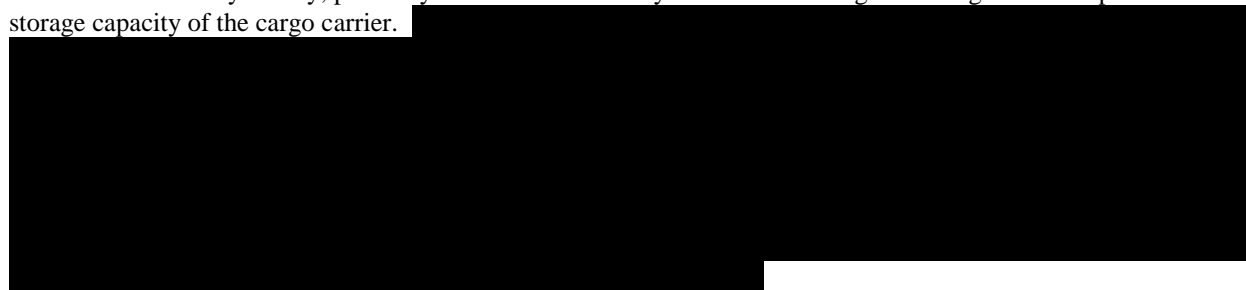
Using the total material throughputs, overall emission factors can be derived in terms of lbs of pollutant per 1000 barrels of material throughput. The following table summarizes the overall emission factors derivation.

Year	Month	Total Barrels Throughput	Emissions Factors Lbs/1000Barrels				
			NO <sub>x</sub>	CO	POC	PM <sub>10</sub>	SO <sub>2</sub>
2013	August						
2013	September						
2013	October						

Year	Month	Total Barrels Throughput	Emissions Factors Lbs/1000Barrels				
			NO <sub>x</sub>	CO	POC	PM <sub>10</sub>	SO <sub>2</sub>
2013	November						
2013	December						
2014	January						
2014	February						
2014	March						
2014	April						
2014	May						
2014	June						
2014	July						
2014	August						
2014	September						
2014	October						
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2015	October						
2015	November						
2015	December						
2016	January						
2016	February						
2016	March						
2016	April						
2016	May						
2016	June						
2016	July						
Total Materials							
Average Emission Factor							
Maximum Emission Factor							
Minimum Emission Factor							



Emission factors vary widely, primarily due to the size of any individual loading/unloading event compared to the storage capacity of the cargo carrier.



Due to the wide range of emission factors, using an average emission factor to estimate permitted emissions for S-1560 is not appropriate, because the maximum PTE could be as high as the emissions derived by the maximum emission factor. However, using the maximum emission factor would in all likelihood overestimate future emissions. Therefore, the approach to estimate future permitted emissions is to derive the maximum consecutive 12-month emission factor. The following table summarizes the overall consecutive 12-month emission factors derived from the 3-year baseline.

Consecutive 12-Months ending		12-Month Throughput Barrels	Emissions Factors Lbs/1000Barrels				
Year	Month		NO <sub>x</sub>	CO	POC	PM <sub>10</sub>	SO <sub>2</sub>
2014	July						
2014	August						
2014	September						
2014	October						
2014	November						
2014	December						
2015	January						
2015	February						
2015	March						
2015	April						
2015	May						
2015	June						
2015	July						
2015	August						
2015	September						
2015	October						
2015	November						
2015	December						
2016	January						
2016	February						
2016	March						
2016	April						
2016	May						
2016	June						
2016	July						
Average Emission Factor							

Consecutive 12-Months ending		12-Month Throughput Barrels	Emissions Factors Lbs/1000Barrels				
Year	Month		NO <sub>x</sub>	CO	POC	PM <sub>10</sub>	SO <sub>2</sub>
Maximum 12-Month Emission Factor							

Tesoro has no plans to make significant changes to the Berth 1A calls, compared to the Berth 1 calls. Thus the expectation is that

- 1.) the ratio of tankers to barges,
- 2.) the ratio of material loaded/unloaded to the barge/tanker material storage capacity,
- 3.) the ratio of material loading to material unloading, and
- 4.) the mix of products,

will not differ significantly from what occurred in the 3-year baseline period. Therefore, Tesoro is confident that this 12 consecutive month maximum emission factor approach is valid to conservatively estimate future emissions.

Applying these maximum consecutive 12-month emission factors to the 30,000,000 barrels per year throughput results in the following future emissions.

Berth 1A Total Annual Marine Cargo Carrier Emissions, 30,000,000 Barrels/year					
Pollutant	NO <sub>x</sub>	CO	POC	PM <sub>10</sub>	SO <sub>2</sub>
Emissions Factors Lbs/1000Barrels	12.588	2.295	0.716	0.277	0.625
Total Emissions, Lbs	377,649	68,850	21,486	8,313	18,744
Total Emissions, Tons	188.825	34.425	10.743	4.157	9.372

## 2. Product Loading Emissions

As part of the cargo carrier emission calculations for each cargo carrier call, Tesoro also provided the quantity of material loaded into each cargo carrier. During the 3-year baseline period, of the 180 cargo carrier calls at Berth 1, 115 of the calls included loading operations. Tesoro tracked the quantity of crude oil, gasoline (including blending components), diesel, jet naphtha, jet kerosene and residual oil loaded.

Emission calculations are based on emission factors from AP-42, Chapter 5.2. Gasoline loading is subject to control requirements of Regulation 8, Rule 44, Section 304 which specifies a 95% emission reduction requirement. In addition, BACT for Marine Loading requires a 98.5% capture and control efficiency.

A-1560 Marine Vapor Recovery will be installed to comply with the abatement requirements for gasoline loading. A-1560 collects the loading emissions, provides enrichment gas, if necessary, to ensure the gases are below the explosion limit, and discharges the enriched marine loading emissions into the A-14 vapor recovery system. A-14 collects emissions from a variety of sources at the refinery. The combined emissions are sent to the No. 1 Gas Plant where the gases are compressed, sent to fuel gas processing, and ultimately end up in the refinery 40# fuel gas system. 40# fuel gas is used in furnaces S-908, S-909 and S-912 in the No. 1 Feed Prep Unit and in the No. 3 Crude Unit.

Tesoro is already subject to a 99.5% destruction efficiency for S-908, S-909, and S-912 in Permit Conditions 13605 (for Alkyl at Railcar Rack and Storage Tank S-1528 and S-323) and 21100 (for Naphtha/Heavy Reformate Tank S-

1496). Tesoro is also subject to a 98% destruction efficiency for S-908, S-909, and S-912 in Permit Conditions 20099 (for Oil Water Separator S-532), However, the 98% and 99.5% destruction efficiencies apply only to the furnaces because the measurement is specified across the combustion devices. The BACT requirement of 98.5% capture and control efficiency is a better basis for estimating loading emissions at S-1560 Berth 1A. This 98.5% overall efficiency provides a conservative emissions estimate for not only the furnace destruction efficiency (expected to exceed 99.5%), but also the capture system emissions at the berth, the pipeline to the No 1 Gas Plant, and any losses at the gas compression, the fuel gas treating, and the fuel gas distribution system to the furnaces. Tesoro expects the capture system at Berth 1A to be 100% efficient because the A-1560 Vapor Recovery System operates at negative pressure during loading operations.

S-1560 Loading Emissions during the 3-year baseline period are summarized in the following table.

Material	Tanker or Barge	AP-42 Uncontrolled Emission Factor, lb/1000gal	Total Quantity Loaded During 3-year Baseline, Barrels	Uncontrolled Emissions, lbs	Capture and Control Efficiency	Controlled Emissions, lbs
[REDACTED]						
Total 3-Year Baseline				104,849		5,359
Annual Average				34,950		1786
Annual Average, tons						0.893



Tesoro is subject to 8-44-304 Emission Control Requirements. 8-44-304.1 provides 2 options for compliance. The first option is to limit emissions to no more than 2 lbs/1000 barrels of organic liquid. The second option is to reduce emissions by at least 95 percent by weight from uncontrolled conditions. Although Tesoro is only required to meet one of these options, its operation meets both options.

[REDACTED] Thus, gasoline loading is expected to be in compliance with 2 lbs/1000 barrels emissions limit of the 8-44-304.

Tesoro will be permitted to load other regulated materials besides gasoline. 8-44-304 has an alternative emission control standard requiring emission reductions of at least 95% by weight. All of Tesoro's regulated material loading is expected to meet the alternative emission control option of 8-44-304 since the loading emissions capture and control efficiency is 98.5%, higher than the 95% emissions reduction requirement.

Per Regulation 8-44-301.2, Tesoro is also required to comply with 8-44-304 emission controls when loading non-regulated materials into a ship cargo vessel in which the previous cargo was a regulated material. Tesoro is expected to comply with this emissions control requirement because the ships that will call on Berth 1A will keep

records of the previous cargo, and Tesoro will have access to these records. Therefore, Tesoro will know, ahead of time, when planning on loading a non-regulated material, that the gas displaced from the cargo tank will need to be routed to the A-1560 Marine Vapor Recovery System. Note that per 8-44-220, a cargo tank is no longer considered to have held a prior cargo of a regulated organic liquid if it has been vented of organic gases and cleaned with an unregulated organic liquid or inorganic liquid. The emission factors used in the table above are applicable for a typical overall situation based on observations that 41% of tested ship compartments were uncleaned, 11% ballasted, 24% cleaned, and 24% gas-freed (for barges, 76% were uncleaned).

Future Berth 1A Loading Emission estimates are summarized in the following table.

Description	Units	Value
Total Annual Material	Barrels	30,000,000
Throughput	1000 gallons	1,260,000
Permitted Limit	Tons	20,000

This future loading emissions estimate is based on the same ratio of materials loaded as in the 3-year baseline. The following table summarizes the material throughputs associated with this future emissions estimate.

Material	Tanker or Barge	Berth 1A Material Loading Throughputs, Barrels/year

There will be variation in overall loading throughputs and emission rates based on the relative amounts of each material loaded in a year, and may not be exactly the same as during the 3-year baseline period. In order to operate S-1560 with the flexibility required, Tesoro has requested that POC emissions from S-1560 Loading Operations be permitted at 20 tons/year. This will be a federally enforceable fully offset limit. Tesoro will keep the records needed to perform the calculations necessary to demonstrate compliance with this annual loading emission limit.

The 20 ton/year POC limit for loading operations will allow greater quantities of material loading compared to the materials loaded during the 3-year baseline. This allowance deviates from the primary assumption in the determination of future ship emissions – there will not be any significant changes to the Berth 1A calls, compared to the Berth 1 calls. In particular, the 20 ton/year limit potentially changes the ratio of material loaded to material unloaded. In order to determine if this change will impact ship emissions, a review of the 3-year baseline ship calls was performed. Ship calls that only involved loading operations were reviewed. The results of this review found that the average emission factor for loading-operations-only ship calls was lower than the average emission factor for all ship calls. The conclusion is that allowing an increase in the relative proportion of loading versus unloading operations potentially reduces ship emissions. Therefore, there is no concern that allowing 20 tons/year POC emissions for loading operations will adversely affect ship emissions.

Peak daily emissions for the loading operations are determined by a review of each cargo carrier call during the 3-year baseline. The results indicate there are days where POC emissions from gasoline loading exceed 10 lbs/highest day.

The total S-1560 emissions are summarized in the following table.

Berth 1A Total Annual Emissions, Tons -- 30,000,000 Barrels/year					
Pollutant	NO <sub>x</sub>	CO	POC	PM <sub>10</sub>	SO <sub>2</sub>
Marine Cargo Carrier	188.825	34.425	10.743	4.157	9.372
Material Loading			20.000		
<b>Total Emissions, Tons</b>	188.825	34.425	30.743	4.157	9.372

**B. S-1561 Emergency Diesel Generator**

Emergency standby diesel internal combustion (IC) engine criteria pollutant emissions from the combustion of diesel fuel include nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), precursor organic compounds (POC), and particulate matter less than 10 microns in diameter (PM<sub>10</sub>). Emissions are estimated based the EPA "D2 Cycle Averages" Certification level for Engine Family FCPXL08.8NZS.

Sulfur dioxide is calculated based on 15 ppm sulfur content in diesel fuel. This ultra-low diesel fuel is required to be used in California. SO<sub>2</sub> emissions are calculated by mass balance with 0.0015% sulfur in fuel by weight, using the engine peak fuel rate specification. Emissions are estimated for a 398 brake horsepower (bhp) IC engine. Annual emissions are limited to 50 hours of operation (testing and maintenance) to comply with the CARB ATCM PM<sub>10</sub> standard. S-1561 will have a fully offset federally enforceable limit of 50 hour/year allowed for testing and maintenance operation.

S-1561 emissions are summarized in the following table.

Pollutant	Emission Factor (g/hp-hr)	Emission Factor (lb/hp-hr)	Hourly Emissions (lbs/hour)	24-hr Daily Emissions (lbs/day)	Annual Emissions (lbs/yr)	Annual Emissions (tons/year)
NO <sub>x</sub>	2.55	0.00562	2.24	53.7	112	0.0559
CO	1.00	0.00221	0.88	21.1	43.9	0.0219
POC	0.18	0.00040	0.158	3.79	7.90	0.00395
SO <sub>2</sub>	0.00177	0.0000039	0.0016	0.04	0.078	0.00004
PM <sub>10</sub>	0.10	0.00022	0.088	2.106	4.388	0.00219

Notes: Maximum Annual Emissions are calculated using 50 hours/year allowed for testing and maintenance operation.

NO<sub>x</sub>, CO, POC and PM<sub>10</sub> emissions factors are based on EPA "D2 Cycle Averages" certification.

SO<sub>2</sub> emission factor is based on mass balance and 0.0015% sulfur in fuel by weight, and a maximum fuel rate of 19.4 gallons per hour.

**C. S-1562 and S-1563 East and West Avon Wharf Emergency Diesel Firewater Pump**

East and West Fire Water Pump IC engines have criteria pollutant emissions from the combustion of diesel fuel include nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), precursor organic compounds (POC),

and particulate matter less than 10 microns in diameter (PM10). Emissions are estimated based the EPA “C1 Cycle Averages” Certification level for Engine Family CCPXL18.1NZS.

Sulfur dioxide is calculated based on 15 ppm sulfur content in diesel fuel. This ultra-low diesel fuel is required to be used in California. SO2 emissions are calculated by mass balance with 0.0015% sulfur in fuel by weight, using the engine peak fuel rate specification. Emissions are estimated for a 700 brake horsepower (bhp) IC engine. Annual emissions are limited to 70 hours of operation (testing and maintenance) each, to comply with the CARB ATCM PM10 standard.

The District normally does not permit an emergency standby firewater pump for more than 50 hours of testing and maintenance operation. However, emergency firewater pumps are addressed separately in the ATCM. 93115.6(a)(4)(A)(1)(c) allows for the following:

Hours of operation limited to ‘hours necessary to comply with testing requirements of the National Fire Protection Association (NFPA) 25 – Standard for the Inspection Testing and Maintenance of Water-Based Fire Protection Systems,’ 2002 edition, which is incorporated here by reference.’ No limit for emergency and emission testing for compliance with this regulation.

The NFPA 25, Chapter 8 Fire Pumps, Section 8.3 Testing, states that tests must be conducted weekly for a minimum of 30 minutes. The Tesoro Fire Marshall has determined that allowing the IC firewater pump engines to run for one hour during each weekly testing operation is better for the maintenance of the IC engines. In addition to the weekly testing, annual hydraulic testing is required for several hours. To allow for the required testing and to accommodate any additional testing associated with repairs, each engine will be permitted for 70 hours per year for testing and maintenance to ensure compliance with the NFPA 25 Standard. S-1562 and S-1563 will each have a fully offset federally enforceable limit of 70 hour/year allowed for testing and maintenance operation.

S-1562 and S-1563 emissions for each engine are summarized in the following table.

Pollutant	Emission Factor (g/hp-hr)	Emission Factor (lb/hp-hr)	Hourly Emissions (lbs/hour)	24-hr Daily Emissions (lbs/day)	Annual Emissions (lbs/yr)	Annual Emissions (tons/year)
NOx	2.87	0.00633	4.43	106	310	0.155
CO	1.72	0.00379	2.65	63.7	186	0.093
POC	0.07	0.00015	0.108	2.59	7.6	0.0038
SO <sub>2</sub>	0.00177	0.0000039	0.003	0.07	0.19	0.0001
PM10	0.07	0.00015	0.108	2.59	7.6	0.0038

Notes: Maximum Annual Emissions are calculated using 70 hours/year allowed for testing and maintenance operation.

NOx, CO, POC and PM10 emissions factors are based on EPA "C1 Cycle Averages" certification.

SO<sub>2</sub> emission factor is based on mass balance and 0.0015% sulfur in fuel by weight, and a maximum fuel rate of 35.9 gallons per hour.

**D. S-1564 Recovered Oil Fixed Roof Tank A-938**

The annual emissions are calculated using EPA's TANKS 4.0.9d software. The actual tank dimensions will be 6 feet in width, 16 feet long and 5.5 feet tall, with a capacity of 3,800 gallons. TANKS 4.0.9d does not have a

rectangular tank option, so a horizontal fixed roof tank was modeled with the appropriate height and a calculated “effective” diameter to match the total tank volume. The TANKS software input is summarized in the following table.

Tank Characteristics	Actual	Model Input
Diameter, feet	6 by 16	11.06
Shell Height, feet	5.5	5.5
Maximum Fill Height, feet	4.5	4.5
Average Fill Height, feet	4.5	4.5
Working Volume, cubic feet	45.27	45.27
Working Volume, gallons	3234.04	3234.04
Shell Color	White	White
Cone Height	0 (flat roof)	0
Cone Slope (ft/ft)	0	0.06 (default)

The material in the tank will contain some gasoline, diesel, and other hydrocarbon material that originates in the Berth 1A drain system (e.g., a few gallons drained from the loading/unloading hoses after material transfer to/from the cargo vessel is completed). The majority of the liquid will be water from Berth 1A rain runoff. Even though the tank will likely contain mostly water, organic material will be less dense and 'float' on the surface of the stored liquid. The emissions estimate is conservative based on 250,000 gallons/year of gasoline with a maximum true vapor pressure of 11 psia. S-1564 will have a fully offset federally enforceable throughput limit of 250,000 gallons per year.

The results of the TANKS emissions estimate are summarized in the following table.

Source	S-1564 Uncontrolled POC Emissions	
	Average Daily lbs/day	Annual, lbs/year
S-1564, Tank A-938, Max TVP = 11 psia	8.67	3166

The average daily emissions are calculated by dividing the annual emissions by 365 days/year. However, the EPA Tanks program is not intended to calculate short term emissions, so the average daily emission rate needs further analysis.

The highest day emissions are calculated as follows, using tank volume and assuming on the highest day, the tank will be near empty, will contain hydrocarbon gas created by the organic material floating on the tank contents, the tank will be completely filled within a 24-hour period, and the liquid filling the tank will displace the gas in the tank.

$$\text{Maximum Daily Emissions} = 3800 \text{ gal/day} / 7.48 \text{ gal/cf} * 16 \text{ lb/lb-mole} / 379 \text{ cf/lb-mole} = 21.4 \text{ lb/day}$$

Therefore, the S-1564 emissions are summarized in the following table.

Source	S-1564 Uncontrolled POC Emissions		
	Maximum Daily lbs/day	Annual, lbs/year	Annual, tons/year
S-1564, Tank A-938, Max TVP = 11 psia	21.4	3166	1.583

**E. Project Fugitive Emissions**

Fugitive emission calculations are based on the projected count of fugitive components, subdivided into process service, and applying the unit component emission factor that represents each components potential to emit. These potential to emit emission factors are derived from Method 3 Correlation Equation of the 1999 CAPCOA guideline (Reference Table IV-3a) using the Regulation 8, Rule 18 Equipment Leak Standards.

While Regulation 8, Rule 44, Section 305 Equipment Leaks is the regulatory requirement for Berth 1A, Tesoro has agreed to meet the requirements of Regulation 8, Rule 18, Equipment Leaks, which are more stringent. The following table summarizes the emission factors used to estimate fugitive emissions.

Component	Service	Correlation Equation (kg/hr)	8-18 Leak Standard (ppm)	Emission Factor kg/hr	Emission Factor lb/hr
Valves	All	2.27E-06(ppm) <sup>0.747</sup>	100	7.08E-05	1.56E-04
Pump seals	All	5.07E-05(ppm) <sup>0.622</sup>	500	2.42E-03	5.33E-03
Connectors	All	1.53E-06(ppm) <sup>0.736</sup>	100	4.54E-05	1.00E-04
Flanges	All	4.53E-06(ppm) <sup>0.706</sup>	100	1.17E-04	2.58E-04
Other (PRV)	All	8.69E-06(ppm) <sup>0.642</sup>	500	4.70E-04	1.04E-03

Total estimated fugitive components for the project have been provided by Tesoro, and are summarized in the following table.

Component Type	Service Type	Potential Emission Factor (lb/hour/source)	S-1560 Berth 1A	A-1560 Vapor Recovery	S-1564 Slop Tank	Total Components	Emissions lb/day
Valves	Gas/Vapor	1.56E-04	0	12	0	12	0.045
	Light Liquid	1.56E-04	25	0	4	29	0.109
	Heavy Liquid	1.56E-04	17	0	0	17	0.064
Flanges/ Connectors	Gas/Vapor	2.58E-04	0	64	0	64	0.396
	Light Liquid	2.58E-04	40	0	14	54	0.334
	Heavy Liquid	2.58E-04	5	0	0	5	0.031
PSV's	Gas/Vapor	1.04E-03	0	1	0	1	0.025
	Light Liquid	1.04E-03	2	0	3	5	0.124
	Heavy Liquid	1.04E-03	3	0	0	3	0.075
Pumps	Light Liquid	5.33E-03	6	0	2	8	1.024
	Heavy Liquid	5.33E-03	0	0	0	0	0
Total Fugitive Emissions					Lbs/Day	2.227	
					Lbs/Year	813	
					Tons/Year	0.406	

**F. Berth 1 Marine Cargo Carrier Emissions**



The Berth 1 POC Emissions during the 3-year baseline period were derived in Part A above, and are summarized in the following table.

Year	Month	S-100 Berth 1 3-Year Baseline Emissions Total				
		NO <sub>x</sub>	CO	POC	PM <sub>10</sub>	SO <sub>2</sub>
Baseline Total, lbs		252,727	50,167	14,942	6,138	11,253
Annual Average, lbs		84,242	16722	4,981	2,046	3,751
Annual Average, tons		42.121	8.361	2.490	1.023	1.876

**G. Berth 1 Material Loading Operations Emissions**

Berth 1 Emissions from Loading Operations were estimated in Part A.2 above, and are summarized in the following table:

	Total Quantity Loaded During 3-Year Baseline, Barrels	Uncontrolled Emissions, lbs	Controlled Emissions, lbs
Total 3-Year Baseline		104,849	5,359
Annual Average		34,950	1,786
Annual Average Loading Operations POC Emissions, tons		17.475	0.893

**H. Berth 1 Vapor Recovery System Emissions**

The Berth 1 Vapor Recovery System was originally permitted in 1987 via Permit Application 31718. In this permit application, the vapor recovery system was constructed and the emission reductions were banked (Bank #83). In the calculations that determined the 260.8 tons of total emission reductions, 5.2 tons of fugitive emissions for the vapor recovery system were deducted. Therefore, the fugitive emissions for the Berth 1 Vapor Recovery System are fully offset.

The offset fugitive emissions estimated in Application 31718 need to be RACT adjusted to determine the contemporaneous emission reductions. This adjustment is calculated by applying the current PTE emission factors to the fugitive component counts that were the basis for the 1987 emissions. The following table summarizes the Berth 1 Vapor Recovery System fugitive emissions.

Component Type	Service Type	Potential Emission Factor (lb/hour/source)	Application 31718 Component Counts	Emissions lb/day
Valves	Gas/Vapor	1.56E-04	14	0.0524
	Light Liquid	1.56E-04	2	0.0075
	Heavy Liquid	1.56E-04	0	-
Flanges/ Connectors	Gas/Vapor	2.58E-04	32	0.1981
	Light Liquid	2.58E-04	0	-
	Heavy Liquid	2.58E-04	0	-
PSV's	Gas/Vapor	1.04E-03	0	-

Component Type	Service Type	Potential Emission Factor (lb/hour/source)	Application 31718 Component Counts	Emissions lb/day
	Light Liquid	1.04E-03	3	0.0749
	Heavy Liquid	1.04E-03	0	-
Pumps	Light Liquid	5.33E-03	1	0.1279
	Heavy Liquid	5.33E-03	0	0
Total Fugitive Emissions		Lbs/Day		0.4608
		Lbs/Year		168.21
		Tons/Year		0.0841

**TOTAL PROJECT CUMULATIVE INCREASE**

The following table summarized the cumulative increase for this project.

Avon MOTEMS Project Cumulative Increase, Tons					
Pollutant	NO <sub>x</sub>	CO	POC	PM <sub>10</sub>	SO <sub>2</sub>
<b>Emissions for New Sources</b>					
S-1560 Marine Cargo Carrier	188.8245	34.425	10.743	4.157	9.372
S-1560 Material Loading			20.000		
S-1561 Diesel Generator	0.056	0.022	0.004	0.002	0
S-1562 Diesel Firewater Pump	0.155	0.093	0.004	0.004	0
S-1563 Diesel Firewater Pump	0.155	0.093	0.004	0.004	0
S-1564 Recovered Oil Tank			1.583		
Fugitive Emissions			0.406		
<b>Total Emissions for New Sources</b>	189.191	34.633	32.744	4.167	9.372
<b>Contemporaneous Emissions Reductions</b>					
S-100 Berth 1 Cargo Carrier Emissions	42.121	8.361	2.490	1.023	1.876
S-100 Berth 1 Loading Operations			0.893		
S-100 Berth 1 Vapor Recovery System			0.084		
<b>Total Contemporaneous Emissions Reductions</b>	42.121	8.361	3.467	1.023	1.876
<b>Total Cumulative Increase</b>					

Avon MOTEMS Project Cumulative Increase, Tons					
Pollutant	NO <sub>x</sub>	CO	POC	PM <sub>10</sub>	SO <sub>2</sub>
<b>Emissions for New Sources</b>					
<b>Project Totals</b>	147.070	26.272	29.277	3.144	7.496

**EMISSIONS OF TOXIC AIR CONTAMINENTS (TACs)**

A summary of the TAC emissions applicable to each source is shown in the following table.

TAC	S-1560 Marine Cargo Carrier	S-1560 Loading	S-1561 Generator	S-1562 East Pump	S-1563 West Pump	S-1564 Slop Tank	Fugitives
Diesel Particulate Matter	X		X	X	X		
Toluene		X				X	X
Ethylbenzene		X				X	X
Xylene (Total)		X				X	X
Benzene		X				X	X
Naphthalene		X				X	X
n-Hexane		X				X	X
Propylene							X

**A. Cargo Carrier TAC Emissions**

Diesel Particulate emissions for Berth 1A total 8,313 lbs annually. However, only emissions from Cargo Carrier hoteling are evaluated for a project risk screen. The total Berth 1A diesel particulate emissions during cargo carrier hoteling are summarized in the following table.

Description	Units	Value
Total Cargo Carrier Hoteling PM10 During 3-Year Baseline	Lbs	2507
Total 3-Year Baseline Tug Emissions During Cargo Carrier Hoteling	Lbs	28
Total 3-Year Baseline PM10 Hoteling Emissions	Lbs	2535
Total 3-Year Baseline PM10 Emissions	Lbs	6138
Percent PM10 Hoteling Emissions of Total PM10 Emissions	%	41.30
Total Future S-1560 Berth 1A PM10 Emissions (4.1565 tons/year)	Lbs/Year	8313
Total Future S-1560 Berth 1A Diesel Particulate Hoteling Emissions	Lbs/Year	3433

**B. S-1560 TAC Emissions from Loading Operations**

Total Loading Operations Emissions during the 3-year baseline period were estimated in Part A.2 of the Emissions Calculations section above. Emissions from gasoline loading will be recovered to be used as refinery fuel gas remote from Berth 1A. Emissions from loading operations of other material during the baseline period (almost all Diesel) are emitted at Berth 1A. The loading operation emissions during the 3-year baseline period are summarized in the following table.

Description	Units	Value
Total 3-year Baseline Loading Operations Emissions	Lbs	5359
Total 3-Year Baseline Loading Emissions, Gasoline to Tanker	Lbs	840
Total 3-Year Baseline Loading Emissions, Gasoline to Barge	Lbs	675
Total 3-Year Baseline Gasoline Loading Emissions	Lbs	1515
Total 3-Year Baseline Gasoline Loading Emissions % of Total	%	28.28
Total 3-Year Baseline Loading Emissions, Diesel to Tanker	Lbs	3240
Total 3-Year Baseline Loading Emissions, Diesel to Barge	Lbs	602
Total 3-Year Baseline Diesel Loading Emissions	Lbs	3842
Total 3-Year Baseline Diesel Loading Emissions % of Total	%	71.72

The total loading operations emissions for S-1560 Berth 1A, based on the proportions during the 3-year baseline (shown in the previous table) and the 20 ton/year POC loading operations are summarized in the following table.

Description	Units	Value
Total S-1560 Loading Operations Emissions (based on 20 ton/yr limit)	Lbs/Year	40,000
Total Gasoline Loading Emissions % of Total	%	28.28
Total Diesel Loading Emissions % of Total	%	71.72
Total Gasoline Loading Emissions	Lbs/Year	11,312
Total Diesel Loading Emissions	Lbs/Year	28,688

However, to conservatively estimate TAC emissions for loading operations, Tesoro has requested the TAC emissions be based on the following criteria:

Description	POC Basis tpy	POC Basis lb/year
Total S-1560 Loading Operations Emissions (based on 20 ton/yr limit)	20	40,000
Maximum Expected Gasoline Loading Emissions	20	40,000
Maximum Expected Diesel Loading Emissions	5	10,000

TAC composition of gasoline and diesel are specified on the material MSDSs. Composition of the loading operation vapor emissions are determined using Raoult's Law applied to the liquid material composition. This was done when the emissions of S-1564 Recovered Oil Tank were evaluated, and the TAC compositions of gasoline and diesel were included in the TANKS 4.0d estimates (see Part E below). The results of these tank emission estimates include the tank emissions TAC composition. The gasoline and diesel compositions are summarized in the following table.

TAC	Gasoline wt%	Diesel wt%	Gasoline Vapor wt%	Diesel Vapor wt%
<b>Toluene</b>	30%		1.717%	
<b>Ethylbenzene</b>	5.0%		0.095%	
<b>Xylene (Total)</b>	30%	2%	0.474%	37.2%
<b>Benzene</b>	1.3%		0.261%	
<b>Naphthalene</b>	5%	1%	0.0018%	0.471%
<b>n-Hexane</b>	0.75%		0.246%	

The annual TAC emissions from the S-1560 Loading Operations are summarized in the following table.

TAC	Gasoline Vapor wt%	Gasoline Loading Emissions, lb/year	Diesel Vapor wt%	Diesel Loading Emissions, lb/year	Total Loading Emissions, lb/year
<b>Toluene</b>	1.717%	687			687
<b>Ethylbenzene</b>	0.095%	38.0			38
<b>Xylene (Total)</b>	0.474%	190	37.2%	3,720	3,910
<b>Benzene</b>	0.261%	104		0	104
<b>Naphthalene</b>	0.0018%	0.720	0.471%	47.1	48
<b>n-Hexane</b>	0.246%	98.40		0	98
<b>Total POC lbs/year</b>		40,000		10,000	40,000

Hourly TAC emissions can be derived by an evaluation of each loading operation in the 3-year baseline period. Using each loading operation calculated emissions and dividing it by the cargo carrier hoteling duration, a loading operation emission rate in lb/hr can be derived. The peak emission rate for gasoline loading occurred during a loading operation on beginning on 5/6/2014 and is 5.46 lb/hr. The peak emission rate for diesel loading occurred during a loading operation beginning on 5/17/2014 and is 2.42 lb/hr.

The maximum hourly TAC emissions from S-1560 Loading Operations are summarized in the following table.

TAC	Gasoline Vapor wt%	Gasoline Loading Emissions, lb/hour	Diesel Vapor wt%	Diesel Loading Emissions, lb/hour	Total Loading Emissions, lb/hour
<b>Toluene</b>	1.717%	0.09380			0.0938
<b>Ethylbenzene</b>	0.095%	0.00519			0.0052
<b>Xylene (Total)</b>	0.474%	0.02589	37.2%	0.900	0.9255
<b>Benzene</b>	0.261%	0.01426			0.0143
<b>Naphthalene</b>	0.0018%	0.00010	0.471%	0.0114	0.0115
<b>n-Hexane</b>	0.246%	0.01344			0.0134
<b>Total lbs/hour</b>		5.46		2.42	

Gasoline and diesel loading operations can occur simultaneously (there were 7 cargo carrier calls during the 3-year baseline where both gasoline and diesel were loaded onto the cargo carrier).

The gasoline loading portion of the emissions from S-1560 Berth 1A will be recovered by A-1560 Marine Vapor Recovery System, and abated by the furnaces that burn 40# fuel gas (S-908, S-909 and S-912 in the process block of the refinery). Therefore, only the diesel loading TACs are emitted at S-1560.

**C. Total S-1560 TAC Emissions**

The total TAC emissions from S-1560 Berth 1A are summarized in the following table.

TAC	Cargo Carrier Hoteling, lbs/year	Loading Operations, lb/year	Total S-1560 TAC Emissions lb/year	Loading Emissions, lb/hour
<b>Diesel PM</b>	3433		3433	
<b>Toluene</b>		687	687	0.0938
<b>Ethylbenzene</b>		38	38	0.0052
<b>Xylene (Total)</b>		3,910	3,910	0.9255
<b>Benzene</b>		104	104	0.0143
<b>Naphthalene</b>		48	48	0.0115

TAC	Cargo Carrier Hoteling, lbs/year	Loading Operations, lb/year	Total S-1560 TAC Emissions lb/year	Loading Emissions, lb/hour
<b>n-Hexane</b>		98	98	0.0134

**D. Diesel Engine TAC Emissions: S-1561, S-1562 and S-1563**

Diesel particulate emissions for the new engines were calculated in Parts B and C of the Emissions Calculations section above. The following table summarizes these emissions.

TAC	S-1561 Diesel Generator, lbs/year	S-1562 Diesel Firewater Pump, lbs/year	S-1563 Diesel Firewater Pump, lbs/year	Total Diesel Engine lb/year
<b>Diesel PM</b>	4.39	7.60	7.60	19.59

**E. S-1564 Recovered Oil Tank TAC Emissions**

S-1564 emissions were estimated in Part D of the Emissions Calculations section above. These emissions were estimated using EPA's TANKS 4.09d program. The input information for this program included TAC concentrations of gasoline and diesel. The TANKS program calculates vapor emission compositions. Both the liquid material concentrations and the vapor emission compositions are summarized in the following table.

TAC	Gasoline wt%	Diesel wt%	Gasoline Vapor wt%	Diesel Vapor wt%
<b>Toluene</b>	30%		1.717%	
<b>Ethylbenzene</b>	5.0%		0.095%	
<b>Xylene (Total)</b>	30%	2%	0.474%	37.2%
<b>Benzene</b>	1.3%		0.261%	
<b>Naphthalene</b>	5%	1%	0.0018%	0.471%
<b>n-Hexane</b>	0.75%		0.246%	

The total POC emissions estimated by the TANKS program are summarized in the following table.

Pollutant	Emissions from Diesel Storage	Emissions from Gasoline Storage
	Lb/yr	Lb/yr
<b>Total POC</b>	4.25	3,166

Daily POC emissions were estimated to be 21.4 lb/day (estimated in Part D of the Emissions Calculations section above).

Hourly emissions would be based on the maximum fill rate specified for this tank. This is specified at 8400 gallons/hr. However, the tank capacity is 3800 gallons, therefore the tank can be filled in less than an hour. The displaced gas from filling the tank volume was estimated when deriving the maximum daily emissions of 21.4 lb/day. Based on the maximum fill rate for the tank, the maximum hourly emissions rate is also 21.4 lbs.

TAC emissions estimated by the TANKS program are summarized in the following table.

Chemical	Diesel TANKS	Gasoline TANKS	Worst Case Material		
	Lb/yr	Lb/yr	Lb/yr	lb/day	lb/hr
<b>POC</b>	4.25	3,165.61	3,165.61	21.40	21.40

Chemical	Diesel TANKS	Gasoline TANKS	Worst Case Material		
	Lb/yr	Lb/yr	Lb/yr	lb/day	lb/hr
Toluene		56.95	56.95	3.85E-01	3.85E-01
Ethylbenzene		3.15	3.15	2.13E-02	2.13E-02
Xylene (Total)	1.58	15.73	15.73	1.06E-01	1.06E-01
Benzene		8.67	8.67	5.86E-02	5.86E-02
Naphthalene	0.02	0.06	0.06	4.06E-04	4.06E-04
Hexane, n-		8.16	8.16	5.52E-02	5.52E-02

**F. Fugitive TAC Emissions**

Total fugitive POC emissions were calculated in Part E of the Emission Calculations section above. Fugitive TAC emissions are estimating using the approach summarized in the following table.

Device Service	S-1560		A-1560	S-1564
	Light Liquid	Heavy Liquid	Gas/Vapor	Light Liquid
Calculation Approach	Composition of Liquid Gasoline	Composition of Liquid Diesel	Enrichment Gas Composition	Composition of Liquid Gasoline
TAC Concentrations				
Toluene	30%			30%
Ethylbenzene	5.0%			5.0%
Xylene	30%	2%		30%
Benzene	1.3%			1.3%
Naphthalene	5%	1%		5%
Hexane, n-	0.75%			0.75%
Propylene			50%	

Applying the TAC concentrations above to the total fugitive POC emissions results in the fugitive TAC emissions summarized in the following table.

Device Service	S-1560		A-1560	S-1564	Total Emissions		
	Light Liquid	Heavy Liquid	Gas/Vapor	Light Liquid	lbs/day	Lbs/hr	Lb/year
Pollutant	lbs/day	lbs/day	lbs/day	lbs/day			
Total POC	1.159	0.169	0.466	0.432	2.226	0.093	813
Toluene	0.348	-	-	0.130	0.477	0.0199	174.15
Ethylbenzene	0.058	-	-	0.022	0.080	0.0033	29.03
Xylene	0.348	0.003	-	0.130	0.481	0.0200	175.39
Benzene	0.015	-	-	0.006	0.021	0.0009	7.55
Naphthalene	0.058	0.002	-	0.022	0.081	0.0034	29.64
Hexane, n-	0.009	-	-	0.003	0.012	0.0005	4.35
Propylene	-	-	0.233	-	0.233	0.0097	85.03

**G. Total Project TAC Emissions**

The total project annual TAC emissions are summarized in the following table.

Total Project TAC Emissions, lbs/year									
TAC	S-1560 Marine Cargo Carrier	S-1560 Loading Operations		S-1561 Generator	S-1562 East Pump	S-1563 West Pump	S-1564 Slop Tank	Fugitives	Total
		Gasoline	Diesel						
Diesel PM	3433			4.39	7.60	7.60			3453
Toluene		687					56.95	174.15	918
Ethylbenzene		38.0					3.15	29.03	70
Xylene (Total)		190	3720				15.73	175.39	4101
Benzene		104					8.67	7.55	120
Naphthalene		0.720	47.1				0.06	29.64	78
n-Hexane		98.40					8.16	4.35	111
Propylene								85.03	85

The total project hourly TAC emissions are summarized in the following table. Only TACs with acute toxic triggers are included.

Total Project TAC Emissions, lbs/hour									
TAC	S-1560 Marine Cargo Carrier	S-1560 Loading Operations		S-1561 Generator	S-1562 East Pump	S-1563 West Pump	S-1564 Slop Tank	Fugitives	Total
		Gasoline	Diesel						
Toluene		0.0938					0.3850	0.0199	0.4987
Xylene (Total)		0.02589	0.900				0.1060	0.0200	1.0515
Benzene		0.01426					0.0586	0.0009	0.0737

**HEALTH RISK ASSESSMENT**

A comparison of the total project TAC emissions and the toxic triggers of Regulation 2, Rule 5 are shown in the following table.

TAC	Emissions		Regulation 2-5 Trigger Levels		Exceeds Trigger?
	lb/hour	lb/year	Acute, lb/hr	Chronic, lb/year	
Diesel PM	NA	3453	NA	0.34	Yes
Toluene	0.4987	918	82	12000	No
Ethylbenzene	NA	70	NA	43	Yes
Xylene (Total)	1.0515	4,101	49	27000	No
Benzene	0.0737	120	2.9	3.8	Yes
Naphthalene	NA	78	NA	3.2	Yes



TAC	Emissions		Regulation 2-5 Trigger Levels		Exceeds Trigger?
	lb/hour	lb/year	Acute, lb/hr	Chronic, lb/year	
Hexane, n-	NA	111	NA	270000	No
Propylene	NA	85	NA	120000	No

The Health Risk Assessment was conducted and the results transmitted January 7, 2017. The project risk is considered acceptable with a Maximum Cancer Risk of 3.4 chances in a million, the chronic hazard index of 0.001 and the acute hazard index of 0.019. These results demonstrate the project meets the requirements of Regulation 2-5-302. In addition, most of the cancer risk is associated with the diesel particulate emissions from the cargo carriers. Pursuant to Regulation 2-5-205, cargo carrier emissions are not subject to TBACT.

**BEST AVAILABLE CONTROL TECHNOLOGY**

In accordance with Regulation 2, Rule 2, Section 301, Best Available Control Technology (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<sub>2</sub> or PM<sub>10</sub>. Cargo carrier emissions are not subject to Regulation 2, Rule 2, Section 301 BACT.

Based on the emission calculations above, the following sources are subject to a BACT determination.

- S-1560 Berth 1A loading operations exceed 10 lb/day POC emissions (re: Emission Calculations Part A.2)
- S-1561 Diesel Generator exceeds 10 lb/day NOx and CO emissions (re: Emission Calculations Part B)
- S-1562 Diesel Firewater Pump exceeds 10 lb/day NOx and CO emissions (re: Emission Calculations Part C)
- S-1563 Diesel Firewater Pump exceeds 10 lb/day NOx and CO emissions (re: Emission Calculations Part D)
- S-1564 Recovered Oil Tank exceeds 10 lb/day POC emissions (re: Emission Calculations Part E)

**A. BACT for S1560 Avon Berth 1A Loading Operations**

The daily POC emissions for gasoline loading exceed 10 pounds per day. Therefore the requirements for BACT are triggered for POC. BACT for marine loading of regulated materials for POC is vapor recovery and control system: compressor, condenser, and thermal incinerator w/ a destruction efficiency >98.5%. A new marine vapor recovery system that is functionally identical to the one on S-100 Berth 1 is being installed as abatement system A-1560. Vapors collected by the marine vapor recovery system are routed to A-14 No. 1 Gas Plant and the 40 pound fuel gas system. The BACT/TBACT Guidelines Document 107.1 covers S-1560.

Loading emissions controls are expected to exceed the BACT 98.5% capture and control requirements. Therefore, the S-1560 Berth 1A Loading Operations are considered to satisfy BACT.

**B. BACT for S-1561 Emergency Standby Diesel IC Engine, S-1562 East and S-1563 West Fire Water Pump IC Engines**

The S-1561 daily NOx and CO emissions exceed 10 pounds per day. Therefore the requirements for BACT are triggered for NOx and CO. All other pollutants are emitted at rates less than 10 pounds per maximum day. The BACT/TBACT Guidelines Document 96.1.3 covers S-1561.

The BACT requirement for NOx and CO is compliance with the emission standard allowed in the current CARB or EPA non-road tier standard for the appropriate horsepower range and the model year. The emergency standby diesel IC engines are certified engines that will comply with the CARB ATCM Limits as summarized in the following table.

Pollutant	S-1561 Emission	CARB/ATCM Standards
	Factor (g/hp-hr)	398 HP (g/hp-hr)
NOx	2.55	
CO	1.00	2.6
POC	0.18	
NOx+POC	2.73	3.0
SO <sub>2</sub>	0.00177	
PM10	0.10	.15

The S-1562 and S-1563 Firewater Pumps daily NOx and CO emissions exceed 10 pounds per day. Therefore the requirements for BACT are triggered for NOx and CO. All other pollutants are emitted at rates less than 10 pounds per maximum day. The BACT/TBACT Guidelines Document 96.1.3 excludes firewater pumps because firewater pump engines were often not as clean as other emergency engines. However, S-1562 and S-1563 are newer engines, and comply with the CARB/ATCM Limits, as summarized in the following table.

Pollutant	S-1562, S-1563 Emission	CARB/ATCM Standards
	Factor (g/hp-hr)	700 HP (g/hp-hr)
NOx	2.87	
CO	1.72	2.6
POC	0.07	
NOx+POC	2.94	3.0
SO <sub>2</sub>	0.00177	
PM10	0.07	.15

Therefore, S-1561, S-1562 and S-1563 are considered to satisfy BACT.

**C. BACT for S-1564 Recovered Oil Tank A-938**

The daily POC emissions could exceed 10 pounds per highest day. A BACT Determination was conducted for POC.

The following table summarizes the Tesoro BACT determination for S-1564.

POC BACT 1 Determination			
Technology	Technically Feasible	Cost Effective	Rationale
Refrigerated Condensers	No	N/A	Typically only small quantities of hydrocarbons are transferred into the tank during line draining. Therefore, the majority of the time S-1564 is in service concentrations of hydrocarbons vapors that are below concentrations which a refrigerated condenser system could effectively capture hydrocarbon vapors. VOC concentrations must be at least 1% to 2% by volume for a refrigerated condenser system to work. A refrigerated condenser system would frequently ice up due to the high humidity and frequent occurrence of fog in the location where the wharf is located.
Recovery with A-1560 Berth 1A Marine Vapor Recovery System	No	N/A	Emissions from S-1564 are continuous and often below the lower explosion limit, making recovery incompatible. The A-1560 is designed to recover cargo carrier emissions from regulated (e.g., gasoline) loading operations. The displacement vapor from the marine tank often contains oxygen and is enriched with propane/propylene to stay above the upper explosion limit. A-1560 operates infrequently, batch-wise only when a regulated material is being loaded. Treating a high oxygen content continuous gas is not feasible.
Incineration	No	N/A	An incinerator would either function improperly due to the low flow rates or draw in sufficient ambient air to meet the incinerator minimum flow requirements and burn an excessive amount of auxiliary fuel. There are also safety concerns about locating an incinerator on the wharf because an incinerator could act as a source of ignition at times hydrocarbon vapors are present. US Coast Guard regulations at 33 CFR 154.2109 specify that a vapor destruction unit cannot be located within 30 meters of any tank vessel, berth or mooring at a facility.

POC BACT 1 Determination			
Technology	Technically Feasible	Cost Effective	Rationale
Vapor Balancing	No	N/A	Vapor balancing is used when gasoline vapors from a tank are transferred to the tanker trailer delivering the gasoline as gasoline flows from the tanker into station's storage tanks. There are no vessels associated with S-1564, therefore vapor balancing is not feasible.
Carbon Adsorption	Yes	No	The emission control cost is \$63,650 per ton of POC. The BACT/TBACT workbook "Maximum Cost Guidelines for BACT" currently specifies that controls for POC cost less than \$17,500 per ton removed to be cost effective. Therefore, use of activated carbon canisters to control emissions from Tank A-938 (S-1564) is not cost effective.

Carbon absorption is technically feasible. Therefore a cost effective analysis is needed. Tesoro estimated the following costs for installing Carbon Absorption system:

- \$20,000 for the piping manifold and connecting hoses for an activated carbon canister system.
- \$1,253 for each activated carbon canister.
- \$8.75 to replace each canister based on 15 minutes and \$35/hr.
- \$2.25 disposal cost for each 180 lb canister based on \$25/ton

A typical carbon adsorption system consists of two beds in series, a lead canister followed by a trim canister. Once hydrocarbon breakthrough is detected from the lead canister, it is replaced with a new canister. The trim canister is switched to the lead service and the new canister is installed as the trim bed.

The capital recovery factor, based on a 4% interest rate (10 Year Treasury Bond rate + 2, rounded up), and a 10 year equipment life, the capital recovery factor is 0.1233.

Simplified BAAQMD cost factors are 0.01 for Tax, 0.01 for Insurance, and 0.02 General and Administrative Expenses. This totals to a 0.04 simplified factor.

The specification from the Calgon Ventsorb carbon canister estimates 41.4 lbs of hydrocarbon is absorbed for each 180 lbs of carbon. This is based on an inlet concentration of 1000 ppm.

US EPA's TANKS emission estimation software, Version 4.09d, was used to estimate volatile organic compound (VOC) emissions from the proposed storage tank. The estimated annual VOC emission rate for S-1564 is 3,166 pounds per year. A 99% abatement factor is equivalent to a 3134 lbs POC reduction, or 1.567 tons.

Number of annual canisters = 3166 lbs / (41.7 lbs/canister) = 75.9 canisters per year.

The capital cost for the installation is \$2506 for two canisters and \$20,000 for the piping installation, or a total of \$22,506. Applying the 0.1233 capital recovery factor results in annual cost of \$2,775.

The annualized cost of this installation and cost effectiveness are summarized in the following table.

Description	Calculation	Amount
Capital	Capital Cost X Recovery Factor	\$2775

Replacement Canisters	76 canisters @ \$1,253 each	\$95228
Replacement Installation	76 canisters @ 8.75 each	\$665
Spent Canister Disposal Fee	76 canisters @ \$2.25 each	\$171
Tax, Insurance, and Administrative Expenses	Capital Cost X 0.04	\$900
Total Annualized Cost		\$99,739
Annual POC Reduction, tons		1.567
Control Cost Effectiveness, \$/ton		\$63,650
BACT Cost Effectiveness Limit, \$/ton		\$17,500
Is Carbon Adsorption Cost Effective?		No

The emission control cost is about \$64,000 per ton of POC. The BACT/TBACT workbook “Maximum Cost Guidelines for BACT” currently specifies that controls for POC cost less than \$17,500 per ton removed to be cost effective. Therefore, the BACT1 use of activated carbon canisters to control emissions from S-1564 is not cost effective.

Since BACT1 is not cost effective, BACT2 Achieved in Practice is required. The BAAQMD BACT Handbook Document Number 167.2.1 covers Fixed Roof Organic Liquid Tanks with capacities under 20,000 gallons. BACT2 is specified as a vapor recovery system with an overall efficiency of 95% or greater. However, while S-1564 emissions were estimated conservatively assuming the tank is full of organic liquid, and required a permit for organic liquid storage, it actually will be storing mostly water from Berth 1A rain runoff. There is no record of controls being achieved in practice for a 3,800 gallon tank storing mostly water. Therefore, BACT2 control for S-1564 is not required.

**OFFSETS**

Offsets are required per Regulation 2-2-302 because Tesoro emits more than 35 tpy of POC and 35 tpy of NOx emissions. Regulation 2-2-302 requires that offsets for POC and NOx be provided at a ratio of 1.15 to 1.0. Regulation 2-2-303 requires that a Major Facility must pay offsets for PM10 and SO2 in excess of 1.0 ton per year for new or modified sources. Regulation 2-2-303 requires that offsets for PM10 and SO2 be provided at a ratio of 1.0 to 1.0.

The total project cumulative increase, and the offset requirements, are summarized in the following table.

Total Cumulative Increase, tons					
Pollutant	NOx	CO	POC	PM10	SO2
<b>Total Emissions for New Sources</b>	189.191	34.633	32.744	4.167	9.372
<b>Total Contemporaneous Emissions Reductions</b>	42.121	8.361	3.467	1.023	1.876
<b>Project Offset Totals</b>	147.070	26.272	29.277	3.144	7.496
Offset Ratio	1.15:1.0	NA	1.15:1.0	1.0:1.0	1.0:1.0
<b>Required Offsets</b>	<b>169.130</b>		<b>33.669</b>	<b>3.144</b>	<b>7.496</b>
Bank 915	8.063				3.525
Bank 968			7.983		
Bank 1144	161.067			3.144	3.971
Bank 1568			18.113		
Bank 1572			5.049		
Bank 1571			0.100		
Bank 1570			1.175		
Bank 1569			1.249		

After the required offsets are surrendered, the banking certificates will have the following credits remaining.

Remaining Credits, tons					
Pollutant	NO <sub>x</sub>	CO	POC	PM <sub>10</sub>	SO <sub>2</sub>
Bank 915	0.000	2.938	0.000	0.000	0.000
Bank 968	0.000	0.000	0.000	0.000	0.000
Bank 1144	75.788	19.912	0.000	8.454	2893.006
Bank 1568	0.000	0.000	0.434	0.000	0.000
Bank 1572	0.000	0.000	0.000	0.000	0.000
Bank 1571	0.000	0.000	0.000	0.000	0.000
Bank 1570	0.000	0.000	0.000	0.000	0.000
Bank 1569	0.000	0.000	0.000	0.000	0.000

### New Source Performance Standards (NSPS)

S-1560 is not subject to any provisions of NSPS.

S-1561, S-1562 and S-1563 Diesel Engines are subject to NSPS 40 CFR 60 Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, because they were manufactured after 4/1/2006. The engines are EPA certified and are therefore expected to comply with the emission standards of NSPS Subpart IIII.

S-1564 Recovered Oil Tank is not subject to NSPS 40 CFR 60 Subpart Kb [Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction, or Modification Commenced After July 23, 1984] because the tank is under 19,800 gallons in capacity.

### National Emission Standards for Hazardous Air Pollutants (NESHAPS)

S-1560 is subject to 40 CFR 63 Subpart Y (NESHAP for Marine Vessel Loading of Organic Liquids) as required by 40 CFR 63 Subpart CC (NESHAP for Source Categories - Petroleum Refineries) 63.651 Marine Tank Vessel Loading Operation Provisions. Tesoro will exceed the requirements of 40 CFR 63.562 **Standards** by reducing HAP emissions from loading operations by 98.5% or more.

S-1561, S-1562 and S-1563 Diesel Engines are subject to NESHAPS 40 CFR 63 Subpart ZZZZ NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE). Per 40 CFR 63.6590(c)(1), a new or reconstructed stationary RICE located at an major source must meet the requirements of 40 CFR 60 Subpart IIII, for compression ignition engines. These engines are in compliance with the requirements of 40 CFR 60 Subpart IIII, as shown in the "NSPS" section of this evaluation.

S-1564 Recovered Oil Tank is subject to the requirements of 40 CFR 61 Subpart FF Benzene Waste Operations NESHAPS (BWON). Tesoro complies with BWON 61.342(e)(2)(i) by treating waste streams to less than or equal to 6.0 Mg/year. The existing S-1508 and S-1509 Berth 1 and Berth 5 Recovered Oil Tanks are also subject to BWON, permitted for a total of 1,689,000 barrels/year throughput (about 71,000,000 gal/yr). Since these two existing tanks will be demolished or decommissioned, and the permitted throughput of S-1564 will be substantially lower at 250,000 gallons/year, the addition of S-1564 is not expected to affect Tesoro's compliance with 40 CFR 61 Subpart FF.

S-1564 is subject to 40 CFR 63 Subpart CC (Petroleum Refinery MACT) since it is permitted to store materials that contain HAPS. However, since its capacity is less than the 20,000 gallon minimum capacity that defines a Group 1 Storage Vessel in 63.641, S-1564 is a Group 2 Storage Vessel. All the requirements of 63.660 Storage Vessel

Provisions only apply to Group 1 Storage Vessels. Therefore, S-1564 is exempt from the Storage Vessel Provisions of 40 CFR 63 Subpart CC.

### **CARB Stationary Diesel Engine Airborne Toxic Control Measure (ATCM)**

S-1561 Emergency Diesel Generator is a new standby engine installed after January 1, 2005. Therefore, S-1561 is required to comply with subsection 93115.6(a)(3) of the ATCM. The emission standards of this subsection are as follows:

**Diesel PM – General Requirements**

93115.6(a)(3)(A)1.a	Meet 0.15 g/bhp-hr PM standard
93115.6(a)(3)(A)1.c (except emergency use and emissions testing)	Operate 50 hours per year, or less, for maintenance and testing

**HC, NO<sub>x</sub>, NMHC+NO<sub>x</sub>, CO**

93115.6(a)(3)(B)	Meet standards for off-road engines of the same model year and horsepower rating as specified in the Off-Road Compression Ignition Engine Standards; or if no standards have been established, meet the Tier 1 standards in Title 13, CCR, Section 2423 for off-road engines of the same horsepower rating, irrespective of the new engine's model year.
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S-1561 is an EPA certified Tier 3 engine that complies with these emission standards.

S-1562 and S-1563 Emergency Diesel Engines are new Firewater Pumps installed after January 1, 2005. Therefore, S-1562 and S-1563 are required to comply with subsection 93115.6(a)(4) of the ATCM. The emission standards of this subsection are as follows:

93115.6(a)(4)(A)1.a	meet the Tier 2 emission standards specified in the Off-Road Compression Ignition Engine Standards for off-road engines with the same maximum rated power (title 13 CCR, section 2423) until 3 years after the date the Tier 3 standards are applicable for off-road engines with the same maximum rated power. At that time, new direct-drive emergency standby diesel-fueled fire-pump engines (>50 bhp) are required to meet the Tier 3 emission standards, until 3 years after the date the Tier 4 standards are applicable for off-road engines with the same maximum rated power. At that time, new direct-drive emergency standby diesel-fueled fire-pump engines (>50 bhp) are required to meet the Tier 4 emission standards; and
93115.6(a)(4)(A)1.b	not operate more than the number of hours necessary to comply with the testing requirements of the National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 2002 edition, which is incorporated herein by reference. This subsection does not limit engine operation for emergency use and for emission testing to show compliance with 93115.6(a)(4).

S-1562 and S-1563 are EPA certified Tier 3 engines that comply with these emission standards.

### **PSD**

A Prevention of Significant Deterioration (PSD) applicability analysis was performed for the Avon Wharf MOTEMS project. Because this project involves only "new emission units," Tesoro used the "actual-to-potential test" specified in 40 CFR 52.21(a)(2)(iv)(d) to determine if a "significant emissions increase" and a "significant net emissions increase" of a "regulated NSR pollutant" will occur. The project involves construction of a new Berth 1A, including an emergency standby diesel IC engine, east fire water pump IC engine, west fire water pump IC engine, recovered oil tank, and marine vapor recovery system.

In the BAAQMD, the PSD pollutants are PM, PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub>, CO, and SO<sub>2</sub> in this analysis. For this analysis NO<sub>x</sub> is considered to be equivalent to NO<sub>2</sub>. The table below summarizes the resulting project emission increases of each regulated PSD pollutant from the "new emission units" for which there was a calculated emissions increase, the total project emission increase, and the corresponding PSD significant emission rates.

BAAQMD Rule 2-2-215.2 states the emissions associated with the cargo carriers shall not be included when determining applicability of the requirements of Section 2-2-304 (PSD Requirement). This definition is consistent with the definition of a “stationary source” under the PSD program at 40 CFR 52.21(b)(5), which excludes “the activities of any vessel.” The recovered oil tank and marine vapor recovery system have a potential to emit only VOC emissions, and are therefore not considered further.

The following table presents the results of the PSD applicability analysis. The project emission increases are less than the corresponding PSD significant emission rates; therefore, a major modification will not occur and the project is not subject to PSD review. The Project does not trigger PSD review for a criteria pollutant; therefore, GHG is not included within this analysis consistent with EPA guidance on implementation of its PSD regulations in light of the Supreme Court’s decision in UARG v. EPA, 12-1146 (2014).

	PM	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	CO	SO <sub>2</sub>
	tpy	tpy	tpy	tpy	tpy	tpy
S-1561 Emergency Standby Diesel IC Engine	0.00219	0.00219	0.00219	0.0559	0.0219	0.00004
S-1562 East Fire Water Pump IC Engine	0.0038	0.0038	0.0038	0.155	0.093	0.0001
S-1563 West Fire Water Pump IC Engine	0.0038	0.0038	0.0038	0.155	0.093	0.0001
Project Emission Increase	0.0098	0.0098	0.0098	0.3659	0.2079	0.0002
PSD Significant Emission Rate	25	15	10	40	100	40

**STATEMENT OF COMPLIANCE**

S-1560 Avon Wharf Berth 1A will be subject to the same regulations as the existing S-100 Berth 1. Tesoro is subject to, and will continue to comply with the following applicable requirements:

- Regulation 6, Rule 1 (Particulate Matter General Requirements).
- Regulation 9, Rule 1 (Sulfur Dioxide).
- Regulation 8 Rule 44 (Organic Compounds - Marine Vessel Loading Terminals)
- 40 CFR 63 Subpart Y (NESHAP for Marine Vessel Loading of Organic Liquids)
- 40 CFR 63 Subpart CC (NESHAP for Source Categories - Petroleum Refineries)

S-1561 Emergency Standby Diesel IC Engine, S-1562 East and S-1563 West Fire Water Pump IC Engines are subject to, and will comply with, the following applicable requirements:

- Regulation 6, Rule 1 (Particulate Matter General Requirements).
- Regulation 9, Rule 1 (Sulfur Dioxide).
- Regulation 9, Rule 8 (Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines)
- 40 CFR 60 Subpart IIII (NSPS for Stationary Compression Ignition Internal Combustion Engines)



40 CFR 63 Subpart ZZZZ (NESHAP for Stationary Reciprocating Ignition Internal  
Combustion Engines)  
CARB ATCM for Stationary Compression Ignition Engines

S-1564 Recovered Oil Fixed Roof Tank is subject to, and will comply with, the following applicable requirements:

Regulation 8, Rule 5 Organic Compounds – Storage of Organic Liquids  
40 CFR 61 Subpart FF (Benzene Waste Operations NESHAPS)

S-1564 is exempt from NSPS Kb and MACT CC because of capacity and will be in Group 402A [MACT and NSPS Kb Exempt (size), BWON 61 Subpart FF (Uncontrolled waste streams), Submerged Fill - Top Fill and Pressure Vacuum Vent] of Table IV-F2 and F3 in the Title V permit.

The project was subject to CEQA review. An EIR was certified by the State Lands Commission in March 2015. The District will publish a Notice of Determination that will include the document entitled “Findings and Supporting Facts Regarding the Environmental Impact Report” in support of this CEQA determination.

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

## PERMIT CONDITIONS

*New Permit Condition 26406 will be imposed for S-1560 Avon Wharf Beth 1A*

*Permit Condition 23811 will be revised to include S-1561 Diesel Emergency Generator*

*New Permit Condition 26407 will be imposed for S-1562 and S-1563 Diesel Firewater Pumps*

*New Permit Condition 26408 will be imposed for S-1564 Recovered Oil Tank*

*Permit Condition 878 for S-100 Avon Wharf Berth 1 will be deleted.*

*Permit Condition 23486 for S-1508 and S-1509 Berth 1 and 5 Recovered Oil Tanks will be deleted.*

### ~~Condition 878~~

#### ~~S100 Avon Wharf Loading Berth No. 1~~

- ~~1. When calculating hydrocarbon emissions from vessel or barge loading, the Permittee/Owner/Operator shall use the emission factors presented in condition number 5 of condition ID #878. (basis: cumulative increase)~~
- ~~2. Permittee/Owner/Operator shall install and maintain a Pressure Recorder/Controller in the vapor recovery system to provide a permanent record of pressure during the loading of vessels. These records shall be maintained for a minimum of 5 years. (basis: cumulative increase)~~
- ~~3. Not less frequently than every six months, Permittee/Owner/Operator shall conduct tests to assess leakage from all relief valves that vent to atmosphere in the marine vapor recovery system on a semi-annual basis.~~

~~Permittee/Owner/Operator shall ensure that the testing and record keeping are done in compliance with Regulation 8, Rule 18.~~

~~(basis: cumulative increase, Regulation 8-18)~~

~~4. If leakage is detected during the loading of a vessel, or if the vapor recovery system is shutdown for any period of time during loading, or if a relief valve in the recovery system vents to atmosphere during loading, Permittee/Owner/Operator shall use the "Non Vapor Recovery" emission factors in condition number 5 of condition ID #878 to calculate emissions from the entire loading operation. Credit for vapor recovery may be given for a portion of a vessel loading operation, provided that Permittee/Owner/Operator can provide documentation to the satisfaction of the APCO that credit is appropriate, as determined by the APCO.~~  
~~———— (basis: cumulative increase)~~

~~5. DATA FOR DETERMINING EMISSIONS FROM MARINE ACTIVITY~~

~~———— Described herein are the following lists of fuel usage rates and emission factors for calculating marine activity emissions~~

~~Part B-1 ————— Tanker Fuel Usage Rates~~

~~Part B-2 ————— Diesel Fuel Used During Barge Unloading~~

~~Part B-3 ————— Tug Usages~~

~~Part B-4 ————— Fuel Combustion Emission Factors~~

~~Part B-5 ————— Hydrocarbon Emissions from Onloading of Crude Oil, Ballast or Products~~

~~The methodology, assumptions, and procedures to be used in calculating the emissions shall be consistent with those set forth in Permittee/Owner/Operator's submittal entitled, "Procedures for Determining Emissions from Marine Activity," dated 10/30/81.~~

~~Calculated emissions shall be reported in units of short tons (2,000 lbs avoirdupois) rounded to three (3) significant figures.~~

***PART B-1: TANKER FUEL RATES***

<del>Tanker (A)</del>	<del>(B)</del>	<del>(C)</del>	<del>(D)</del>	<del>(D)</del>	<del>Hoteling</del>	<del>Hoteling</del>
<del>Deadweight</del>	<del>Main</del>	<del>Engine</del>	<del>Engine</del>	<del>Unloading</del>	<del>Boiler Fuel</del>	<del>Fuel Use</del>
<del>———— Fuel Use</del>						
<del>Tonnage</del>	<del>Engine</del>	<del>Fuel</del>	<del>Fuel Use</del>	<del>Rate</del>	<del>Use For</del>	<del>Fuel</del>
<del>Oil/Diesel</del>	<del>————</del>					
<del>(10000 tons)</del>	<del>Type</del>	<del>Type</del>	<del>(bbl/hr)</del>	<del>(bbl/hr)</del>	<del>Unloading</del>	<del>————</del>
<del>————</del>						
				<del>(bbl/hr)</del>	<del>(bbl/hr)</del>	<del>(bbl/hr)</del>

< 2	ST	F	5.0	6,000	7.0	1	0
	MT	D	2.5	6,000	7.0	1	1
2 to < 3	ST	F	8.1	8,000	9.5	1	10
	MT	D	5.6	8,000	9.5	1	1
3 to < 4	ST	F	9.4	10,000	11.5	1	10
	MT	D	6.9	10,000	11.5	1	1
4 to < 5	ST	F	10.9	12,000	13.5	1	10
	MT	D	8.1	12,000	13.5	1	1
5 to < 6	ST	F	13.1	14,000	15.5	1	10
	MT	D	8.4	14,000	15.5	1	1
6 to < 8	ST	F	15.0	15,000	16.0	2	20
	MT	D	9.4	15,000	16.0	2	2
8 to < 10	ST	F	18.1	16,000	17.0	2	20
	MT	D	10.9	16,000	17.0	2	2
10 to < 14	ST	F	20.0	17,000	17.5	2	20
	MT	D	13.1	17,000	17.5	2	2
14 to < 18	ST	F	21.6	18,000	18.5	2	20
	MT	D	15.6	18,000	18.5	2	2
≥ 18	ST	F	22.5	19,000	19.5	3	0
	MT	D	19.1	19,000	19.5	3	3

**Explanation of abbreviations for PART B-1:**

Column A — ST — = — steamship (steam boilers and turbines)

— MT — = — motorship (internal combustion engines)

Column B — F — = — fuel oil (not diesel fuel)

— D — = — diesel oil

Column C — BBL/hr = — barrels per hour of fuel use during transit (at 50% of full steaming)

Column D — During unloading of oil or ballast, steamships and motorships use fuel oil (F) for boilers/turbines which drive the unloading pumps

***PART B-2: DIESEL FUEL USED DURING BARGE UNLOADING\****

— barge unloading rate — diesel fuel usage  
 — (bbl/hr) — (bbl/hr)

2,000	2.3
2,200	2.4
2,500	2.9
3,500	4.1
8,000	9.5
10,000	11.5
13,000	13.5

\* Based on internal combustion engines driving the unloading pumps on the barges using the same kind of diesel as the tugs (i.e., 0.50 wt% sulfur and API gravity of 35)

**PART B-3: TUG USAGES**

One tug for assisting tankers of < 50,000 DWT size, for a total transit time of four hours per tanker call at docks.

Two tugs for assisting tankers of > 50,000 DWT size, for a total transit time of four hours each tug per tanker call at docks.

One tug for transporting barges or lighters, for a total transit time of ten hours per each barge/lighter call at docks.

Thus, for each call below:	Total tug transit hour
Tanker of < 50,000	4
Tanker of ≥ 50,000	8
Product shipment barge	10
Crude oil lighter	10

**PART B-4: FUEL COMBUSTION EMISSION FACTORS**

(pounds / 1,000 gallons of fuel burned \*)

<u>Boiler In Steamships:</u>	<u>Fuel Type</u>	<u>*POC</u>	<u>*SO<sub>2</sub></u>	<u>*NO<sub>x</sub></u>	<u>*CO</u>	<u>*PM<sub>10</sub></u>
during transit	F	3.10	315.3	48.2	2.62	19.0
during hoteling	F	3.10	315.3	20.9	2.62	19.0
during unloading	F	3.10	315.3	48.2	2.62	19.0

Internal Combustion

<u>Engines In Motorships:</u>	<u>Fuel Type</u>	<u>*POC</u>	<u>*SO<sub>2</sub></u>	<u>*NO<sub>x</sub></u>	<u>*CO</u>	<u>*PM<sub>10</sub></u>
during transit	D	32.8	70.1	367.0	56.9	20.0
during hoteling	D	32.8	70.1	367.0	56.9	20.0

Internal Combustion

Engines in Motorships

<u>&gt; or = 100,000 DWT:</u>	<u>Fuel Type</u>	<u>*POC</u>	<u>*SO<sub>2</sub></u>	<u>*NO<sub>x</sub></u>	<u>*CO</u>	<u>*PM<sub>10</sub></u>
during transit	D	32.8	210.3	367.0	56.9	20.0
during hoteling	D	32.8	210.3	367.0	56.9	20.0

<u>Boilers In Motorships:</u>	<u>Fuel Type</u>	<u>*POC</u>	<u>*SO<sub>2</sub></u>	<u>*NO<sub>x</sub></u>	<u>*CO</u>	<u>*PM<sub>10</sub></u>
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during transit	F	3.10	315.3	20.9	2.62	19.0
during hoteling	F	3.10	315.3	48.2	2.62	19.0

Internal Combustion (IC):

<u>Engines In Tugs:</u>	<u>Fuel Type</u>	<u>*POC</u>	<u>*SO<sub>2</sub></u>	<u>*NO<sub>x</sub></u>	<u>*CO</u>	<u>*PM<sub>10</sub></u>
during transit	TD	13.0	70.1	571.2	56.9	25.0
IC engines driving barge-unloading pumps	TD	13.0	70.1	571.2	56.9	25.0

(PM-10 factor of 25 lb/1000 gallons also applies to internal combustion engines driving barge-unloading pumps)

Explanation of abbreviations for PART B-4:

Fuel Type

F = fuel oil or residuum sulfur @ < 2.0 wt%; nitrogen @ < 0.43 wt%; API gravity 18

D = marine diesel sulfur @ < 0.5 wt%; nitrogen @ < 0.08 wt%; API gravity 35

TD = tug diesel sulfur @ < 0.5 wt; API gravity @ 35

PART B-5: HYDROCARBON EMISSIONS FROM UNLOADING OF CRUDE OIL, BALLAST OR PRODUCTS

<u>COMMODITY</u>	<u>Non-Vapor Recovery</u>	<u>Vapor Recovery</u>
<u>ONLOADED</u>	<u>POC Emissions</u>	<u>POC Emissions</u>
	<u>(lb/1,000 gallons)</u>	<u>(lb/1,000 gallons)</u>

Crude Oil:

Barges	1.7	0.034
Vessels	1.0	0.02

Ballast: (unsegregated\*\*\*)

Crude	0.7	0.014
Gasoline	1.6	0.032

Gasoline:

Barges	4.0	0.08
Vessels	2.4	0.048

Turbine Fuel (Jet Fuel) 0.005 0.0001

Diesel Oil, Gas Oil, 0.005 0.0001

Conversion Feed,

Cutter Stock, Catalytic

Cracker Charge

HDN Charge, Stove Oil,

Solvents, Lubestocks,

Middle Distillate Oil

Fuel Oil, Heavy Fuel Oil, 4.0 E-05 8.0 E-07

Low Sulfur Oil, Bunkers

IFO, LSFO, Residuum,

Carbon Black, Purchased

~~—————~~ ~~Cut Back Tar, Asphalt~~

~~—————~~ ~~\*\*\*~~ ~~—————~~ The volume of unsegregated ballast taken on by a ship which has offloaded cargo is determined by the following equation:

~~—————~~ ~~—————~~ 
$$B = 7.5 \times MDWT \times (0.35 - B \text{ segregated}/100)$$

Explanation of abbreviations for PART B-5:

~~B~~ = the volume of ballast into dirty cargo tanks in Mbbbl

~~MDWT~~ = ship tonnage in thousands of dead weight tons as indicated by Clarkson

~~B segregated~~ = the percent of segregated or dedicated ballast for the ship as indicated by Clarkson or some other reliable source which is known to be more current; e.g., ship's records, where the percent is equal to or less than 35. If the percent is greater than 35 than the amount of unsegregated ballast will be zero.

*Condition 23486*

~~Application 15429 (April, 2007).~~

~~Revised by Application 19326 (February, 2009)~~

~~S-1508 Tank A906 and S-1509 Tank A907, Avon Wharf Slop Oil Tanks: Each tank: 4' W X 12' L X 3.5', 1,250 gallon capacity~~

~~1) The total combined net throughput of S-1508 Tank A906 and S-1509 Tank A907 shall not exceed 1,689,000 barrels in any consecutive 12-month period. The owner/operator shall use a radar monitoring device to measure the height of the tank. The owner/operator shall use the change in height of liquid in the tank to calculate throughput. (basis: Cumulative Increase)~~

~~2) Materials collected in S-1508 and S-1509 shall be limited to the following:~~  
~~a. Water runoff, slop oil, or recovered oil with a true vapor pressure less than 11 psia~~  
~~b. A liquid other than those specified above may be collected in S-1508 and S-1509, provided that both of the following criteria are met:~~  
~~1. true vapor pressure must be less than 11 psia~~  
~~2. toxic emissions in lbs/year, based on the maximum throughput in part 1, do not exceed any risk screening trigger level.~~  
~~(basis: Cumulative Increase)~~

~~3) Deleted. (Final project fugitive component count provided July 11, 2007. Final count did not cause fugitive emissions to exceed the emissions estimated in the project application.)~~

~~4) To determine compliance with the above conditions, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions, including, but not necessarily limited to, the following information:~~

~~a. On a monthly basis, type and amount of liquids collected and true vapor pressure ranges of such liquids. These records shall be kept for at least 5 years.~~

~~All records shall be recorded in a District approved log and made available for inspection by District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District Regulations. (basis: Cumulative Increase, Regulation 1-441)~~

### Condition 23811

Application 14917, September 2006.

Modified by Application 16495, November 2007.

Modified by Application 19330, February 2009.

Modified by Application 21713, May 2010

Modified by Application 22152, October 2010

Modified by Application 25942, February 2014. Added S-1557.

Modified by Application 27790, January 2017. Added S-1561

Plant 14628 (B2758) Emergency Diesel Engines S-1518, S-1519 and S-1557

Plant 14629 (B2759) Emergency Diesel Engines S-56 and S-57

Plant 14628 (B2758) Emergency Diesel Engine S-1522

Plant 14629 (B2759) Emergency Diesel Engine S-58

Plant 14628 (B2758) Avon Wharf Berth 1A Emergency Generator Diesel Engine S-1561

1. Operating for reliability-related activities is limited to 50 hours per year per engine.

[Basis: "Stationary Diesel Engine ATCM", CA Code of Regulations, Title 17, Section 93115.6(b)(3)(A)2b and 93115.6(a)(3)(A)1c]

2. The owner or 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 hours while mitigating emergency conditions or while emission testing to show compliance with District, state or Federal emission limits is not limited.

[Basis: Regulation 9-8-330, "Stationary Diesel Engine ATCM", CA Code of Regulations, Title 17, Section 93115.4(29)]

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: Regulation 9-8-530, "Stationary Diesel Engine ATCM", CA Code of Regulations, Title 17, Section 93115.10(d)(1)]

4. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 60 months from the date of entry. 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: Regulation 9-8-530, 2-6-501, and "Stationary Diesel Engine ATCM", CA Code of Regulations, Title 17, Section 93115.10(f)]

#### Condition 26406

Application 27790, January 2017.  
Avon Wharf MOTEMS Project  
S-1560 Avon Wharf Berth 1A, abated by  
A-1560 Avon Wharf Berth 1A Marine Vapor Recovery System

1. The owner/operator shall not operate S-1560 Berth 1A unless the total product transferred at S-1560 does not exceed 30,000,000 barrels in any consecutive 12-month period. The owner/operator shall not transfer any Crude Oil at S-1560 Berth 1A. (basis: Cumulative Increase, Offsets)

2. Emissions for Cargo Carrier (Barges and Tankers) calls to S-1560 Berth 1A shall not exceed the following fully offset limits:

- NOx: 188.825 tons/year
- CO: 34.425 tons/year
- POC: 10.743 tons/year
- PM10: 4.157 tons/year
- SO2: 9.372 tons/year

(basis: Cumulative Increase, Offsets)



3. The owner/operator of S-1560 shall demonstrate compliance with the throughput limit in Part 1 by recording the monthly volumes of material loaded and unloaded at S-1560. Monthly throughput shall be totaled on a consecutive 12-month basis. The owner/operator shall demonstrate compliance with the emission limits in Part 2 by showing annual loading and unloading throughput, on a calendar year basis, is less than 30,000,000 barrels per year. (basis: Cumulative Increase, Offsets)

4. The owner/operator shall operate S-1560 only when POC emissions from product loading operations do not exceed the fully offset limit of 20.00 tons/year. The owner/operator shall record the quantity of each material loaded onto vessels at S-1560 and perform the emission calculations required to demonstrate compliance using the following emission factors (pounds per 1000 gallons loaded) and assuming a destruction efficiency of 98.5% for controlled loading.

Gasoline/Components loaded onto Tanker	1.8
Gasoline/Components loaded onto Barge	3.4
Diesel loaded onto Tanker	0.005
Diesel loaded onto Barge	0.012
Residual Oil loaded onto Tanker	0.00004
Residual Oil loaded onto Barge	0.00009

(basis: Cumulative Increase, Offsets)

5. The owner/operator may only use a different methodology and/or different assumptions to demonstrate compliance with Part 4 when approved in advance by the District. (basis: Cumulative Increase, Offsets)

6. The owner/operator of S-1560 Berth 1A shall not load any regulated materials, including gasoline, gasoline blending stocks, aviation gas, or JP-4 unless the entire loading operation is abated with A-1560 Marine Vapor Recovery System. (basis: Cumulative Increase, Offsets)

7. The owner/operator shall install and maintain a Pressure Recorder/Controller in the vapor recovery system to provide a permanent record of pressure during the loading of vessels. These records shall be maintained for a minimum of 5 years. (basis: Cumulative Increase)

8. Not less frequently than every six months, the owner/operator shall conduct tests to assess leakage from all relief valves that vent to atmosphere in the marine vapor recovery system. The owner/operator shall ensure that the testing and record keeping are done in compliance with Regulation 8, Rule 18. (basis: Cumulative Increase, Regulation 8-18)

9. Not more than 30 days after the start-up of S-1560 Berth 1A, the owner/operator shall provide the District's Engineering Division with a final count of fugitive components installed. The owner/operator has been permitted for an increase in the following fugitive components:

- 12 valves in gas/vapor service
- 29 valves in light liquid service

- 17 valves in heavy liquid service
- 64 flanges/connectors in gas/vapor service
- 54 flanges/connectors in light liquid service
- 5 flanges/connectors in heavy liquid service
- 8 pumps in light liquid service
- 1 PRV in gas/vapor service
- 5 PRVs in light liquid service
- 3 PRVs in heavy liquid service

The total permitted fully offset fugitive POC emissions for the Avon Wharf MOTEMS project are 813 lbs/year. (basis: Cumulative Increase, Offsets)

10. If there is an increase in the total fugitive component emissions, the plant's cumulative emissions for the project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The owner/operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after submittal of the final POC fugitive count. If the actual component count is less than the predicted, the total will be adjusted accordingly and all emission offsets applied by the owner/operator in excess of the actual total fugitive emissions will be credited back to the owner/operator. (basis: Offsets)

11. The Owner/Operator shall maintain a District-approved record containing all measurements of type of material and quantity of material loaded and unloaded over Avon Wharf Berth 1A. This information shall be kept available for District inspection for a period of at least 5 years following the date on which such measurements, records or data are made or recorded. (basis: Recordkeeping)

12. Not more than 30 days after the start-up of S-1560 Berth 1A, the owner/operator shall permanently decommission S-100 Avon Berth 1 and S-1508 Berth 1 Recovered Oil Tank, and surrender the permits for S-100, S-108 Avon Berth 5, S-1508 and S-1509 Berth 5 Recovered Oil Tank. (basis: Contemporaneous Emissions Reductions, Cumulative Increase, Offsets)

#### Condition 26407

Application 27790, January 2017.  
Avon Wharf MOTEMS Project  
S-1562 Avon Berth 1A East Diesel Firewater Pump  
S-1563 Avon Berth 1A West Diesel Firewater Pump

1. Operating for reliability-related activities is limited to 70 hours per year per engine.

[Basis: "Stationary Diesel Engine ATCM", CA Code of Regulations, Title 17, Section 93115.6(a)(4)(A)1c]

2. The owner or operator shall operate each firewater pump 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 hours while mitigating emergency conditions or while emission testing to show compliance with District, state or Federal emission limits is not limited.

[Basis: Regulation 9-8-330, "Stationary Diesel Engine ATCM", CA Code of Regulations, Title 17, Section 93115.4(29)]

3. The owner/operator shall operate each firewater pump 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: Regulation 9-8-530, "Stationary Diesel Engine ATCM", CA Code of Regulations, Title 17, Section 93115.10(d)(1)]

4. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 60 months from the date of entry. 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: Regulation 9-8-530, 2-6-501, and "Stationary Diesel Engine ATCM", CA Code of Regulations, Title 17, Section 93115.10(f)]

#### Condition 26408

Application 27790, January 2017.  
Avon Wharf MOTEMS Project  
S-1564 Avon Berth 1A Recovered Oil Fixed Roof Tank 938, 3800 gallons

1. The owner/operator of S-1564 Tank 938 shall not exceed 250,000 gallons of water runoff and recovered oil in any consecutive 12-month period. (basis: Cumulative Increase, Offsets)

2. The owner/operator may store alternate liquid(s) other than the materials specified in Part 1 and/or usages in excess of those specified in Part 1, provided that the owner/operator can demonstrate that all of the following are satisfied:

- a. The true vapor pressure of the organic material is less than 11 psia
- b. The total POC emissions from S-1564 do not exceed 3166 lbs in any consecutive 12-month period.
- c. Toxic emissions do not exceed the following:
  - Toluene 56.95 lbs/yr or 0.385 lb/hr
  - Ethylbenzene 3.15 lb/yr
  - Xylene (Total) 15.73 lbs/yr or 0.106 lb/hr
  - Benzene 8.67 lbs/yr or 0.0586 lb/hr
  - Naphthalene 0.06 lbs/yr
  - n-Hexane 8.16 lb/yr

3. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:

- a. Quantities of each type of liquid stored at this source on a monthly basis.
- b. If a material other than those specified in Part 1 is stored, POC and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Part 2, on a monthly basis;
- c. Monthly throughput and/or emission calculations shall be totaled for each consecutive twelve-month period.

All records shall be retained on-site for five years, from the date of entry, and made available for inspection by District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District Regulations. (Basis: Cumulative Increase; Toxics)

## RECOMMENDATION

It is recommended that an Authority to Construct be granted to Tesoro Refining & Marketing Company LLC for the following source:

<b>S-1560</b>	<b>Avon Wharf Berth 1A, abated by</b>
<b>A-1560</b>	<b>Vapor Recovery System for Avon Wharf Berth 1A</b>
<b>S-1561</b>	<b>Emergency Diesel Generator, Caterpillar Model C9, 398 Bhp</b>
<b>S-1562</b>	<b>East Avon Wharf Emergency Diesel Firewater Pump, Caterpillar Model C18, 700 Bhp</b>
<b>S-1563</b>	<b>West Avon Wharf Emergency Diesel Firewater Pump, Caterpillar Model C18, 700 Bhp</b>
<b>S-1564</b>	<b>Recovered Oil Fixed Roof Tank A-938, 3800 gallons</b>
<b>S-1567</b>	<b>East Diesel Tank, 1000 gallons, exempt per Regulation 2-1-123.3.2</b>
<b>S-1568</b>	<b>West Diesel Tank, 1000 gallons, exempt per Regulation 2-1-123.3.2</b>

It is also recommended that exemptions be granted to Tesoro Refining & Marketing Company LLC for the following sources:

<b>S-1567</b>	<b>East Diesel Tank, 1000 gallons, exempt per Regulation 2-1-123.3.2</b>
<b>S-1568</b>	<b>West Diesel Tank, 1000 gallons, exempt per Regulation 2-1-123.3.2</b>

By: \_\_\_\_\_  
Arthur P Valla  
Senior Air Quality Engineer  
1/9/2017

**Appendix A**  
**Tesoro Avon Wharf Marine Vessel**  
**Emission Calculation Documentation**

This document addresses the emissions sources, methodology, and assumptions used within the Avon Wharf Calculation Spreadsheet (spreadsheet) to estimate emissions for marine vessels calling on the proposed Avon Wharf. Emissions are calculated for each marine vessel call at the existing Avon Wharf from August 2013 through July 2016.

**I. Emissions Sources**

Marine vessels calling on the Avon Wharf consist of tanker ships and barges. Tugboats are used to escort and/or push tanker ships and barges to and from the Avon Wharf. **Table 1** presents the emissions sources that are evaluated for these marine vessels in the spreadsheet.

**TABLE 1.**  
**EMISSIONS SOURCES ON MARINE VESSELS CALLING ON AVON WHARF**

Marine Vessel	Emissions Sources on Marine Vessels Calling on Avon Wharf					
	Main Engine	Auxiliary Engine	Auxiliary Boiler	Onboard Engines	Pump	Fugitive Displacement from Material Loading
Tanker ships	Yes	Yes	No <sup>2</sup>	No		Yes
Barges	No <sup>1</sup>	Yes	No	Yes		Yes
Tugboats (escort/pushing)	Yes	Yes	No	No		No

NOTES:

<sup>1</sup> Only self-propelled barges may have main engines; however, barges calling on Avon Wharf are assumed to not have main engines.

<sup>2</sup> Tankers may have auxiliary boilers; however, tankers calling on Avon Wharf are assumed to not use auxiliary boilers.

Marine vessels travel to the Avon Wharf using vessel traffic lanes. Emissions are calculated for the round-trip starting from the Pilot Boarding/Sea Buoy location (approximately 11 nautical miles west of the Golden Gate Bridge) to the Avon Wharf. Portions of the trip from the Pilot Boarding/Sea Buoy location to the Avon Wharf are segmented to account for emissions from the marine vessels' various operating modes, distances, and speeds.

Tugboats escort the ships through tug escort zones. Only tank vessels carrying 5,000 or more long tons of oil are required to have an escort tug (Title 14, CCR, Subdivision 4, Chapter 4, Subchapter 1). The San Francisco Bay Area is divided into 6 tug escort zones. Avon-bound vessels transit through zones 1, 2, 5, and 6. The vessel escort begins and ends at the western end of zone 1, also known as the COLREGS (International Regulations for Preventing Collisions at Sea) Line, approximately 2.2 nautical miles (nm) west of the Golden Gate Bridge. This is the same location as Point Bonita. A vessel must be escorted by tugboats in zones 1, 2, and 6. No escort is required in zone 5, which lies between zones 2 and 6. However, because the tugboats are already escorting the tank vessel, they typically continue to escort the vessel through zone 5. **Table 2** presents the vessel travel segments, distances, and tug escort zones.

**TABLE 2.**  
**VESSEL TRAVEL SEGMENTS, DISTANCES, AND TUG ESCORT ZONES**

Inbound / Outbound	Segment		Distance, nm	Tug Escort Zone
	From	To		
Inbound	Pilot Boarding (Sea Buoy)	COLREGS Line	8.8	N/A
	COLREGS Line	Golden Gate Bridge	2.3	Zone 1
	Golden Gate Bridge	Echo Buoy	16.45	Zone 2
	Echo Buoy	SPB Light #15	7.7	Zone 5
	SPB Light #15	Near Plains Terminal	7.9	Zone 6
	Near Plains Terminal	Avon Wharf	0.5	Zone 6
Outbound	Avon Wharf	Near Plains Terminal	0.5	Zone 6
	Near Plains Terminal	SPB Light #15	7.9	Zone 6
	SPB Light #15	COLREGS Line	26.45	Zones 1, 2, and 5
	COLREGS Line	Pilot Boarding (Sea Buoy)	8.8	N/A

### A. Tanker Ships

Tanker ships are self-propelled marine vessels that are equipped with a propulsion (main) engine, two to four auxiliary engines, and an auxiliary boiler. The onboard cargo discharge pumps are either steam driven (use steam generated by auxiliary boiler) or electric-driven (use electricity generated by auxiliary engines). Auxiliary engines are typically medium speed, compression ignition engines. **Table 3** presents the tanker ship operating mode, speed, duration, and number of tugboats required per segment. Note that ships not carrying product do not require an escort tug. Ships that are carrying product require 1 escort tug, except during maneuvering. Therefore, in **Table 3**, the number of tugboats required depend on whether the ship is empty or carrying product.

**TABLE 3.**  
**TANKER SHIP OPERATING MODE, SPEED, DURATION, AND NUMBER OF TUGBOATS REQUIRED PER SEGMENT**

Inbound / Docked / Outbound	Segment		Tanker Ships			
	From	To	Operating Mode	Speed, knots	Duration, hours	Number of Tugboats Required
Inbound	Pilot Boarding (Sea Buoy)	COLREGS Line	Transit	12	0.73	0
	COLREGS Line	Golden Gate Bridge	Transit (RSZ)	10	0.23	0 or 1
	Golden Gate Bridge	Echo Buoy	Transit (RSZ)	10	1.65	0 or 1
	Echo Buoy	SPB Light #15	Transit (RSZ)	10	0.77	0 or 1
	SPB Light #15	Near Plains Terminal	Transit (RSZ)	8	0.99	0 or 1
	Near Plains Terminal	Avon Wharf	Maneuvering	5	0.10	2

Inbound / Docked / Outbound	Segment		Tanker Ships			
	From	To	Operating Mode	Speed, knots	Duration, hours	Number of Tugboats Required
	At Avon Wharf (Docking)		Maneuvering	N/A	0.25	2
Docked	At Avon Wharf (Hoteling and Product Discharge)		Hoteling	N/A	Varies	N/A
Outbound	At Avon Wharf (Undocking)		Maneuvering	N/A	0.25	2
	Avon Wharf	Near Plains Terminal	Maneuvering	8	0.06	2
	Near Plains Terminal	SPB Light #15	Transit (RSZ)	10 (loaded); 12 (unloaded)	0.79 (loaded); 0.66 (unloaded)	0 or 1
	SPB Light #15	COLREGS Line	Transit (RSZ)	10 (loaded); 12 (unloaded)	2.65 (loaded); 2.20 (unloaded)	0 or 1
	COLREGS Line	Pilot Boarding (Sea Buoy)	Transit	12	0.73	0

NOTE:  
RSZ = Reduced Speed Zone

## B. Barges

Barges are typically non-self-propelled and therefore aren't equipped with main engines. Non-self-propelled barges are propelled by tugboats, which are also known as pushing boats. These pushing tugboats accompany the barge throughout the span of the trip. The barges are typically equipped with two small auxiliary engines to generate electricity and two auxiliary engines to run the onboard cargo discharge pumps. Articulated Tug/Barges (ATBs) are barges that are mechanically connected with a dedicated tugboat. The dedicated tugboat is classified as an ocean-going vessel and is equipped with a propulsion engines and auxiliary engines. ATBs do not have auxiliary boilers. For this analysis, it is assumed all barges are non-self-propelled, non-ocean-going barges. **Table 4** presents the barge operating mode, speed, duration, and number of tugboats required per segment. As with tankers, barges not carrying product do not require an escort tug. Barges that are carrying product require 1 escort tug, except during maneuvering. Therefore, in **Table 4**, the number of tugboats required depend on whether the ship is empty or carrying product.

**TABLE 4.**  
**BARGE OPERATING MODE, SPEED, DURATION, AND NUMBER OF TUGBOATS REQUIRED PER SEGMENT**

Inbound / Docked / Outbound	Segment		Barges				
	From	To	Operating Mode	Speed, knots	Duration, hours	Number of Tugboats Required	
Inbound	Pilot Boarding (Sea Buoy)	COLREGS Line	Transit	8	1.1	1	
	COLREGS Line	Golden Gate Bridge	Transit	8	0.29	1 or 2	
	Golden Gate Bridge	Echo Buoy	Transit	8	2.06	1 or 2	



Inbound / Docked / Outbound	Segment		Barges			
	From	To	Operating Mode	Speed, knots	Duration, hours	Number of Tugboats Required
	Echo Buoy	SPB Light #15	Transit	8	0.96	1 or 2
	SPB Light #15	Near Plains Terminal	Transit	8	0.99	1 or 2
	Near Plains Terminal	Avon Wharf	Maneuvering	5	0.10	2
	At Avon Wharf (Docking)		Maneuvering	N/A	0.25	2
Docked	At Avon Wharf (Hoteling and Product Discharge)		Hoteling	N/A	Varies	0
Outbound	At Avon Wharf (Undocking)		Maneuvering	N/A	0.25	2
	Avon Wharf	Near Plains Terminal	Maneuvering	5	0.10	2
	Near Plains Terminal	SPB Light #15	Transit	8	0.99	1 or 2
	SPB Light #15	COLREGS Line	Transit	8	3.31	1 or 2
	COLREGS Line	Pilot Buoy	Boarding (Sea Transit)	8	1.1	1

### C. Tugboats

Tugboats are used to escort ships, ATBs, and barges while transiting through the escort zones (only tank vessels carrying 5,000 or more long tons of oil are required to have an escort tug) and assist these vessels while docking and undocking at the port. Non-self-propelled barges require an escort tugboat in addition to the pushing tugboat if the barge is loaded with 5,000 tons of oil as cargo. An escort tugboat is classified as harbor craft, as it operates near the harbor. The number and class of tugboats required to escort a vessel depends on the current velocity, displacement of ships, deadweight tonnage (DWT) of barges, and the bollard pull rating of the available tugboats. However, for this analysis, an escort or pushing tugboat is assumed to typically have two propulsion (main) engines and two auxiliary engines. One of the auxiliary engines is a backup; although two auxiliary engines are present, only one auxiliary engine is used at a time.

Emissions from escort tugboats are estimated for round-trip travel described below:

- Cruise travel from tugboat’s home base to COLREGS Line;
- Escort/assist travel from COLREGS Line to Avon Wharf;
- Cruise travel to and from temporary port (1.7 nautical miles each way);
- Escort/assist travel from Avon Wharf to COLREGS Line;
- Cruise travel from tugboat’s home base.

Emissions from pushing tugboats for barges are estimated for round-trip travel described below:

- Pushing assist travel from the Sea Buoy to Avon Wharf;
- Auxiliary engine use during hoteling;
- Pushing assist travel from Avon Wharf to the Sea Buoy.

## II. Methodology and Assumptions

The methodology and assumptions used to estimate emissions for the emissions sources associated with tankers, barges, and tugboats are described below.

### A. Emissions from Tankers

#### 1. Emissions from Tanker Main Engine

The following equation is used to estimate emissions of a specific pollutant  $p$ , in grams, from tanker main (propulsion) engines:

$$E_p = EF_{p,T,S,MY,F,om} \times MCR \times LF_{om} \times Time_{om} \times LLA_p \times (1 - eff_{p,MY}) \times SF$$

**Table 5** summarizes the parameters, inputs, default assumptions used, and references for estimating emissions from tanker main engines.

**TABLE 5.**  
**TANKER MAIN ENGINE EMISSIONS CALCULATIONS PARAMETERS, DATA INPUTS, ASSUMPTIONS, AND APPLICABLE REFERENCES**

Parameter	Description	Data Inputs, Assumptions, and Applicable References
$T$	Engine type	Applicable engine types are motor diesel, diesel-electric, steam turbine, gas turbine, and gas turbine-electric. If data is not available, motor diesel engine type is assumed.
$EF_{p,T,S,MY,F}$	Emission factor, g/kW-hr	Reference: All emission factors for motor engines obtained from California ARB, May 2011, Appendix D, Emissions Estimation Methodology for Ocean-Going Vessels, Tables II-6 through Tables II-8. Criteria pollutant emission factors for steam turbine and gas turbine propulsion engines obtained from Table 2-9, Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories, US EPA, April 2009. Emission factors for Gas Turbine - Electric assumed to be equal to those for Gas Turbine. Currently all ship motor engines are assumed to be motor diesel.
$p$	Pollutant	NO <sub>x</sub> , CO, VOC, PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub>
$S$	Engine speed, rpm	If data is not available, slow speed engine (129 rpm) is assumed. Main diesel engines are typically two-stroke, slow-speed engines with speed less than 130 rpm.
$MY$	Engine model year	If vessel-specific engine data is not available, model year is assumed to be equal to ship built year.

**TABLE 5.  
TANKER MAIN ENGINE EMISSIONS CALCULATIONS PARAMETERS, DATA INPUTS, ASSUMPTIONS, AND APPLICABLE REFERENCES**

Parameter	Description	Data Inputs, Assumptions, and Applicable References
<i>MCR</i>	Maximum continuous rating (max power) of the engine, kW	If tanker-specific kW is not known, maximum continuous rating is based on ship's deadweight tonnage (DWT), based on equation below: $MCR, kW = 0.746 \times (9070 + 0.101 \times DWT)$ Reference: USEPA, Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data, (EPA420-R-00-002, February 2000), Table 4-5.
<i>LLA<sub>p</sub></i>	Low-load adjustment multiplier	LLA is only applied if main engine operates below 20% load factor. Reference: USEPA, Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories, April 2009, Table 2-15
<i>LF<sub>om</sub></i>	Load factor of the engine by operating mode, %	$LF_{om} = \left(\frac{AS_{om}}{MS}\right)^3$ For docking and undocking operating mode, load factor assumed to be 2%. On a vessel with a steam engine for a main engine with no auxiliary boilers, a minimum load factor of 2% or an equivalent load factor for the same power consumption as required for an auxiliary boiler on a motor diesel main engine (3,000 kW / MCR) or diesel-electric (346 kW / MCR) was assumed. Reference: SF Bay Area Seaports Air Emissions Inventory, Port of Richmond 2005 Emissions Inventory, June 2010
<i>eff<sub>p,MY</sub></i>	Control efficiency	Control efficiencies for NO <sub>x</sub> (30%) and PM (25%) assumed for main motor diesel or diesel-electric engines built after 2004. This control efficiency was removed from the emission calculations since subsequent Port of Los Angeles Inventory documents changed and did not apply these control efficiencies to all tanker engines. Reference: Port of Los Angeles Inventory of Air Emissions 2012, July 2013, Section 3.5.12.
<i>AS<sub>om</sub></i>	Actual vessel speed in operating mode, knots	Assumed speeds are as presented in Table 3. Reference: SF Bay Area Seaports Air Emissions Inventory, Port of Richmond 2005 Emissions Inventory, June 2010; Title 14, CCR, Subdivision 4. Office of Spill Prevention and Response, Chapter 4, Subchapter 1, Sections 851.1 through 851.10.1
<i>MS</i>	Maximum vessel speed, knots	If data is not available, 15 knots is assumed. Reference: CARB, Emissions Estimation Methodology for Ocean Going Vessels, May 2011
<i>Time<sub>om</sub></i>	Duration in operating mode, hours	$Time_{om} = \frac{Distance_{om}}{AS_{om}}$ <i>Distance<sub>om</sub></i> is the distance travelled by the vessel by operating mode in nautical miles. Reference: Pilot Guidebook provided by Tesoro, Distances from the Sea Buoy, pg 76 Docking and undocking activities at Wharf take 15 minutes each. Hoteling time is equal to the vessel departure time subtracted by the vessel arrival time. Reference: SF Bay Area Seaports Air Emissions Inventory, Port of Richmond 2005 Emissions Inventory, June 2010
<i>F</i>	Fuel type	Applicable fuel types for tanker ship main engines include 2.7% sulfur heavy fuel oil [HFO], 0.5% sulfur marine diesel oil [MDO]/marine gas oil [MGO], and 0.1% sulfur MDO/MGO. MDO is assumed to be used in the engines. Since July 1, 2009, sulfur content for ocean-going vessels was reduced to 0.5% sulfur for MDO. Since January 1, 2014, sulfur content for ocean-going vessels has been reduced to 0.1% sulfur for MDO. No heavy fuel oil is used. Emissions factors are converted from 2.7% sulfur content heavy fuel oil to 0.5% and 0.1% sulfur content marine diesel oil using the fuel correction factors in the following equation: $EF_{p,T,S,MY,x\%MDO} = EF_{p,T,S,MY,2.7\%HFO} \times FCF_{x\%MDO}$
<i>om</i>	Operating mode	Tanker ships have cruise, maneuvering, and hoteling operating modes. Main engines are assumed to be operated in cruise, slow cruise in RSZ, and maneuvering operating modes.

**TABLE 5.**  
**TANKER MAIN ENGINE EMISSIONS CALCULATIONS PARAMETERS, DATA INPUTS, ASSUMPTIONS, AND APPLICABLE REFERENCES**

Parameter	Description	Data Inputs, Assumptions, and Applicable References
SF	Shared emissions factor	Ocean going vessels may service multiple refineries. If an ocean going vessel services multiple refineries, the emissions attributed to transit is apportioned evenly to all the refineries that are serviced by the ocean going vessel. The emissions attributed to at-berth activities (maneuvering, hoteling, etc.) during the ship call are not considered shared.  Data from the Marine Exchange of the San Francisco Bay Region (SFMX) was used for information on ship calls.

## 2. Emissions from Tanker Auxiliary Engines

The following equation is used to estimate emissions of a specific pollutant *p*, in grams, from tanker auxiliary engines:

$$E_p = EF_{p,T,S,MY,F} \times MCR \times LF_{om} \times Time_{om} \times SF$$

**Table 6** summarizes the parameters, inputs, default assumptions used, and references for estimating emissions from tanker auxiliary engines.

**TABLE 6.**  
**TANKER AUXILIARY ENGINE EMISSIONS CALCULATIONS PARAMETERS, DATA INPUTS, ASSUMPTIONS, AND APPLICABLE REFERENCES**

Parameter	Description	Data Inputs, Assumptions, and Applicable References															
T	Engine type	If data is not available, motor diesel engine type is assumed.															
EF <sub>p, T, S, MY, F</sub>	Emission factor, g/kW-hr	Reference: All emission factors for motor engines obtained from California ARB, May 2011, Appendix D, Emissions Estimation Methodology for Ocean-Going Vessels, Tables II-8.															
p	Pollutant	NO <sub>x</sub> , CO, VOC, PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub>															
S	Engine speed, rpm	Engine speed of 900 rpm assumed.															
MY	Engine model year	If vessel-specific engine data is not available, model year is assumed to be equal to ship built year.															
MCR	Maximum continuous rating (max power) of the engine, kW	If tanker-specific kW is not known, maximum continuous rating based on ship's maximum continuous rating of the main engine, based on equation below: <i>MCR, kW = 0.211 × (MCR of Main Engine)</i> Reference: USEPA, Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories, April 2009, Table 2-4.															
LF <sub>om</sub>	Load factor of the engine by operating mode, %	Load factors are based on the values below: <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>Operating Mode</th> <th>Tanker Ship</th> <th>ATB</th> </tr> </thead> <tbody> <tr> <td>Cruise</td> <td>24%</td> <td>17%</td> </tr> <tr> <td>Reduced Speed Zone (RSZ) Transit</td> <td>28%</td> <td>27%</td> </tr> <tr> <td>Maneuvering</td> <td>33%</td> <td>45%</td> </tr> <tr> <td>Hoteling</td> <td>26%</td> <td>22%</td> </tr> </tbody> </table> Reference: Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories, US EPA, April 2009, Table 2-7	Operating Mode	Tanker Ship	ATB	Cruise	24%	17%	Reduced Speed Zone (RSZ) Transit	28%	27%	Maneuvering	33%	45%	Hoteling	26%	22%
Operating Mode	Tanker Ship	ATB															
Cruise	24%	17%															
Reduced Speed Zone (RSZ) Transit	28%	27%															
Maneuvering	33%	45%															
Hoteling	26%	22%															

Parameter	Description	Data Inputs, Assumptions, and Applicable References
<i>Time<sub>om</sub></i>	Duration in operating mode, hours	Auxiliary engines are assumed to be running for the entire hoteling duration. Hoteling time is equal to the vessel departure time subtracted by the vessel arrival time.  Reference: SF Bay Area Seaports Air Emissions Inventory, Port of Richmond 2005 Emissions Inventory, June 2010
<i>F</i>	Fuel type	Applicable fuel types for tanker ship auxiliary engines include 2.7% sulfur heavy fuel oil [HFO], 0.5% sulfur marine diesel oil [MDO]/marine gas oil [MGO], 0.1% sulfur MDO/MGO. Since January 1, 2014, sulfur content for ocean-going vessels has been reduced to 0.1% sulfur for MDO/MGO. No heavy fuel oil is used.  Emissions factors are converted from 2.7% sulfur content heavy fuel oil to 0.5% and 0.1% sulfur content marine diesel oil using the fuel correction factors in the following equation:  $EF_{p,T,S,MY,x\%MDO} = EF_{p,T,S,MY,2.7\%HFO} \times FCF_{x\%MDO}$
<i>om</i>	Operating mode	Tanker ships have cruise, slow cruise in reduced speed zone [RSZ], maneuvering, and hoteling operating modes. Auxiliary engines are assumed to be operated in all operating modes.
<i>SF</i>	Shared emissions factor	Ocean going vessels may service multiple refineries. If an ocean going vessel services multiple refineries, the emissions attributed to transit is apportioned evenly to all the refineries that are serviced by the ocean going vessel. The emissions attributed to at-berth activities (maneuvering, hoteling, etc.) during the ship call are not considered shared.  Data from the Marine Exchange of the San Francisco Bay Region (SFMX) was used for information on ship calls.

### 3. Emissions from Tanker Auxiliary Boilers

According to Tesoro, tankers visiting the Avon Berth have onboard pumps that are typically driven by hydraulic or electric power generated by auxiliary engines. Therefore, emissions from tanker auxiliary boilers would not occur. Emissions from the auxiliary engines that drive the onboard pumps have been accounted for.

#### B. Emissions from Barges

Emissions from barges are calculated for auxiliary engines used to generate electricity and auxiliary engines used to operate cargo discharge pumps. The following equation is used to estimate emissions of a specific pollutant *p*, in grams, from barge engines:

$$E_p = EF_{0,MY,HP,U,om} \times F_{MY,HP} \times \left( 1 + D_{HP} \times \frac{A}{UL_U} \right) \times HP_U \times n \times LF_{U,om} \times Time_{om} \times SF$$

**Table 7** summarizes the parameters, inputs, default assumptions used, and references for estimating emissions from barges.

**TABLE 7.**  
**BARGE EMISSIONS CALCULATIONS PARAMETERS, DATA INPUTS, ASSUMPTIONS, AND APPLICABLE REFERENCES**

Parameter	Description	Data Inputs, Assumptions, and Applicable References
<i>T</i>	Engine type	If data is not available, motor diesel engine type is assumed.
<i>EF<sub>0,MY,HP,U</sub></i>	Zero- hour emission factor based on engine model year,	Reference: Criteria air pollutant emission factors from CARB, California Barge and Dredge Emissions Inventory Database, <a href="http://www.arb.ca.gov/msei/categories.htm">http://www.arb.ca.gov/msei/categories.htm</a> .

**TABLE 7.  
BARGE EMISSIONS CALCULATIONS PARAMETERS, DATA INPUTS, ASSUMPTIONS, AND APPLICABLE REFERENCES**

Parameter	Description	Data Inputs, Assumptions, and Applicable References																
	horsepower and engine use, g/HP-hr	<p>Zero-hour emission factor for PM<sub>2.5</sub> assumed to be equal to the zero-hour emission factor for PM<sub>10</sub>. Zero-hour emission factor for SO<sub>2</sub> was estimated using the 15 ppm fuel sulfur content in ultra-low sulfur diesel and the following equation:</p> $EF_{0,SO_2} = \frac{15}{10^6} \times \frac{MW_{SO_2}}{MW_S} \times BSFC$ <p>Where MW<sub>SO<sub>2</sub></sub> is the molecular weight of SO<sub>2</sub> (64 g/mole), MW<sub>S</sub> is the molecular weight of sulfur (32 g/mole), and BSFC is the brake-specific fuel consumption in g/HP-hr.</p>																
<i>p</i>	Pollutant	NO <sub>x</sub> , CO, VOC, PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub>																
<i>MY</i>	Engine model year	Where engine-specific information is not known, the engine model year is assumed to be the latest of either the barge build year, or the earliest year for which Tier 3 was required for an engine of that horsepower. (The shipping operators replace Tier 1 or 2 engines with Tier 3 in lieu of rebuild for compliance with ARB fleet rules.)																
<i>LF<sub>U, om</sub></i>	Load factor of the engine by engine use and operating mode, %	<p>Load factors are based on the values below:</p> <table border="1"> <thead> <tr> <th>Engine</th> <th>Transit</th> <th>Hoteling</th> <th>Discharge</th> </tr> </thead> <tbody> <tr> <td>Main (propulsion)</td> <td>45%</td> <td>0%</td> <td>0%</td> </tr> <tr> <td>Auxiliary engine (generator)</td> <td>75%</td> <td>75%</td> <td>75%</td> </tr> <tr> <td>Auxiliary engine (pumps)</td> <td>0%</td> <td>71%</td> <td>71%</td> </tr> </tbody> </table> <p>Reference: CARB, Appendix C Updates on the Emissions Inventory for Commercial Harbor Craft Operating in California, Table 3.</p> <p>As noted above, it is assumed that none of the barges are self-propelled, therefore no emissions are calculated from main propulsion engines.</p>	Engine	Transit	Hoteling	Discharge	Main (propulsion)	45%	0%	0%	Auxiliary engine (generator)	75%	75%	75%	Auxiliary engine (pumps)	0%	71%	71%
Engine	Transit	Hoteling	Discharge															
Main (propulsion)	45%	0%	0%															
Auxiliary engine (generator)	75%	75%	75%															
Auxiliary engine (pumps)	0%	71%	71%															
<i>Time<sub>om</sub></i>	Duration in operating mode, hours	<p>Transit time is equal to distance traveled in nautical miles divided by speed in knots. For transit mode, barges are assumed to travel at 8 knots. For maneuvering mode, barges are assumed to travel at 5 knots. For docking and undocking, it is assumed to take 15 minutes for each (30 minutes total). Hoteling time is equal to the vessel departure time subtracted by the vessel arrival time. Discharge time is equal to the quantity of cargo discharged divided by the discharge rate of the pumps, provided in the barge database.</p> <p>Reference: Title 14, CCR, Subdivision 4. Office of Spill Prevention and Response, Chapter 4, Subchapter 1, Sections 851.1 through 851.10.1 (for transit speed)</p>																
<i>F<sub>MY, HP</sub></i>	Fuel correction factor based on engine model year and horsepower	<p>Reference: CARB, Proposed OFFROAD Diesel Fuel Correction Factors, Table 7: <a href="http://www.arb.ca.gov/msei/offroad/techmemo/arb_offroad_fuels.pdf">http://www.arb.ca.gov/msei/offroad/techmemo/arb_offroad_fuels.pdf</a></p> <p>Fuel correction factor for PM<sub>2.5</sub> assumed to be equal to fuel correction factor for PM<sub>10</sub>. For all other pollutants, fuel correction factor assumed to be equal to 1.</p>																
<i>D<sub>HP</sub></i>	Deterioration factor based on horsepower	<p>Reference: CARB, California Barge and Dredge Emissions Inventory Database. <a href="http://www.arb.ca.gov/msei/categories.htm">http://www.arb.ca.gov/msei/categories.htm</a></p> <p>Deterioration factor for PM<sub>2.5</sub> assumed to be equal to deterioration factor for PM<sub>10</sub>. For SO<sub>2</sub>, deterioration factor assumed to be equal to 0.</p>																
<i>A</i>	Age of the engine	Age of the engine equals year of call subtracted by engine model year.																
<i>UL<sub>U</sub></i>	Useful life based on the engine use	<p>For main (propulsion) engines, useful life is assumed to be equal to 17 years. For auxiliary engines (generators), useful life is assumed to be equal to 22.5 years. For auxiliary engines (pumps), useful life is assumed to be equal to 21 years.</p> <p>Reference: CARB, Appendix C, Updates on the Emissions Inventory for Commercial Harbor Craft Operating in California, Table 3.</p>																
<i>HP<sub>U</sub></i>	Total horsepower rating of the engines by use	Total horsepower rating is equal to the power rating per engine multiplied by the number of engines. For unknown engine horsepower ratings, the average horsepower of barge engines by engine use was used, based on available barge data.																
<i>n</i>	Number of engines by use on the barge	All barges are assumed to be non-self-propelled. Therefore, the number of main (propulsion) engines is assumed to be 0. The number of auxiliary engines (generators) is assumed to be 2, and the number of auxiliary engines (pumps) is assumed to be 2, if vessel-specific information is not available. In general, only one auxiliary generator engine is needed at a time. For discharging, it is assumed all pumps on vessel are used, and one auxiliary generator engine, unless the barge operates an inert gas system during discharge of gasoline, which necessitates the use of a second auxiliary generator engine.																

**TABLE 7.**  
**BARGE EMISSIONS CALCULATIONS PARAMETERS, DATA INPUTS, ASSUMPTIONS, AND APPLICABLE REFERENCES**

Parameter	Description	Data Inputs, Assumptions, and Applicable References
		For loading, no barge pumps are used to assist the onshore pump(s) and only one generator (auxiliary engine) is used.
<i>U</i>	Engine use	Main or auxiliary engine.
<i>om</i>	Operating mode	Barges have cruise and escort/assist operating modes.
<i>SF</i>	Shared emissions factor	Ocean going vessels may service multiple refineries. If an ocean going vessel services multiple refineries, the emissions attributed to transit is apportioned evenly to all the refineries that are serviced by the ocean going vessel. The emissions attributed to at-berth activities (maneuvering, hoteling, etc.) during the ship call are not considered shared. Data from the Marine Exchange of the San Francisco Bay Region (SFMX) was used for information on ship calls.

### C. Emissions from Tugboats

The following equation is used to estimate emissions of a specific pollutant *p*, in grams, from tugboat engines:

$$E_p = EF_{0,MY,HP,U} \times F_{MY,HP} \times \left( 1 + D_{HP} \times \frac{A}{UL_U} \right) \times HP_U \times n \times LF_{U,om} \times Time_{om} \times SF \times N$$

**Table 8** summarizes the parameters, inputs, default assumptions used, and references for estimating emissions from escort tugboats.

**TABLE 8.**  
**TUGBOAT EMISSIONS CALCULATIONS PARAMETERS, DATA INPUTS, ASSUMPTIONS, AND APPLICABLE REFERENCES**

Parameter	Description	Data Inputs, Assumptions, and Applicable References															
$EF_{0,MY,HP,U}$	Zero-hour emission factor based on engine model year, horsepower and engine use, g/HP-hr	Reference: Criteria air pollutant emission factors from CARB, Appendix B Emissions Estimation Methodology for Commercial Harbor Craft Operating in California, <a href="#">2012</a> . Zero-hour emission factor for PM <sub>2.5</sub> assumed to be equal to the zero-hour emission factor for PM <sub>10</sub> . Zero-hour emission factor for SO <sub>2</sub> was estimated using the 15 ppm fuel sulfur content in ultra-low sulfur diesel and the following equation: $EF_{0,SO_2} = \frac{15}{10^6} \times \frac{MW_{SO_2}}{MW_S} \times BSFC$ Where MW <sub>SO<sub>2</sub></sub> is the molecular weight of SO <sub>2</sub> (64 g/mole), MW <sub>S</sub> is the molecular weight of sulfur (32 g/mole), and BSFC is the brake-specific fuel consumption in g/HP-hr.															
<i>p</i>	Pollutant	NO <sub>x</sub> , CO, VOC, PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub>															
<i>MY</i>	Engine model year	Tugboat built year assumed to be equal to the average built year of all tugboats operating in the Bay Area, by tug class (Class A or B). Engine model year assumed to be the same as the built year, unless specific information on engine replacements is known.															
$LF_{U,om}$	Load factor of the engine by engine use and operating mode, %	Load factors are based on the values below: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Operating Mode</th> <th>Main</th> <th>Auxiliary</th> </tr> </thead> <tbody> <tr> <td>Escort cruise</td> <td>50%</td> <td>43%</td> </tr> <tr> <td>Escort assist</td> <td>31%</td> <td>43%</td> </tr> <tr> <td>Escort hotel</td> <td>0%</td> <td>0%</td> </tr> <tr> <td>Pushing cruise</td> <td>31%</td> <td>17%</td> </tr> </tbody> </table>	Operating Mode	Main	Auxiliary	Escort cruise	50%	43%	Escort assist	31%	43%	Escort hotel	0%	0%	Pushing cruise	31%	17%
Operating Mode	Main	Auxiliary															
Escort cruise	50%	43%															
Escort assist	31%	43%															
Escort hotel	0%	0%															
Pushing cruise	31%	17%															

**TABLE 8.**  
**TUGBOAT EMISSIONS CALCULATIONS PARAMETERS, DATA INPUTS, ASSUMPTIONS, AND APPLICABLE REFERENCES**

Parameter	Description	Data Inputs, Assumptions, and Applicable References
		<p>Pushing assist (Reduced Speed Zone) 31% 27%</p> <p>Pushing assist (maneuvering) 31% 45%</p> <p>Pushing hotel 0% 22%</p> <p>Reference: SF Bay Area Seaports Air Emissions Inventory, Port of Richmond 2005 Emissions Inventory, June 2010, Appendix A, Table 2; Load factor for pushing tugboat auxiliary engine from Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories, US EPA, April 2009, Table 2-7.</p>
$Time_{om}$	Duration in operating mode, hours	<p>Distances and speeds are outlined in Tables 3 and 4, except for light trips (trips when a tug is not escorting/ assisting a vessel) outlined below.</p> <p>Distance from tugboat home base to COLREGS Line is average of distances between the three major tugboat companies operating in Bay Area (obtained from Google Earth). Cruise time is equal to the duration it takes for the tugboat to arrive at the COLREGS Line from its home base (round-trip), and also takes into account travel to temporary base (1.7 nautical miles each way) while escort vessel is hoteling. Tugs used for maneuvering assist but not for escorting are assumed to originate at and/or return to the temporary base. Assist/escort time is the time taken by the vessel to travel to and from the COLREGS Line and docking/undocking at the Berth. Average tugboat speed assumed to be 13 knots when not escorting or pushing.</p>
$F_{MY, HP}$	Fuel correction factor based on engine model year and horsepower	<p>Reference: CARB, Appendix B, Emissions Estimation Methodology for Commercial Harbor Craft Operating in California, 2012, Table II-4; Port of Los Angeles Inventory of Air Emissions 2012, July 2013, Table 4.5.</p> <p>Fuel correction factor for <math>PM_{2.5}</math> assumed to be equal to fuel correction factor for <math>PM_{10}</math>. For all other pollutants, fuel correction factor assumed to be equal to 1 (<math>SO_2</math> emission factor already calculated for 15ppm sulfur content).</p>
$D_{HP}$	Deterioration factor based on horsepower	<p>Reference: CARB, Appendix B, Emissions Estimation Methodology for Commercial Harbor Craft Operating in California, 2012, Table II-5</p> <p>Deterioration factor for <math>PM_{2.5}</math> assumed to be equal to deterioration factor for <math>PM_{10}</math>. For <math>SO_2</math>, deterioration factor assumed to be equal to 0.</p>
$A$	Age of the engine	Age of the engine equals year of call subtracted by engine model year.
$UL_U$	Useful life based on the engine use	<p>For tugboat main (propulsion) engines, useful life is assumed to be equal to 21 years. For auxiliary engines, useful life is assumed to be equal to 23 years.</p> <p>Reference: CARB, Appendix B Emissions Estimation Methodology for Commercial Harbor Craft Operating in California, 2012, Table II-2.</p>
$HP_U$	Horsepower rating of the engine by use	Average of all tugboats operating in Bay Area by tug class (Class A or B). Tugboats escorting barges are assumed to be Class A. Pushing tugboats assisting barges are assumed to be Class A. Tugboats escorting tanker ships are assumed to be Class A.
$n$	Number of engines by use	Each tugboat is assumed to have 2 main engines and 2 auxiliary engines. It is assumed that one of the auxiliary engines is a backup engine, and that only one auxiliary engine is operated at any time.
$U$	Engine use	Main or auxiliary engine.
$om$	Operating mode	Tugboats have cruise, escort/assist, and pushing/assist operating modes.
$N$	Number of tugboats required to escort and dock/undock the vessel	<p>Number of tugboats required per ship varies by currents, ship's displacement, and the Kips rating of the available tugboats. For barges, one pushing tugboat is assumed to be required. One escort tugboat is required based on whether the vessel contains cargo or not. During maneuvering, it is assumed that two tugboats must be present (two escort tugboats for tankers; one pushing tugboat and one escort tugboat for barges).</p> <p>Reference: Title 14, CCR, Subdivision 4. Office of Spill Prevention and Response, Chapter 4, Subchapter 1, Sections 851.1 through 851.10.1. For docking and undocking: San Francisco Harbor Safety Plan Addendum 3 - Tesoro Terminal Regulations for Ships and Barges - Tug Requirement.</p>
$SF$	Shared emissions factor	Ocean going vessels may service multiple refineries. If an ocean going vessel services multiple refineries, the emissions attributed to transit is apportioned evenly to all the refineries that are serviced by the ocean going vessel. The emissions attributed to at-



**TABLE 8.**  
**TUGBOAT EMISSIONS CALCULATIONS PARAMETERS, DATA INPUTS, ASSUMPTIONS, AND APPLICABLE REFERENCES**

Parameter	Description	Data Inputs, Assumptions, and Applicable References
		berth activities (maneuvering, hoteling, etc.) during the ship call are not considered shared. Data from the Marine Exchange of the San Francisco Bay Region (SFMX) was used for information on ship calls.

### D. Emissions from Loading

Fugitive VOC emissions due to vapor displacement during cargo loading into the marine vessel cargo holds were estimated using the emissions factors provided in *AP-42, Chapter 5.2, Transportation and Marketing of Petroleum Liquids, June 2008*. Table 5.2-2 of this AP-42 document provides uncontrolled VOC emission factors for gasoline loading into marine vessels for various loading scenarios. These emission factors are summarized in **Table 9** below. Control efficiency applied only to loading gasoline or other regulated materials onto vessels. Capture and control efficiency of 98.5% was assumed for ships controlled with the A-1560 vapor recovery system.

**TABLE 9.**  
**UNCONTROLLED EMISSION FACTORS FOR GASOLINE LOADING**

Vessel Tank Condition	Previous Cargo	VOC Emissions, lb/1,000 gallons loaded	
		Ships / Ocean Barges	Barges
Typical overall situation	Any cargo	1.8	3.4

Source: EPA AP-42, Chapter 5.2, Transportation and Marketing of Petroleum Liquids, June 2008, Table 5.2-2.

While the previous cargo for each call is known, the vessel tank condition is unknown. Emissions during cargo loading assume an unknown/overall typical vessel tank condition for both ships/ocean barges and barges.

Table 5.2-6 of this AP-42 document provides uncontrolled Total Organic Compound (TOC) emission factors for loading other petroleum products into marine vessels for various loading scenarios. It is assumed VOC is equal to TOC. These emission factors are summarized in **Table 10** below.

**TABLE 10.**  
**UNCONTROLLED EMISSION FACTORS FOR PETROLEUM LIQUID LOADING**

Petroleum Liquid	VOC Emissions, lb/1,000 gallons loaded	
	Ships / Ocean Barges	Barges
Diesel	0.005	0.012
Jet naptha (JP-4)	0.5	1.2
Jet kerosene	0.005	0.013

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Residual oil	0.00004	0.00009
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### III. Future Projected Emissions

Per the BAAQMD's direction, a baseline period from August 2013 through July 2016 was used to calculate an average emission factor in pounds per 1000 barrels. This best represents Tesoro's current fleet and operations. No change in our operations are anticipated for the future. Therefore, the emission factor represents actual volumes loaded or unloaded from ships, the typical fleet use of barges versus tankers, and the typical pattern with respect to sharing emissions due to multiple stops in the Bay. Therefore, this factor is used to calculate projected emissions. This approach is more conservative than assuming that ships will be larger and more completely loaded in the future.

The baseline emissions calculated are contemporaneous emission reductions due to the shutdown and replacement of the existing berth. Therefore, the future emissions projections are adjusted for the contemporaneous emission reduction. The net increase will be offset at the appropriate ratio.

**Application 27990 Addendum, Avon Wharf MOTEMS Project  
ENGINEERING EVALUATION ADDENDUM  
Tesoro Refining & Marketing Company LLC  
PLANT NO. 14628  
APPLICATION NO. 27990  
AVON WHARF MOTEMS PROJECT**

**BACKGROUND**

The Tesoro Refining & Marketing Company LLC. (Tesoro) has started up the Avon Wharf MOTEMS Project, including the following equipment:

- S-1560 Avon Wharf Berth 1A, abated by
- A-1560 Vapor Recovery System for Avon Wharf Berth 1A
- S-1561 Emergency Diesel Generator, Caterpillar Model C9, 398 Bhp
- S-1562 East Avon Wharf Emergency Diesel Firewater Pump, Caterpillar Model C18, 700 Bhp
- S-1563 West Avon Wharf Emergency Diesel Firewater Pump, Caterpillar Model C18, 700 Bhp
- S-1564 Recovered Oil Fixed Roof Tank A-938, 3800 gallons

Tesoro has provided the final fugitive component counts for this project. This addendum updates the project fugitive emissions and the project cumulative increase. POC Emission Offsets will be reduced slightly, from 33.669 tons to 33.652 tons.

This Project also includes removing the following equipment from the Permit to Operate:

- S-100 Avon Wharf Loading Berth 1 (to be decommissioned)
- S-108 Avon Wharf Berth 5 (to be demolished)
- S-1469 Avon Wharf Firewater Pump Engine, 400 HP (to be demolished)
- S-1508 Avon Berth 1 Recovered Oil Tank (to be decommissioned)
- S-1509 Avon Berth 5 Recovered Oil Tank (to be demolished)

This addendum only includes the sections of the 1/9/2017 final engineering evaluation that are changed by the final fugitive component counts.

**EMISSION CALCULATIONS**

Only the project fugitive emission calculations are changed by this addendum.

**E. Project Fugitive Emissions**

Total final fugitive components for the project have been provided by Tesoro on May 4, 2017, and are summarized in the following table, showing the changes from the original estimated component counts.

Component Type	Service Type	Potential Emission Factor (lb/hour/source)	S-1560 Berth 1A	A-1560 Vapor Recovery	S-1564 Slop Tank	Total Components	Emissions lb/day
Valves	Gas/Vapor	1.56E-04	0	<del>17</del>	0	<del>17-12</del>	0.06445
	Light Liquid	1.56E-04	25	0	4	29	0.109

Component Type	Service Type	Potential Emission Factor (lb/hour/source)	S-1560 Berth 1A	A-1560 Vapor Recovery	S-1564 Slop Tank	Total Components	Emissions lb/day
	Heavy Liquid	1.56E-04	<u>127</u>	0	0	<u>12-17</u>	0.04564
Flanges/ Connectors	Gas/Vapor	2.58E-04	0	<u>5664</u>	0	<u>56-64</u>	0.34796
	Light Liquid	2.58E-04	<u>3140</u>	0	14	<u>45-54</u>	0.279334
	Heavy Liquid	2.58E-04	<u>95</u>	0	0	<u>9-5</u>	0.05634
PSV's	Gas/Vapor	1.04E-03	0	1	0	1	0.025
	Light Liquid	1.04E-03	2	0	3	5	0.124
	Heavy Liquid	1.04E-03	3	0	0	3	0.075
Pumps	Light Liquid	5.33E-03	6	0	2	8	1.024
	Heavy Liquid	5.33E-03	0	0	0	0	0
Total Fugitive Emissions					Lbs/Day		<u>2,2272.146</u>
					Lbs/Year		<u>783813</u>
					Tons/Year		<u>0.392406</u>

**TOTAL PROJECT CUMULATIVE INCREASE**

The following table summarized the final cumulative increase for this project.

Avon MOTEMS Project Cumulative Increase, Tons					
Pollutant	NO <sub>x</sub>	CO	POC	PM <sub>10</sub>	SO <sub>2</sub>
<b>Emissions for New Sources</b>					
S-1560 Marine Cargo Carrier	188.8245	34.425	10.743	4.157	9.372
S-1560 Material Loading			20.000		
S-1561 Diesel Generator	0.056	0.022	0.004	0.002	0
S-1562 Diesel Firewater Pump	0.155	0.093	0.004	0.004	0
S-1563 Diesel Firewater Pump	0.155	0.093	0.004	0.004	0
S-1564 Recovered Oil Tank			1.583		
Fugitive Emissions			<u>0.392406</u>		
<b>Total Emissions for New Sources</b>	189.191	34.633	<u>32.73044</u>	4.167	9.372
<b>Contemporaneous Emissions Reductions</b>					
S-100 Berth 1 Cargo Carrier Emissions	42.121	8.361	2.490	1.023	1.876
S-100 Berth 1 Loading Operations			0.893		
S-100 Berth 1 Vapor Recovery System			0.084		

Avon MOTEMS Project Cumulative Increase, Tons					
Pollutant	NO <sub>x</sub>	CO	POC	PM <sub>10</sub>	SO <sub>2</sub>
<b>Emissions for New Sources</b>					
<b>Total Contemporaneous Emissions Reductions</b>	42.121	8.361	3.467	1.023	1.876
<b>Total Cumulative Increase</b>					
<b>Project Totals</b>	147.070	26.272	29.2 <del>6377</del>	3.144	7.496

**EMISSIONS OF TOXIC AIR CONTAMINENTS (TACs)**

Only the fugitive TAC emissions have changed in this addendum.

**F. Fugitive TAC Emissions**

Total fugitive POC emissions were calculated in Part E of the Emission Calculations section above. Fugitive TAC emissions are estimating using the approach summarized in the following table.

Device Service	S-1560		A-1560	S-1564
	Light Liquid	Heavy Liquid	Gas/Vapor	Light Liquid
Calculation Approach	Composition of Liquid Gasoline	Composition of Liquid Diesel	Enrichment Gas Composition	Composition of Liquid Gasoline
<b>TAC Concentrations</b>				
<b>Toluene</b>	30%			30%
<b>Ethylbenzene</b>	5.0%			5.0%
<b>Xylene</b>	30%	2%		30%
<b>Benzene</b>	1.3%			1.3%
<b>Naphthalene</b>	5%	1%		5%
<b>Hexane, n-</b>	0.75%			0.75%
<b>Propylene</b>			50%	

Applying the TAC concentrations above to the total final fugitive POC emissions results in the fugitive TAC emissions summarized in the following table.

Device Service	S-1560		A-1560	S-1564	Total Emissions		
	Light Liquid	Heavy Liquid	Gas/Vapor	Light Liquid	lbs/day	Lbs/hr	Lb/year
<b>Pollutant</b>	<b>lbs/day</b>	<b>lbs/day</b>	<b>lbs/day</b>	<b>lbs/day</b>			
<b>Total POC</b>	1.1 <del>0359</del>	0.1 <del>7569</del>	0.4 <del>3566</del>	0.432	2.1 <del>46226</del>	0.0 <del>89493</del>	<del>81783</del>
<b>Toluene</b>	0.3 <del>3148</del>	-	-	0.130	0.4 <del>6177</del>	0.01 <del>929</del>	1 <del>6874.125</del>
<b>Ethylbenzene</b>	0.05 <del>58</del>	-	-	0.022	0.0 <del>7780</del>	0.003 <del>23</del>	2 <del>89.032</del>
<b>Xylene</b>	0.3 <del>3148</del>	0.00 <del>43</del>	-	0.130	0.4 <del>6481</del>	0.01 <del>93200</del>	1 <del>6975.4039</del>
<b>Benzene</b>	0.01 <del>45</del>	-	-	0.006	0.02 <del>01</del>	0.000 <del>89</del>	7.2 <del>955</del>

Device Service	S-1560		A-1560	S-1564	Total Emissions		
	Light Liquid	Heavy Liquid	Gas/Vapor	Light Liquid			
Pollutant	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	Lbs/hr	Lb/year
Naphthalene	0.0558	0.002	-	0.022	0.07984	0.00334	289.664
Hexane, n-	0.0089	-	-	0.003	0.0112	0.0005	4.2035
Propylene	-	-	0.21833	-	0.21833	0.00917	7985.4103

**G. Total Project TAC Emissions**

The total project annual TAC emissions are summarized in the following table.

Total Project TAC Emissions, lbs/year									
TAC	S-1560 Marine Cargo Carrier	S-1560 Loading Operations		S-1561 Generator	S-1562 East Pump	S-1563 West Pump	S-1564 Slop Tank	Fugitives	Total
		Gasoline	Diesel						
Diesel PM	3433			4.39	7.60	7.60			3453
Toluene		687					56.95	16874.125	9128
Ethylbenzene		38.0					3.15	289.023	6970
Xylene (Total)		190	3720				15.73	16975.4039	40951.04
Benzene		104					8.67	7.2955	120
Naphthalene		0.720	47.1				0.06	289.664	778
n-Hexane		98.40					8.16	4.2035	111
Propylene								8579.4103	7985

The total project hourly TAC emissions are summarized in the following table. Only TACs with acute toxic triggers are included.

Total Project TAC Emissions, lbs/hour									
TAC	S-1560 Marine Cargo Carrier	S-1560 Loading Operations		S-1561 Generator	S-1562 East Pump	S-1563 West Pump	S-1564 Slop Tank	Fugitives	Total
		Gasoline	Diesel						
Toluene		0.0938					0.3850	0.01929	0.49807
Xylene (Total)		0.02589	0.900				0.1060	0.0193200	1.05125
Benzene		0.01426					0.0586	0.00089	0.07367

### HEALTH RISK ASSESSMENT

All of the toxic emissions go down slightly due to the final fugitive component count. Therefore, a revised risk screen is not required.

### OFFSETS

Offsets are required per Regulation 2-2-302 because Tesoro emits more than 35 tpy of POC and 35 tpy of NOx emissions. Regulation 2-2-302 requires that offsets for POC and NOx be provided at a ratio of 1.15 to 1.0. Regulation 2-2-303 requires that a Major Facility must pay offsets for PM10 and SO2 in excess of 1.0 ton per year for new or modified sources. Regulation 2-2-303 requires that offsets for PM10 and SO2 be provided at a ratio of 1.0 to 1.0.

The total project cumulative increase, and the offset requirements, are summarized in the following table.

Total Cumulative Increase, tons					
Pollutant	NOx	CO	POC	PM10	SO2
<b>Total Emissions for New Sources</b>	189.191	34.633	32.73044	4.167	9.372
<b>Total Contemporaneous Emissions Reductions</b>	42.121	8.361	3.467	1.023	1.876
<b>Project Offset Totals</b>	147.070	26.272	29.26377	3.144	7.496
Offset Ratio	1.15:1.0	NA	1.15:1.0	1.0:1.0	1.0:1.0
<b>Required Offsets</b>	<b>169.130</b>		<b>33.65269</b>	<b>3.144</b>	<b>7.496</b>
Bank 915	8.063				3.525
Bank 968			7.983		
Bank 1144	161.067			3.144	3.971
Bank 1568			18.096413		
Bank 1572			5.049		
Bank 1571			0.100		
Bank 1570			1.175		
Bank 1569			1.249		

After the required offsets are surrendered, the banking certificates will have the following credits remaining.

Remaining Credits, tons					
Pollutant	NOx	CO	POC	PM10	SO2
Bank 915	0.000	2.938	0.000	0.000	0.000
Bank 968	0.000	0.000	0.000	0.000	0.000
Bank 1144	75.788	19.912	0.000	8.454	2893.006
Bank 1568	0.000	0.000	0.45134	0.000	0.000
Bank 1572	0.000	0.000	0.000	0.000	0.000
Bank 1571	0.000	0.000	0.000	0.000	0.000
Bank 1570	0.000	0.000	0.000	0.000	0.000
Bank 1569	0.000	0.000	0.000	0.000	0.000

## PERMIT CONDITIONS

New Permit Condition 26406 will be revised as follows:

### Condition 26406

Application 27790, January 2017.  
Avon Wharf MOTEMS Project  
S-1560 Avon Wharf Berth 1A, abated by  
A-1560 Avon Wharf Berth 1A Marine Vapor Recovery System

1. The owner/operator shall not operate S-1560 Berth 1A unless the total product transferred at S-1560 does not exceed 30,000,000 barrels in any consecutive 12-month period. The owner/operator shall not transfer any Crude Oil at S-1560 Berth 1A. (basis: Cumulative Increase, Offsets)
2. Emissions for Cargo Carrier (Barges and Tankers) calls to S-1560 Berth 1A shall not exceed the following fully offset limits:  
NOx: 188.825 tons/year  
CO: 34.425 tons/year  
POC: 10.743 tons/year  
PM10: 4.157 tons/year  
SO2: 9.372 tons/year  
(basis: Cumulative Increase, Offsets)
3. The owner/operator of S-1560 shall demonstrate compliance with the throughput limit in Part 1 by recording the monthly volumes of material loaded and unloaded at S-1560. Monthly throughput shall be totaled on a consecutive 12-month basis. The owner/operator shall demonstrate compliance with the emission limits in Part 2 by showing annual loading and unloading throughput, on a calendar year basis, is less than 30,000,000 barrels per year. (basis: Cumulative Increase, Offsets)
4. The owner/operator shall operate S-1560 only when POC emissions from product loading operations do not exceed the fully offset limit of 20.00 tons/year. The owner/operator shall record the quantity of each material loaded onto vessels at S-1560 and perform the emission calculations required to demonstrate compliance using the following emission factors (pounds per 1000 gallons loaded) and assuming a destruction efficiency of 98.5% for controlled loading.

Gasoline/Components loaded onto Tanker	1.8
Gasoline/Components loaded onto Barge	3.4
Diesel loaded onto Tanker	0.005
Diesel loaded onto Barge	0.012
Residual Oil loaded onto Tanker	0.00004
Residual Oil loaded onto Barge	0.00009

  
(basis: Cumulative Increase, Offsets)



5. The owner/operator may only use a different methodology and/or different assumptions to demonstrate compliance with Part 4 when approved in advance by the District. (basis: Cumulative Increase, Offsets)
6. The owner/operator of S-1560 Berth 1A shall not load any regulated materials, including gasoline, gasoline blending stocks, aviation gas, or JP-4 unless the entire loading operation is abated with A-1560 Marine Vapor Recovery System. (basis: Cumulative Increase, Offsets)
7. The owner/operator shall install and maintain a Pressure Recorder/Controller in the vapor recovery system to provide a permanent record of pressure during the loading of vessels. These records shall be maintained for a minimum of 5 years. (basis: Cumulative Increase)
8. Not less frequently than every six months, the owner/operator shall conduct tests to assess leakage from all relief valves that vent to atmosphere in the marine vapor recovery system. The owner/operator shall ensure that the testing and record keeping are done in compliance with Regulation 8, Rule 18. (basis: Cumulative Increase, Regulation 8-18)
9. ~~Deleted. Tesoro provided the final fugitive component counts 5/4/2017. Not more than 30 days after the start-up of S-1560 Berth 1A, the owner/operator shall provide the District's Engineering Division with a final count of fugitive components installed. The owner/operator has been permitted for an increase in the following fugitive components:  
12 valves in gas/vapor service  
29 valves in light liquid service  
17 valves in heavy liquid service  
64 flanges/connectors in gas/vapor service  
54 flanges/connectors in light liquid service  
5 flanges/connectors in heavy liquid service  
8 pumps in light liquid service  
1 PRV in gas/vapor service  
5 PRVs in light liquid service  
3 PRVs in heavy liquid service~~  
The total permitted fully offset fugitive POC emissions for the Avon Wharf MOTEMS project are ~~783~~ 813 lbs/year. (basis: Cumulative Increase, Offsets)
10. ~~Deleted. Offsets were adjusted according to the final fugitive component count. If there is an increase in the total fugitive component emissions, the plant's cumulative emissions for the project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The owner/operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after submittal of the final POC fugitive count. If the actual component count is less than the predicted, the total will be adjusted accordingly and all emission offsets applied by the owner/operator in excess of the actual total fugitive emissions will be credited back to the owner/operator. (basis: Offsets)~~

11. The Owner/Operator shall maintain a District-approved record containing all measurements of type of material and quantity of material loaded and unloaded over Avon Wharf Berth 1A. This information shall be kept available for District inspection for a period of at least 5 years following the date on which such measurements, records or data are made or recorded. (basis: Recordkeeping)

12. ~~Deleted. S-100 was permanently decommissioned and Not more than 30 days after the start up of S-1560 Berth 1A, the owner/operator shall permanently decommission S-100 Avon Berth 1 and S-1508 Berth 1 Recovered Oil Tank, and surrender the permits for S-100, S-108 Avon Berth 5, S-1508 and S-1509 Berth 5 Recovered Oil Tank have been surrendered. (basis: Contemporaneous Emissions Reductions, Cumulative Increase, Offsets)~~

## RECOMMENDATION

It is recommended that a Permit to Operate be granted to Tesoro Refining & Marketing Company LLC for the following sources:

**S-1560 Avon Wharf Berth 1A, abated by**  
**A-1560 Vapor Recovery System for Avon Wharf Berth 1A**  
**S-1561 Emergency Diesel Generator, Caterpillar Model C9, 398 Bhp**  
**S-1562 East Avon Wharf Emergency Diesel Firewater Pump, Caterpillar Model C18, 700 Bhp**  
**S-1563 West Avon Wharf Emergency Diesel Firewater Pump, Caterpillar Model C18, 700 Bhp**  
**S-1564 Recovered Oil Fixed Roof Tank A-938, 3800 gallons**

By: \_\_\_\_\_  
Arthur P Valla  
Senior Air Quality Engineer  
6/15/17

**Application 28073, FCCU CO Boiler Low NOx Burners**

**ENGINEERING EVALUATION**  
**Tesoro Refining & Marketing Company LLC**  
**PLANT NO. 14628**  
**APPLICATION NO. 28073**

**BACKGROUND**

The Tesoro Refining & Marketing Company LLC (Tesoro) is applying for an Authority to Construct and a Change in Conditions for the following equipment:

**S-901 FCCU CO Boiler**

to alter the source by replacing the auxiliary firing burners with low NOx burners and to incorporate Consent Decree requirements.

This permit application was deemed complete August 30, 2016.

Tesoro has reached agreement with EPA for a Consent Decree (CD) for the Tesoro Golden Eagle Refinery in Martinez. EPA Consent Decree requirements refer to the Consent Decree lodged in *United States of America, et. al. v Tesoro Refining & Marketing Company LLC et. al.*, United States District Court for the Western District of Texas (Civ. No. SA-16-cv-00722).

This Consent Decree imposes NOx emissions limits on the FCCU, detailed in § 43. The FCCU refers to the “Martinez Refinery FCCU” as defined in § 11 to include, but is not limited to, the Martinez FCCU Catalyst Regenerator and the Martinez FCCU CO Boiler (currently known as the No. 7 Boiler). The Interim and Final limits are summarized in the following table:

<u>Category</u>	<u>Description</u>	<u>CD §</u>	<u>Limit</u>	<u>Units</u>	<u>Average Period</u>
FCCU NOx	Interim Limits	43.a(i)	175.1	ppmvd @0% O2	24-hour
		43.a(ii)	52.5	ppmvd @0% O2	365-day rolling
	Final Limits	43.b(i)	40	ppmvd @0% O2	7-day rolling
		43.b(ii)	20	ppmvd @0% O2	365-day rolling

The 365-day average limits are called "long term" limits; the other NOx limits "short term" limits. The interim limits are effective now, and the final limits are effective 7/1/2017 (7-day rolling) and 7/1/2018 (365-day rolling). All limits are applied, in accordance with § 43.d, at the FCCU complex main stack, which is downstream of the FCCU Regenerator S-802, CO Boiler S-901, and Electrostatic Precipitator with Ammonia Injection A-30.

In addition, the Consent Decree imposes new CO emission limits, and clarifies the applicability of the FCCU limits.

- The CO emissions limit is 180 ppmvd at 0% O<sub>2</sub>, 365-day rolling average, applicable at all times, including periods of FCCU startup, shutdown or malfunction. [§ 45]
- The NO<sub>x</sub> limits do not apply when the FCCU is shutdown, but the S-901 Boiler is operating firing refinery fuel gas (i.e., generating steam by the supplemental firing of the boiler). [§ 43e]
- The short term NO<sub>x</sub> limits (175.1 ppmvd and 40 ppmvd) do not apply during FCCU startup, shutdown or malfunction. [§ 43c]
- The long term NO<sub>x</sub> limits (52.5 ppmvd and 20 ppmvd) apply at all times, including periods of FCCU startup, shutdown or malfunction. [§ 43c]
- The short term SO<sub>2</sub> limit (50 ppmvd at 0% O<sub>2</sub>) shall not apply during periods of FCCU feed hydrotreater outage provided the owner/operator complies with the FCCU Feed Hydrotreater Outage Plan at all times (including periods of startup, shutdown or malfunction of the hydrotreater). [Appendix A-2, § B1b]

Lastly, the CD prevents or restricts the use of emission reductions or offsets associated with the NO<sub>x</sub> or SO<sub>2</sub> emission reductions resulting in the compliance with the CD. [§§ 159, 161]

### **S-901 HISTORY and APPLICATION EVALUATION**

S-901 is a grandfathered source that was initially placed in operation in 1969. S-901 serves a dual function -- as an abatement device for the S-802 FCCU Regenerator flue gas, and as a steam boiler source firing supplemental fuel. Alteration of a grandfathered source is a difficult application to address. A District procedure addressing this issue, entitled "A Method to Confirm that a Grandfathered Source at a Petroleum Refinery is Altered rather than Modified" was approved 4/16/2015. However, this approved procedure is not mandatory and Tesoro elected not to use the procedure for this permit application.

In 1994 Permit Application 12722, former refinery owner Tosco was authorized to modify the FCCU to replace the internal reactor riser. To approve this modification, FCCU emissions were "baselined" according to the then-current Regulation 2, Rule 2 New Source Review. Tosco agreed to limit FCCU emissions to the baseline, ensuring the FCCU modification resulting in no increase in emissions (i.e., an alteration as defined in the current Regulation 2-1-233). Thus Application 12722 did not trigger BACT and offsets and the FCCU baseline emissions became federally enforceable emissions limits. The FCCU emissions limits were imposed in Condition 11433.

Currently, in the Tesoro Title V permit, S-802 FCCU is shown as a NSR source and S-901 is shown as a Grandfathered Source. S-802 is a NSR source based on the 1994 Application 12722 modification. Tesoro stated (during the review of this application) that it believes S-901 should also be shown as a NSR source, because it is part of the 1994 emissions baseline. Tesoro also cites 40 CFR 60.101a, saying the definition of FCCU includes the CO Boiler and waste heat boiler. However, this would apply to S-901 as the abatement device for the S-802 FCCU. What the 60.101a definition says is the "*...unit includes the riser, reactor, regenerator, air blowers, spent catalyst or contact material stripper, catalyst or contact material recovery equipment, and regenerator equipment for controlling air pollutant emissions and for heat recovery*" (underlined emphasis added). So it is correct that S-901, the abatement device, is part of S-802 FCCU in federal definitions. However, for District purposes, S-901, the operation firing fuel to generate steam, is a grandfathered source because it has never been modified and the emissions associated with firing fuel

have never been subject to the requirements of Regulation 2, Rule 2 New Source Review. Therefore, the S-901 "Grandfathered Source" designation in the Title V permit is correct.

This Tesoro permit application proposes to alter S-901 by replacing the fuel gas burners used for supplemental firing. The approach to determine if a project is an alteration usually evaluates the proposed emissions and compares them to currently permitted emissions. It would follow that by using the Application 12722 emissions baseline, if there is no emissions increase, the project is an alteration. However, this approach is not possible. The 1994 modification was for the FCCU Reactor, but the emissions baseline was at the FCCU complex stack which would include S-802 and S-901 emissions. Unfortunately, there are no details in the Application 12722 file that indicate what or how much was fired in S-901 during the baseline period (S-901 was originally permitted to fire fuel gas, fuel oil and coke). Therefore, there is no possibility to evaluate the FCCU baseline emissions into that attributed to S-802 and that attributed to S-901. Furthermore, the inclusion of S-901 emissions in the S-802 baseline is problematic since it is not appropriate to group sources when conducting an evaluation under New Source Review.

Therefore, in order to demonstrate that S-901 can be considered an altered grandfathered source, an alternative approach will be used to evaluate this permit application. This approach will demonstrate emissions due to the new burners will not increase above the S-901 grandfathered emissions.

## EMISSION CALCULATIONS

There are no emission increases associated with this application.

For NOx and CO, the following two step approach demonstrates that there are no emission increases.

The first step in the emissions demonstration is to determine if the firing rate for S-901 will be changed. The 1967 Peabody Design Specifications provided by Tesoro indicate that the original S-901 design consisted of 8 burners, each rated for 74,500 scf/hr. The design also specified a fuel gas heat content of 1156 btu/scf. Therefore, the original capacity of the S-901 is:

$$8 \times 74,500 \times 1156 = 688,976,000 \text{ Btu/hr} = 689 \text{ MMBtu/hr}$$

According to the information provided by Tesoro, there will be 6 replacement burners, John Zink Hamworthy ECOjet® Ultra-Low NOx Burners, each designed for 108.6 MMBtu/hr (HHV). Therefore, the new capacity of the S-901 is:

$$6 \times 108.6 = 651.6 \text{ MM Btu/hr}$$

Therefore, this project does not increase the firing rate for S-901.

The second step in the NOx and CO emissions demonstration is to determine that emissions are not increased because the emission factors for the new burners do not increase.

The 1967 Peabody Design Specification does not include emissions factors. However, AP-42 specifies emission factors for "Pre-NSPS" boilers in Chapter 1.4 Natural Gas Combustion. According to Tesoro, the new ECOjet® Ultra-Low NOx Burners are not being supplied with an emissions guarantee. However, the published product specification does include expected emissions. This emission factor information is summarized in the following table:

Pollutant	AP-42 Table 1.4-1 “Pre-NSPS”		ECOjet® Ultra-Low NOx Burners Specification
	Lb/MMSCF	=ppmv@3%O2	ppm
NOx	280	230	<15
CO	84	114	<100

Therefore, this project does not increase the NOx or CO emissions.

For all pollutants other than NOx and CO, AP-42 Chapter 1.4 for Natural Gas Combustion presents emission factors in terms of lb/MMscf (Tables 1.4-2 and 1.4-3) which can be converted to lb/MMBtu. Since this application does not increase the firing rate for S-901, emissions will not increase.

## STATEMENT OF COMPLIANCE

This application does not change the compliance of S-901 FCCU CO Boiler. S-901, which is considered an abatement device for S-802 FCCU, is expected to remain in compliance with the following:

Regulation 6, Rule 1 - Particulate Matter General Requirements.

Regulation 9 Rule 10 - Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators, and Process Heaters in Petroleum Refineries.

NSPS 40 CFR 60 Subpart J -- Standards of Performance for Petroleum Refineries

NESHAPS 40 CFR 63 Subpart UUU -- Refinery MACT2.

40 CFR 64 -- Compliance Assurance Monitoring

The project is exempt from CEQA pursuant to Regulation 2-1-312.3:

312.3 Permit applications for projects undertaken for the sole purpose of bringing an existing facility into compliance with newly adopted regulatory requirements of the District or of any other local, state or federal agency.

The District will publish a Notice of Exemption with the Clerk of Contra Costa County.

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

PSD, BACT, Offsets, and Toxics do not apply.

## PERMIT CONDITIONS

Tesoro’s proposed revision to the permit conditions did not include the interim NOx limits. Tesoro’s rationale was that the Consent Decree Paragraph 158 states that only the final limits should be incorporated into the Title V permit. Actually what paragraph 158 says is that only the final limits will survive the Consent Decree. This makes sense because when the Consent Decree is terminated (presumably many years in the future), the final limits would be effective. However, the interim limits are currently effective, have been since 2015, and it is appropriate to include them in permit conditions.

Permit Condition 11433 will be revised as follows:

Condition 11433

S802 FCCU Fluid Catalytic Cracker

S901 No. 7 Boiler

PERMIT CONDITION ID 11433 PLANT 14628 S-802 AND S-901, THE FCCU/CO BOILER PLANT:

ADMINISTRATIVELY REVISED VIA APPLICATION 15212 (MARCH 2007) ADDED [VALERO CONSENT DECREE \(EPA CASE NO. SA-05CA-0569\) REQUIREMENTS](#) PARTS 7 THROUGH 12.

ADMINISTRATIVELY REVISED VIA APPLICATION 19647 (MARCH 2009) CONSOLIDATION OF BUBBLE CONDITION 4357 WITH CONDITION 8077

ADMINISTRATIVELY REVISED VIA APPLICATION 17500 (JUNE 2009) CLARIFICATION OF CONSENT DECREE REQUIREMENTS, ADDING PARTS 13 - 16.

ALTERED BY APPLICATION 23075 (MAY 2011)

[ALTERED BY APPLICATION 28073 \(FEBRUARY 2017\), UPDATED CONSENT DECREE REQUIREMENTS TO PARTS 7 THROUGH 16, AND ADDED PART 17, BASED ON 2016 TESORO CONSENT DECREE \(EPA CASE NO. SA-16-CV-00722\)](#)

NOTE: The consent decree referenced in this condition is:

Case No. [SA-05-CA-0569-RFSA-16-CV-00722](#); [United States of America, et. al., v. Valero Tesoro Marketing & Refining Company LLC—California, et.al.](#) in the United States District Court, Western District of Texas, [San Antonio Division, Filed 07/18/2016 Lodged 6/15/2005](#), Entered ~~11/23/2005~~ [on September 28, 2016](#).

1. The FCCU/CO Boiler Plant, Sources S-802/S-901, shall be abated at all times of operation by the electrostatic precipitator A-30 operating properly as designed. (basis: cumulative increase, BACT, offsets)
2. Total emissions to the atmosphere from the FCCU/CO Boiler Plant, Sources S-802/S-901, shall not exceed the following limits in any calendar year.

PM/PM10	151.5	ton/year
POC	5.8	ton/year
NOx	354.4	ton/year
SO2	1335.5	ton/year
CO	121.9	ton/year

(basis: cumulative increase, BACT, offsets)
  - 2A. The owner/operator shall continuously monitor and record SO2 and NOx emissions exiting A30 to determine compliance with Part 2. Any new CEMs shall be reviewed and pre-approved the District Source Test Manager. (basis: cumulative increase, BACT)
  - 2B. The owner/operator shall install a continuous opacity monitor to ensure that the emission is not greater than 20% opacity for a period or periods aggregating more than three minutes in any hour when the boiler is burning CO gas from the FCCU. (basis: Reg. 6-1-302)
3. Deleted. (All new hydrocarbon vapor pressure relief valves associated with this project are vented to the refinery flare gas recovery system.)

4. To demonstrate compliance with the emission limits of part 2 above and Condition ID 8077, part B2, the Owner/Operator shall monitor and calculate all emissions, in lb/day, of NO<sub>x</sub>, CO, POC, PM/PM<sub>10</sub>, and SO<sub>2</sub>, associated with the FCCU/CO Boiler Plant, S-802 and S-901, and summarize and report these emissions to the District on a monthly basis, in accordance with the procedures and requirements specified in Condition ID 8077, part B5. (basis: cumulative increase, BACT, offsets)
5. The Owner/Operator may submit for District review approved source test data to develop new emission factors for CO and precursor organic compounds, POC, to be used as alternatives to the emission factors specified in Permit No. 22769 (the No. 3 HDS Permit), if it can be shown that the new data are more representative of actual emissions. (basis: cumulative increase, offsets)
6. The Owner/Operator shall maintain a District approved file containing all measurements, records, charts, and other data which are required to be collected pursuant to the various provisions of this conditional permit, as well as all other data and calculations necessary to determine the emissions from the emission points covered by this permit, according to the procedures specified in Permittee/Owner/Operator's Permit No. 22769 (the No. 3 HDS Permit). This material shall be kept available for District staff inspection for a period of at least 5 years following the date on which such measurements, records or data are made or recorded. (basis: cumulative increase, offsets, BACT)
7.
  - a. NO<sub>x</sub> concentration emission limits from the FCCU Regenerator shall not exceed ~~52.520~~ ppmvd at 0% O<sub>2</sub>, measured as a 365-calendar day rolling average, and ~~175.140~~ ppmvd at 0% O<sub>2</sub>, measured as a ~~24-hour~~ 7-calendar day rolling average, as determined at the FCCU Complex Main Stack prior to commingling with other streams. The first 365-day period ends 10/1/2015. (basis: Regulation 2-1-403, Consent Decree Paragraphs 43a, 43d35)
  - b. Effective July 1, 2017, NO<sub>x</sub> emissions from the FCCU shall not exceed 40 ppmvd at 0% O<sub>2</sub>, measured as a 7-calendar day rolling average, as determined at the FCCU CO Boiler exit stack (as opposed to measuring the gases existing the FCCU Catalyst Regenerator prior to entering the FCCU CO Boiler). (basis: Regulation 2-1-403 and Consent Decree Paragraphs 43b, 43d)
  - c. Effective July 1, 2018, NO<sub>x</sub> emissions from the FCCU shall not exceed 20 ppmvd at 0% O<sub>2</sub>, measured as a 365-calendar day rolling average, as determined at the FCCU CO Boiler exit stack. The first 365-day period ends 7/1/2018. (basis: Regulation 2-1-403 and Consent Decree Paragraphs 43b, 43d)
  - d. The NO<sub>x</sub> emission limits in 7a, b, and c do not apply when the FCCU CO Boiler is operating and firing only refinery fuel gas (i.e not processing gases from the FCCU Catalyst Regenerator. (basis: Regulation 2-1-403 and Consent Decree Paragraph 43e)
8. SO<sub>2</sub> ~~concentration~~ emissions limits from the FCCU and CO Boiler (S-802 and S-901) shall not exceed 25 ppmvd at 0% O<sub>2</sub>, measured as a 365-calendar day rolling average, and 50 ppmvd at 0% O<sub>2</sub>, measured as a 7-calendar day rolling average. (basis: Regulation 2-1-403, Consent Decree Appendix A-2 Paragraph B1a82)
9. CO emissions from the FCCU and CO Boiler (S-802 and S-901) shall not exceed ~~180500~~ ppmvd at 0% O<sub>2</sub>, measured as a 365-day rolling average, and shall apply at all times one-hour block average. The first 365-day period ends 10/1/2015. (basis: Regulation 2-1-403 and Consent Decree Paragraph 4594)
10. Particulate concentration emissions limits from the FCCU and CO Boiler (S-802 and S-901) shall not exceed 1 pound per 1000 pounds of coke burned (front half only according to Method 5B or 5F, as appropriate), measured as a one-hour average over three performance test runs. (basis: Regulation 2-1-403 and Consent Decree Appendix A-2, Paragraph C4a95)



11. The FCCU Regenerator (S-802) shall be an affected facility under 40 CFR 60 Subpart J for carbon monoxide (CO), opacity, particulate matter, and sulfur oxides (SO<sub>2</sub>) and the Owner/Operator shall comply with all applicable provisions of 40 CFR 60 Subparts A and J for FCCU Regenerators. The NSPS Subpart J limits for SO<sub>2</sub>, CO, opacity, and particulate matter, shall not apply during periods of startup, shutdown or malfunction of the FCCU or malfunction of the applicable control equipment. (basis: [Regulation 2-1-403 and Consent Decree Appendix A-2 Paragraphs B2, C4b, C5, D7b, D899, 102, 107A and 110](#))
12.
  - a. The FCCU short term NO<sub>x</sub> limits in Part 7 (40 ppmvd at 0% O<sub>2</sub>, measured as a 7-calendar day rolling average, [175.1 ppm at 0% O<sub>2</sub>, measured as a 24-hr average](#)) shall not apply during FCCU startup, shutdown or malfunction. The FCCU long term limits (20 ppmvd at 0% O<sub>2</sub>, measured as a 365 day rolling average, [52.5 ppm at 0% O<sub>2</sub>, measured as a 365 day rolling average](#)) shall apply at all times, including periods of startup, shutdown or malfunction. (basis: [Regulation 2-1-403 and Consent Decree Paragraph 43c](#))
  - b. ~~and~~The short-term SO<sub>2</sub> limit in Part 8 (50 ppmvd at 0% O<sub>2</sub>, measured as a 7-calendar day rolling average) shall not apply during periods of FCCU feed hydrotreater outage [provided the owner/operator complies with the FCCU Feed Hydrotreater Outage Plan at all times \(including periods of startup, shutdown or malfunction of the hydrotreater\).](#) ~~During hydrotreater outages, startup, shutdown or malfunction, Tesoro shall comply with the FCCU Feed Hydrotreater Outage Plan.~~ (basis: [Regulation 2-1-403 and Consent Decree Appendix A-2, Paragraph B1b-85](#))
13. The Owner/Operator shall use NO<sub>x</sub> and O<sub>2</sub> CEMS to demonstrate compliance with the NO<sub>x</sub> emission limits in Part 7. The CEMS shall be installed, certified, calibrated, operated, and maintained in accordance with the applicable provisions of 40 CFR 60.13 and 40 CFR 60, Appendices A, B, and F. (basis: [Regulation 2-1-403 and Consent Decree Paragraphs 4461, 62](#))
14. The Owner/Operator of S-802 shall use SO<sub>2</sub> and O<sub>2</sub> CEMS to demonstrate compliance with the SO<sub>2</sub> emission limits in Part 8. The CEMS shall be installed, certified, calibrated, operated, and maintained in accordance with the applicable provisions of 40 CFR 60.13 and 40 CFR 60, Appendices A, B, and F. (basis: [Regulation 2-1-403 and Consent Decree Appendix A-2, Paragraphs B390, 91](#))
15. ~~The entry of the 2005 Consent Decree satisfied the notification requirements in accordance with Rule 2-1-403 and Consent Decree Appendix A-2 Paragraphs B2, C5 and D8. The Owner/Operator of S-802 is exempt from notification requirements in accordance with 40 CFR Part 60, Subparts A and J, including without limitation 40 CFR 60.7, with respect to the provisions of 40 CFR Part 60, Subparts A and J, as such requirements apply to relate to CO, opacity, particulate matter, and SO<sub>2</sub> emissions from FCCU regenerators. (basis: Consent Decree Paragraphs 100, 108)~~
16. The Owner/Operator shall conduct the accuracy tests listed below on any CEMS used to comply with this permit condition unless that CEMS is otherwise subject to the requirements of NSPS Subparts A and J. These accuracy tests are allowed in lieu of the requirements of Part 60, Appendix F Paragraphs 5.1.1, 5.1.3 and 5.1.4. (basis: [Regulation 2-1-403 and Consent Decree Paragraphs 44, 46 and Appendix A-2, Paragraphs B3 and D962, 90, 101, 109](#))
  - a. Conduct either a RAA or a RATA on each CEMS at least once every three (3) years.
  - b. Conduct a CGA on each CEMS each calendar quarter during which a RAA or a RATA is not performed.
  - c. Conduct a FAT, as defined in BAAQMD regulations or procedures, if desired, in lieu of any required RAA or CGA.

17. The Owner/Operator shall neither generate nor use any NOx or SO2 emission reductions resulting from compliance with Parts 7 [CD NOx limit], 8 [CD SO2 limit] and 11 [CD NSPS J] as emission reduction credits or offsets in any PSD, major nonattainment NSR, or minor NSR permit or permit proceeding (including, but not limited to, in any netting analysis to avoid PSD or NSR permitting). For any PSD or NSR applicability determinations after November 23, 2005, the emission limitations required in Parts 7 [CD NOx limit], 8 [CD SO2 limit] and 11 [CD NSPS J] shall be used to adjust downward the baseline actual emissions as required in 40 CFR Section 52.21(b)(48) or in the equivalent BAAQMD PSD or NSR requirement. Except for PSD, major nonattainment NSR, or minor NSR permit rules and regulations, nothing in this Part is intended to contravene, impair, be inconsistent with, or otherwise restrict compliance options available to the Owner/Operator under the SIP to demonstrate compliance with any emission limitation or other standard applicable to the Martinez refinery (including without limitation any provision established or imposed under the SIP governing intra-facility emission trading). However, the Owner/Operator shall not trade or sell any emissions reductions to another refinery or plant. To the extent allowed by applicable permitting requirements, nothing in this Part is intended to prohibit Tesoro from seeking to use or generate emission reductions from the emissions unit covered by Parts 7 [CD NOx limit], 8 [CD SO2 limit] and 11 [CD NSPS J] to the extent that the proposed emission reductions represent the difference between baseline actual emissions (as adjusted downward by the emission limitations required in Parts 8 [CD SO2 limit] and 11 [CD NSPS J]) and more stringent limits that Tesoro may elect to accept for this emissions unit in a permitting process. (Basis: Regulation 2-1-403 and Consent Decree Paragraphs 159, 161).

## **TITLE V PERMIT**

This facility is a Major Facility and currently there is a Title V permit renewal being drafted. The changes to the Title V permit are included in Appendix A of this evaluation.

## **RECOMMENDATION**

It is recommended that an Authority to Construct, and a Change in Conditions to the Permit to Operate, be granted to Tesoro for the following equipment:

### **S-901 FCCU CO Boiler**

By: \_\_\_\_\_  
Arthur P Valla  
Senior Air Quality Engineer  
February 17, 2017

Appendix A

The proposed changes to tables in sections IV and VII as well as Condition Number 11433 in section VI. All changes are tracked based on the final “Revision 5” permit.

Changes to Section IV:

**Table IV – B.1**  
**Source-specific Applicable Requirements**  
**S802–FCCU: FLUID CATALYTIC CRACKER**  
**ABATED BY S901 CO BOILER**  
**ABATED BY A30 ESP**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
<b>BAAQMD Regulation 1</b>	<b>General Provisions and Definitions (07/19/2006)</b>		
1-501	Sampling Facilities	Y	
1-520	Continuous Emission Monitoring	Y	
1- 520.5	SO2 and opacity monitors at catalyst regenerators of FCC units <sup>78</sup>	Y	
1- 520.8	Monitors pursuant to Regulations 10, 12 and 2-1-403 <sup>9</sup>	Y	
1-521	Monitoring may be required by APCO	Y	
1-522	Continuous Emission Monitoring and Recordkeeping Procedures	N	
1-522.1	approval of plans and specifications	Y	
1-522.2	scheduling requirements	Y	
1-522.3	CEM performance testing	Y	
1-522.4	reporting of inoperative CEMs	Y	
1-522.5	CEM calibration requirements	Y	
1-522.6	CEM accuracy requirements	Y	
1-522.7	emission limit exceedance reporting requirements	N	
1-522.8	monitoring data submittal requirements	Y	
1-522.9	recordkeeping requirements	Y	
1-522.10	monitors required by Sections 1-521 or 2-1-403 shall meet the requirements specified by the APCO	Y	
1-523	Parametric Monitoring and Recordkeeping Procedures	N	
1-523.1	Report periods of parametric monitor inoperation	Y	
1-523.2	Limits on periods of parametric monitor inoperation	Y	
1-523.3	Report exceedances	N	
1-523.4	Recordkeeping	Y	
1-523.5	Maintenance and calibration; written policy	N	
1-602	Area and Continuous Monitoring Requirements	N	

<sup>7</sup> Emission limits for opacity apply to S802 but are monitored after S901 [at the FCCU Complex Main Stack](#).

<sup>8</sup> Emission limits for SO2 apply to S802 but are monitored after S901 [at the FCCU Complex Main Stack](#).

<sup>9</sup> Monitors are required by Regulation 10 (NSPS J) for opacity and SO2 emissions limits that apply to S802 but are monitored after S901 [at the FCCU Complex Main Stack](#).

**Table IV – B.1  
 Source-specific Applicable Requirements  
 S802–FCCU: FLUID CATALYTIC CRACKER  
 ABATED BY S901 CO BOILER  
 ABATED BY A30 ESP**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
<b>SIP Regulation 1</b>	<b>General Provisions and Definitions (06/28/1999)</b>		
1-522	Continuous Emission Monitoring and Recordkeeping Procedures	Y	
1-522.7	Excesses	Y	
1-523	Parametric Monitoring and Recordkeeping Procedures	Y	
1-523.3	Report exceedances	Y	
<b>BAAQMD Regulation 6 Rule 1</b>	<b>Particulate Matter; General Requirements (12/05/2007)</b>		
6-1-301	Ringelmann Number 1 Limitation	N	
6-1-302	Opacity Limit (where opacity monitor is required by the District)	N	
6-1-305	Visible Particles	N	
6-1-310	Particulate Weight Limitation	N	
6-1-311	General Operations (process weight rate limitation) <sup>10</sup>	N	
6-1-401	Appearance of Emissions	N	
6-1-501	Sampling Facilities and Instruments Required (where opacity monitor is required by the District)	N	
6-1-502	Data, Records and Reporting (where opacity monitor is required by the District)	N	
6-1-601	Particulate Matter, Sampling, Sampling Facilities, Opacity Instruments and Appraisal of Visible Emissions	N	
<b>SIP Regulation 6</b>	<b>Particulate Matter and Visible Emissions (09/04/1998)</b>		
6-301	Ringelmann Number 1 Limitation	Y	
6-302	Opacity Limit (where opacity monitor is required by the District)	Y	
6-305	Visible Particles	Y	
6-310	Particulate Weight Limitation	Y	
6-311	General Operations (process weight rate limitation)	Y	
6-401	Appearance of Emissions	Y	
6-501	Sampling Facilities and Instruments Required (where opacity monitor is required by the District)	Y	
6-502	Data, Records and Reporting (where opacity monitor is required by the District)	Y	
6-601	Particulate Matter, Sampling, Sampling Facilities, Opacity Instruments and Appraisal of Visible Emissions	Y	

<sup>10</sup> Emission limits for particulate matter apply to S802 but are monitored [after S901 at the FCCU Complex Main Stack](#)

**Table IV – B.1  
Source-specific Applicable Requirements  
S802–FCCU: FLUID CATALYTIC CRACKER  
ABATED BY S901 CO BOILER  
ABATED BY A30 ESP**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
<b>BAAQMD Regulation 9 Rule 1</b>	<b>Inorganic Gaseous Pollutants – Sulfur Dioxide (03/15/1995)</b>		
9-1-310	Emission Limitations for Fluid Catalytic Cracking Units, Fluid Cokers, and Coke Calcining Kilns	Y	
9-1-310.1	Emission Limitation for Fluid Catalytic Cracking Unit	Y	
9-1-310.3	Emission Limitation for Fluid Catalytic Cracking Units	Y	
9-1-502	Emission Monitoring Requirements (Regulations 1-520, 1-522)	Y	
9-1-601	Sampling and Analysis of Gas Streams	Y	
9-1-603	Averaging Times	Y	
9-1-605	Emission Monitoring	Y	
<b>BAAQMD Regulation 10</b>	<b>Standards of Performance for New Stationary Sources incorporated by reference (02/16/2000)</b>		
10-14	Subpart J – Standards of Performance for Petroleum Refineries (08/07/1991)	Y	
<b>40 CFR 60 Subpart J</b>	<b>NSPS – Standards of Performance for Petroleum Refineries (06/24/2008) Applicability defined by Condition 11433</b>		
60.102	Standard for Particulate Matter	Y	
60.102(a)(1)	Limit on particulate matter from catalyst regenerator	Y	
60.102(a)(2)	Limit on opacity of gases from catalyst regenerator	Y	
60.103	Standard for Carbon Monoxide	Y	
60.103(a)	Limit on carbon monoxide emissions from catalyst regenerator	Y	
60.104	Standard for Sulfur Dioxide	Y	
60.104(b)(2)	Limit on sulfur oxide emissions from catalyst regenerator without an add-on control device.	Y	
60.104(c)	Determine compliance with §60.104(b)(2) daily on a 7-day rolling average basis per 60.106	Y	
60.105	Monitoring of Emissions and Operations	Y	
60.105(a)(1)	Continuous opacity monitoring requirement for catalyst regenerator emissions to atmosphere	Y	
60.105(a)(2)	Continuous CO concentration monitoring requirement for catalyst regenerator emissions to atmosphere	Y	
60.105(a)(2)(i)	Continuous CO concentration monitoring requirement for catalyst regenerator emissions to atmosphere; span for instrument is 1000 ppm CO	Y	
60.105(c)	Daily record required: Average coke burn-off rate (Mg (tons) per hour) and hours of operation for FCCU catalyst regenerator	Y	
60.105(e)	Periods of excess emissions for §60.7(c) reports	Y	
60.105(e)(1)	Periods of excess emissions: Opacity	Y	

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<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
60.105(e)(2)	Periods of excess emissions: Carbon monoxide	Y	
60.106	Test Methods and Procedures	Y	
60.106(a)	For §60.8 performance tests, use 40 CFR 60 Appendix A reference methods except as specified in §60.8	Y	
60.106(b)	Methods to determine compliance with PM standards in §60.102(a)	Y	
60.106(b)(1)	Methods to determine compliance with PM standards in §60.102(a): equations	Y	
60.106(b)(2)	Methods to determine compliance with PM standards in §60.102(a); Method 5B or 5F methods	Y	
60.106(b)(3)	Coke burn-off rate calculation	Y	
60.106(b)(4)	Methods to determine opacity	Y	
60.106(d)	Methods to determine compliance with CO standard in §60.103(a)	Y	
60.106(g)	Methods to determine compliance with SO <sub>2</sub> standard in §60.104(b)	Y	
60.106(i)	Calculation procedures for determining compliance with §60.104(b)(2)	Y	
60.106(i)(12)	An owner or operator may, upon approval by the Administrator, use an alternative method for determining compliance with §60.104(b)(2)	Y	
60.107	Reporting and recordkeeping requirements	Y	
60.107(b)(2)	Records if subject to §60.104(b)(2)	Y	
60.107(b)(4)	Records for each 7-day rolling average compliance determination	Y	
60.107(c)	Report required if subject to §60.104(b).	Y	
60.107(c)(1)	Report required if subject to §60.104(b). Information required in report:	Y	
60.107(c)(1)(ii)	Report required if subject to §60.104(b). Information required in report if complying with 60.104(b)(2) – Identify all 7 day periods during which average SO <sub>2</sub> exceeded limit	Y	
60.107(c)(3)	Report required if subject to §60.104(b). Information required in report if complying with 60.104(b)(2) – Data required for each 7 day period during which an exceedance occurred	Y	
60.107(d)	Report required if subject to §60.104(b). Information required in report: signed certification explaining periods when data not available	Y	
60.107(f)	Submit required reports semiannually for each six-month period, a report postmarked by the 30th day following the end of each six-month period.	Y	
60.107(g)	Submit signed statement certifying accuracy and completeness of information contained in the report.	Y	
<b>40 CFR 60 Appendix B</b>	<b>NSPS – Title 40 Part 60 Appendix B – Performance Specifications (10/17/2000)</b> <b>Applicability defined by Condition 11433</b>		
Performance Specification 2	Specifications and Test Procedures for SO <sub>2</sub> and NO <sub>x</sub> Continuous Emission Monitoring Systems in Stationary Sources	Y	

**Table IV – B.1**  
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<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
Performance Specification 3	Specifications and Test Procedures for O <sub>2</sub> and CO <sub>2</sub> Continuous Emission Monitoring Systems in Stationary Sources	Y	
Performance Specification 4	Specifications and Test Procedures for Carbon Monoxide Continuous Emission Monitoring Systems in Stationary Sources	Y	
<b>40 CFR 60 Appendix F</b>	<b>NSPS – Title 40 Part 60 Appendix F – Quality Assurance Procedures (06/13/2007)</b> <b>Applicability defined by Condition 11433</b>		
Procedure 1	QA Requirements for Gas Continuous Emission Monitoring Systems	Y	
<b>40 CFR 63 Subpart UUU</b>	<b>NESHAPS for Source Categories - Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units (04/20/2006)</b>		
63.1560	Applicability and Designation of Affected Facility	Y	
63.1561(a)(1)	Applicable to petroleum refineries located at a major source of HAP emissions	Y	
63.1561(a)(2)	Applicable to a major source of HAPs with potential to emit 10 tpy any single HAP or 25 tpy of any combination of HAPs	Y	
63.1562	What parts of my plant are covered by this subpart?	Y	
63.1562(a)	New, reconstructed, or existing affected source at a petroleum refinery	Y	
63.1562(b)(1)	Affected source: Process vent on FCCU catalyst regenerator	Y	
63.1562(e)	Existing affected source	Y	
63.1564	Requirements for HAP Emissions from Catalytic Cracking Units	Y	
63.1564(a)	Emission Limitations and Work Practice Standards	Y	
63.1564(a)(1)	Emission limitation requirements for Catalytic Cracking Units subject to NSPS 60.102 for PM: Meet the emission limitations for NSPS units. (Table 1, Item 1)	Y	
63.1564(a)(3)	Prepare Operation, Maintenance, and Monitoring Plan and operate in compliance with the plan	Y	
63.1564(b)	Initial Compliance Demonstration with emission limitations and work practice standards	Y	
63.1564(b)(1)	Install Continuous Opacity Monitoring System (COMS) to measure and record the opacity of emissions from each catalyst regenerator vent. (Table 3, Item 1)	Y	
63.1564(b)(6)	Demonstrate Initial Compliance with Work Practice Standard by submitting Operation, Maintenance, and Monitoring Plan as part of the Notification of Compliance Status report.	Y	
63.1564(b)(7)	Submit Notice of Initial Compliance Status containing the results of the initial compliance demonstration.	Y	
63.1564(c)	Continuous Compliance Demonstration with emission limitation and work practice standards	Y	

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<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
63.1564(c)(1)	For PM emission limit, determine and record daily average coke burn-off rate and hours of operation for catalyst regenerator; use process data to determine the volumetric flow rate; and maintain PM emission rate below 1.0 lb/1,000 lbs of coke burn-off. For site-specific opacity limit collect hourly average continuous opacity monitoring system data and maintain each 6-minute average per 1-hour period below the site-specific limit. (Table 6, Item 1)	Y	
63.1565	Requirements for Organic HAP Emissions from Catalytic Cracking Units	Y	
63.1565(a)	Emission Limitations and Work Practice Standards	Y	
63.1565(a)(1)	Emission limitation requirements for Catalytic Cracking Units subject to NSPS for CO in 60.103: Meet emission limitations for NSPS units.	Y	
63.1565(a)(3)	Prepare Operation, Maintenance, and Monitoring Plan and operate in compliance with the plan.	Y	
63.1565(b)	Initial Compliance Demonstration with emission limitations and work practice standards	Y	
63.1565(b)(1)	Install Continuous Emissions Monitoring System (CEMS) to measure and record the CO emissions concentration (ppmvd) from each catalyst regenerator vent. (Table 10, Item 1)	Y	
63.1565(b)(4)	Initial Compliance Demonstration with emission limitation. (Table 12, Item 1)	Y	
63.1565(b)(5)	Demonstrate Initial Compliance with Work Practice Standard by submitting Operation, Maintenance, and Monitoring Plan as part of the Notification of Compliance Status report.	Y	
63.1565(b)(6)	Submit Notice of Initial Compliance Status containing the results of the initial compliance demonstration.	Y	
63.1565(c)	Continuous Compliance Demonstration with emission limitation and work practice standards	Y	
63.1565(c)(1)	Demonstrate Continuous Compliance with emission limitation by collecting hourly average CO data, maintain hourly average CO concentration at or below 500 ppmvd. (Table 13, Item 1)	Y	
63.1565(c)(2)	Demonstrate Continuous Compliance with Work Practice Standard through maintaining records to document conformance with the Operation, Maintenance, and Monitoring Plan.	Y	
63.1569	Requirements for HAP Emissions from Bypass Lines	Y	
63.1569(a)(1)	Meet work practice standards for bypass lines by selecting one of four options.	Y	
63.1569(a)(1)(i)	Install an automated system in the bypass line (Table 36, Option 1)	Y	
63.1569(a)(3)	Prepare an Operations, Maintenance, and Operating Plan, and operate at all times in accordance with the Plan.	Y	
63.1569(b)	Initial Compliance Demonstration with work practice standards	Y	



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<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
63.1569(b)(1)	Conduct performance test for automated bypass line (Table 37, Option 1)	Y	
63.1569(b)(2)	Demonstrate initial compliance with work practice standard for bypass line with automated system (Table 38, Option 1).	Y	
63.1569(b)(3)	Demonstrate initial compliance with the work practice standard for automated bypass lines by submitting an Operations, Maintenance, and Monitoring Plan as part of the Notification of Compliance Status report.	Y	
63.1569(b)(4)	Submit the Notification of Compliance Status containing the results of the initial compliance demonstration.	Y	
63.1569(c)	Demonstrate continuous compliance with the work practice standards for bypass lines.	Y	
63.1569(c)(1)	Demonstrate continuous compliance with the work practice standards for automated bypass lines by continuously monitoring and recording whether flow is present in the bypass line, and recording whether the device is operating properly. (Table 39, Option 1)	Y	
63.1569(c)(2)	Demonstrate continuous compliance with the work practice standard for automated bypass lines by complying with the Operation, Maintenance, and Monitoring Plan.	Y	
63.1570	General Compliance Requirements	Y	
63.1570(a)	Operate in compliance with non-opacity standards at all times except during periods of startup, shutdown, and malfunction, as specified in 63.6(f)(1)	Y	
63.1570(b)	Operate in compliance with the opacity limits at all times except during periods of startup, shutdown, and malfunction, as specified in 63.6(h)(1).	Y	
63.1570(c)	Operate and maintain source including pollution control and monitoring equipment in accordance with 63.6(e)(1).	Y	
63.1570(d)	Develop and implement startup, shutdown, and malfunction plan (SSMP) in accordance with 63.6(e)(3)	Y	
63.1570(f)	Report deviations from compliance with this subpart according to the requirements of 63.1575	Y	
63.1570(g)	Deviations that occur during startup, shutdown, or malfunction are not violations if operating in accordance with SSMP	Y	
63.1571	Performance Tests	Y	
63.1571(a)	Conduct Performance Test and submit results no later than 150 days after compliance date	Y	
63.1571(b)	Requirements for Performance Tests	Y	
63.1571(b)(1)	Conduct performance tests in accordance with the requirements of 63.7(e)(1)	Y	
63.1571(b)(2)	Except for opacity and visual emissions observations, conduct three separate test runs of at least an hour for each performance test	Y	
63.1571(b)(3)	Conduct each performance evaluation in accordance with the requirements of 63.8(e)	Y	

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<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
63.1571(b)(4)	Do not conduct performance tests during periods of startup, shutdown, or malfunction	Y	
63.1571(b)(5)	Arithmetic average of emission rates	Y	
63.1572	Monitoring installation, operation, and maintenance requirements	Y	
63.1572(a)	Monitoring installation, operation, and maintenance requirements for continuous emissions monitoring systems	Y	
63.1572(a)(1)	Install, operate, and maintain CO CEMS for the FCCU CO limit on the FCCU according to the requirements in Table 40.	Y	
63.1572(a)(2)	Performance test requirements for CEMS used to meet NSPS CO limit in accordance with §63.8 and Table 40.	Y	
63.1572(a)(3)	Minimum data requirements for CEMS per 63.8(c)(4)(ii).	Y	
63.1572(a)(4)	Data reduction requirements per 63.8(g)(2).	Y	
63.1572(b)	Monitoring installation, operation, and maintenance requirements for continuous opacity monitoring systems.	Y	
63.1572(b)(1)	Install, operate, and maintain COM for the FCCU according to the requirements in Table 40.	Y	
63.1572(b)(2)	Performance test requirements for COMS to meet NSPS COM limit in accordance with §63.8 and Table 40.	Y	
63.1572(b)(3)	Minimum data requirements for CEMS per 63.8(c)(4)(i).	Y	
63.1572(d)	Data monitoring and collection requirements	Y	
63.1572(d)(1)	Conduct monitoring at all times source is operating except for monitoring malfunctions, repairs, and QA/QC activities	Y	
63.1572(d)(2)	Not use data recorded during monitoring malfunctions, repairs, and QA/QC activities	Y	
63.1573	Monitoring Alternatives	Y	
63.1573(a)(2)	Alternative to calculate regenerator exhaust rate based on air flow rate to the regenerator, and CO/CO <sub>2</sub> , and O <sub>2</sub> in exhaust flow	Y	
63.1574	Notification Requirements	Y	
63.1574(a)(2)	Submit notification of intent to conduct performance test 30 days before scheduled (instead of 60 days)	Y	
63.1574(a)(3)	Notification of Compliance Status	Y	
63.1574(a)(3)(ii)	Submit Notification of Compliance Status for initial compliance demonstration that includes a performance test, no later than 150 days after source compliance date	Y	
63.1574(d)	Information to be Submitted in Notice of Compliance Status (Table 42): identification of affected sources and emission points (Item 1); initial compliance demonstration (Item 2); continuous compliance (Item 3)	Y	
63.1574(f)	Requirement to prepare Operation, Maintenance, and Monitoring Plan	Y	

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63.1574(f)(1)	Submit plan to permitting authority for review and approval along with NOCS. Include duty to prepare and implement plan into Part 70 or 71 permit. Submit changes for review and approval. Comply with approved OMMP until change approved.	Y	
63.1574(f)(2)	Minimum contents of Operation, Maintenance, and Monitoring Plan	Y	
63.1575	Reports	Y	
63.1575(a)	Required reports: semiannual compliance report (Table 43, Item 1)	Y	
63.1575(b)	Specified semiannual report submittal dates	Y	
63.1575(c)	Information required in compliance report	Y	
63.1575(d)	Information required for deviations from emission limitations and work practice standards where CEMS or COMS <b>is not</b> used to comply with emission limitation or work practice standard	Y	
63.1575(e)	Information required for deviations from emission limitations and work practice standards where CEM or COMS <b>is</b> used to comply with emission limitation or work practice standard	Y	
63.1575(f)	Additional information for compliance reports	Y	
63.1575(g)	Submittal of reports required by other regulations in place of or as part of compliance report if they contain the required information	Y	
63.1575(h)	Reporting requirements for startups, shutdowns, and malfunctions	Y	
63.1576	Recordkeeping	Y	
63.1576(a)	Required Records – General	Y	
63.1576(b)	Records for continuous emission monitoring systems and continuous opacity monitoring systems	Y	
63.1576(c)	Records required by for visible emission observations (63.6(h))	Y	
63.1576(d)	Records required by Tables 6, 7, 13, and 14 of Subpart UUU for catalytic cracking units and Table 39 for bypass lines	Y	
63.1576(e)	Maintain copy of Operation, Maintenance, and Monitoring Plan and records to show continuous compliance with plan	Y	
63.1576(f)	Records of changes that affect emission control system performance	Y	
63.1576(g)	Records in a form suitable and readily available for review	Y	
63.1576(h)	Maintain records for 5 years	Y	
63.1576(i)	Records onsite for two years; may be maintained offsite for remaining 3 years	Y	
<b>40 CFR 64</b>	<b>Compliance Assurance Monitoring (10/22/1997)</b>		
64.2(a)	General Applicability	Y	
64.2(a)(1)	General Applicability: Subject to an emission limitation or standard for regulated air pollutant	Y	
64.2(a)(2)	General Applicability: Uses a control device to achieve compliance with emission limitation	Y	

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64.2(a)(3)	General Applicability: Has pre-control device potential to emit $\geq$ major source threshold	Y	
64.2(b)(1)	Exemptions for emission limitations or standards	Y	
64.2(b)(1)(i)	Exemptions for emission limitations or standards: Emission limitation proposed after 11/15/1990	Y	
64.2(b)(1)(vi)	Exemptions for emission limitations or standards: Title V permit specifies a continuous compliance determination method for emission limitation	Y	
<b>BAAQMD Condition 8077</b>			
Part B2	Emissions – see Table A of Appendix A	Y	
Part B2A	Emissions Cap – annual limits	Y	
Part B2B	Emissions Cap – monthly limits	Y	
Part B2C	Emissions Cap – monthly compensatory emission limits	Y	
Part B2D	Emissions Cap – total accumulated emissions in calendar year limit		
Part B5	Reporting and Recordkeeping	Y	
Appendix A	Refinery emission sources covered by Cap emission limitations	Y	
Appendix A.1	Emission points covered by the hydrocarbon limits of Part B2	Y	
Appendix A.2	Emission points covered by the nitrogen oxides limits of Part B2	Y	
Appendix A.3	Emission points covered by the sulfur oxide limits of Part B2	Y	
Appendix A.4	Emission points covered by the carbon monoxide limits of Part B2	Y	
Appendix A.5	Emission points covered by the particulate limits of Part B2	Y	
Appendix C	Procedures for determining emissions from refinery sources identified in Appendix A	Y	
Appendix C.2(b)	SO <sub>2</sub> Emissions – FCCU-COB	Y	
Appendix C.3(b)	NO <sub>x</sub> Emissions – FCCU-COB	Y	
Appendix C.4(b)	Particulate Emissions – FCCU COB. Includes source test requirements	Y	
Appendix C.5(b)	Nonmethane Hydrocarbon Emissions – FCCU COB	Y	
Appendix C.6(b)	Carbon Monoxide Emissions – FCCU-COB	Y	
Appendix D	Emission and fuel use monitoring instruments and procedures	Y	
Appendix D.SO <sub>2</sub>	In-stack SO <sub>2</sub> concentration monitor and stack gas flow rate monitors on S901	Y	
Appendix D.NO <sub>x</sub>	In stack NO <sub>x</sub> concentration monitor and stack gas flow rate monitor on S901	Y	

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Appendix D. 100 PSI Fuel Gas Metering System	Flow rate monitor for 100# refinery fuel gas supply to S901	Y	
<b>BAAQMD Condition 11433</b>			
Part 1	Requirement for abatement by A-30 Electrostatic Precipitator (basis: cumulative increase, BACT, offsets)	Y	
Part 2	Annual emission limits by pollutant (basis: cumulative increase, BACT, offsets)	Y	
Part 2A	NOx and SO2 CEM requirement (basis: cumulative increase, BACT)	Y	
Part 2B	Continuous Opacity Monitor (basis: Reg. 6-302)	Y	
Part 4	Requirement to monitor and calculate emissions (basis: cumulative increase, BACT, offsets)	Y	
Part 5	Procedure for development of new emission factors (basis: cumulative increase, offsets)	Y	
Part 6	Record keeping (basis: cumulative increase, offsets, BACT)	Y	
<del>Part 7a</del> Part 7	<del>Consent decree Interim NOx Emission Limits at FCCU Complex Main Stack (basis: Regulation 2-1-403, Consent Decree §§ 43a, 43d)</del> Consent decree NOx Emission Limits (basis: Consent Decree §§ 35)	Y	
Part 7b	<del>Consent Decree Final Short Term NOx Emission Limits at FCCU Complex Main Stack (basis: Regulation 2-1-403, Consent Decree §§ 43b, 43d)</del>	<u>Y</u>	
Part 7c	<del>Consent Decree Final Long Term NOx Emission Limits at FCCU Complex Main Stack (basis: Regulation 2-1-403, Consent Decree §§ 43b, 43d)</del>	<u>Y</u>	
Part 7d	<del>NOx emission limits in 7a, 7b and 7c do not apply when the FCCU CO Boiler is operating and firing only fuel gas. (basis: Rule 2-1-403 and Consent Decree §§ 43e)</del>	<u>Y</u>	
Part 8	<del>Consent decree SO2 Emission Limits from FCCU and CO Boiler (basis: Regulation 2-1-403, Consent Decree Appendix A-2 §§ B1a)</del> Consent decree SO2 Emission Limits (basis: Consent Decree §§ 82)	Y	
Part 9	<del>Consent decree CO Emission Limits from FCCU and CO Boiler (basis: Rule 2-1-403 and Consent Decree §§ 45)</del> Consent decree CO Emission Limits (basis: Consent Decree §§ 94)	Y	
Part 10	<del>Consent decree Particulate Emission Limits from FCCU and CO Boiler (basis: Regulation 2-1-403, Consent Decree Appendix A-2 §§ C4a)</del> Consent decree Particulate Emission Limits (basis: Consent Decree §§ 95)	Y	

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Part 11	Consent Decree NSPS Applicability: SO <sub>2</sub> , CO, opacity, particulate matter. NSPS Limits not applicable during startup, shutdown or malfunction (basis: <a href="#">Regulation 2-1-403 and Consent Decree Appendix A-2 §§ B2, C4b, C5, D7b, D8</a> <del>Consent Decree §§ 99, 102, 107A, 110</del> )	Y	
Part 12a	<del>Consent Decree short-term NO<sub>x</sub> and SO<sub>2</sub> limits not applicable during hydrotreater outage, including startup, shutdown or malfunction (basis: Consent Decree §§ 85)</del> <a href="#">Consent Decree short-term NO<sub>x</sub> limit is not applicable during FCCU startup, shutdown or malfunction. Consent Decree long-term limit is applicable at all times, including periods of FCCU startup, shutdown or malfunction. (basis: Regulation 2-1-403 and Consent Decree §§ 43c)</a>	Y	<a href="#">Short term 7/1/2017</a> <a href="#">Long-term 7/1/2018</a>
<a href="#">Part 12b</a>	<a href="#">Consent Decree short-term SO<sub>2</sub> limit not applicable during hydrotreater outage, including startup, shutdown or malfunction, provided the owner operator complies with the FCCU Hydrotreater Outage Plan. (basis: Rule 2-1-403 and Consent Decree Appendix A-2 §§ B1b)</a>	<u>Y</u>	
Part 13	Consent Decree NO <sub>x</sub> monitoring requirements (basis: <a href="#">Regulation 2 1 403 and Consent Decree §§ 4461, 62</a> )	Y	
Part 14	Consent Decree SO <sub>2</sub> monitoring requirements (basis: <a href="#">Regulation 2-1-403 and Consent Decree Appendix A-2 §§ B3</a> <del>Consent Decree §§ 90, 91</del> )	Y	
<a href="#">Part 15</a>	<del>Consent Decree exemptions from NSPS notification requirements (basis: Consent Decree §§ 100, 108)</del>	<del>Y</del>	
Part 16	Consent Decree CEMS accuracy test allowances (basis: <a href="#">Regulation 2 1 403 and Consent Decree §§ 44, 46 and Appendix A-2, §§ B3 and D9</a> <del>Consent Decree §§ 62, 90, 101, 109</del> )	Y	
<a href="#">Part 17</a>	<a href="#">Restrictions on generation and use of emission reductions from compliance with Part 7 [NO<sub>x</sub> limits], Part 8 [SO<sub>2</sub> limits] Part 11 [CD NSPS J]. (Basis: Rule 2-1-403 and Consent Decree Paragraphs 159 and 161).</a>	<u>Y</u>	
<b>BAAQMD Condition 22150</b>			
Part 1	Continuous ESP opacity monitoring for assurance of compliance with Regulations 6-310. (basis: Regulation 6-310, 2-6-503)	Y	
Part 2	Opacity limit; Each time the opacity exceeds the established range of compliance, the owner/operator shall conduct a source test to determine compliance with Regulations 6-310. The source test shall be within 45 days of the detection of the exceedance.(basis: Regulation 2-6-503)	Y	

**Table IV – C.1.1  
Source-specific Applicable Requirements  
S901- No. 7 BOILER - FCCU CO BOILER  
ABATES S802**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
<b>BAAQMD Regulation 1</b>	<b>General Provisions and Definitions (07/19/2006)</b>		
1-520	Continuous Emission Monitoring	Y	
1-520.5	SO <sub>2</sub> and opacity monitoring for catalyst regenerators for fluid catalytic cracking units <sup>11, 12</sup>	Y	
1-520.8	Monitors pursuant to Regulations 10, 12 and 2-1-403 <sup>13</sup>	Y	
1-521	Monitoring May Be Required	Y	
1-522	Continuous Emission Monitoring and Recordkeeping Procedures	N	
1-522.1	approval of plans and specifications	Y	
1-522.2	scheduling requirements	Y	
1-522.3	CEM performance testing	Y	
1-522.4	reporting of inoperative CEMs	Y	
1-522.5	CEM calibration requirements	Y	
1-522.6	CEM accuracy requirements	Y	
1-522.7	emission limit exceedance reporting requirements	N	
1-522.8	monitoring data submittal requirements	Y	
1-522.9	recordkeeping requirements	Y	
1-522.10	Continuous Emission Monitoring and Recordkeeping Procedures	Y	
1-523	Parametric Monitoring and Recordkeeping Procedures	N	
1-523.1	Report periods of parametric monitor inoperation	Y	
1-523.2	Limits on periods of parametric monitor inoperation	Y	
1-523.3	Report exceedances	N	
1-523.4	Recordkeeping	Y	
1-523.5	Maintenance and calibration; written policy	N	
1-602	Area and Continuous Monitoring Requirements	N	
<b>SIP Regulation 1</b>	<b>General Provisions and Definitions (06/28/1999)</b>		
1-522	Continuous Emission Monitoring and Recordkeeping Procedures	Y	
1-522.7	emission limit exceedance reporting requirements	Y	
1-523	Parametric Monitoring and Recordkeeping Procedures	Y	
1-523.3	Report exceedances	Y	
<b>BAAQMD Regulation 6 Rule 1</b>	<b>Particulate Matter; General Requirements(12/05/2007)</b>		

<sup>11</sup> Emission limits for opacity apply to S802 but are monitored after S901 [at the FCCU Complex Main Stack](#).

<sup>12</sup> Emission limits for SO<sub>2</sub> apply to S802 but are monitored after S901 [at the FCCU Complex Main Stack](#).

<sup>13</sup> Monitors are required by Regulation 10 (NSPS J) for opacity and SO<sub>2</sub> emissions limits that apply to S802 but are monitored after S901 [at the FCCU Complex Main Stack](#).

**Table IV – C.1.1  
 Source-specific Applicable Requirements  
 S901- No. 7 BOILER - FCCU CO BOILER  
 ABATES S802**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
6-1-301	Ringelmann No. 1 Limitation	N	
6-1-302	Opacity Limitation	Y	
6-1-304	Tube Cleaning	N	
6-1-305	Visible Particles	N	
6-1-310	Particle Weight Limitation	N	
6-1-310.3	Heat transfer operations	N	
6-1-311	General Operations (process weight rate limitation) <sup>14</sup>	N	
6-1-601	Particulate Matter, Sampling, Sampling Facilities, Opacity Instruments and Appraisal of Visible Emissions	N	
<b>SIP Regulation 6</b>	<b>Particulate Matter and Visible Emissions (09/04/1998)</b>		
6-301	Ringelmann No. 1 Limitation	Y	
6-302	Opacity Limitation	Y	
6-304	Tube Cleaning	Y	
6-305	Visible Particles	Y	
6-310	Particle Weight Limitation	Y	
6-310.3	Heat transfer operations	Y	
6-311	General Operations (process weight rate limitation)	Y	
6-601	Particulate Matter, Sampling, Sampling Facilities, Opacity Instruments and Appraisal of Visible Emissions	Y	
<b>BAAQMD Regulation 9 Rule 10</b>	<b>Inorganic Gaseous Pollutants - Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators, and Process Heaters in Petroleum Refineries (07/17/2002)</b>		
9-10-303.1	Federal Interim Facility-wide NOx emission limit for CO Boilers	Y	
9-10-304	NOx emission limit for CO Boilers	N	
9-10-304.1	NOx emission limit for CO Boilers	N	
9-10-305	CO emission limit	N	
9-10-502	Monitoring for sources subject to 9-10-301, 303, 304, and 305	N	
9-10-502.1	CEMS for NOx, CO, and O2	N	
9-10-502.2	Fuel flowmeters	N	
9-10-504	Recordkeeping	N	
9-10-504.1	Recordkeeping for sources subject to 9-10-301, 304, or 305, or effective 7/17/2007, 9-10-303	N	
9-10-505	Reporting for sources subject to 9-10-301, 303, 304, 305, and/or 306	N	
9-10-601	Determination of Nitrogen Oxides	Y	

<sup>14</sup> Emission limits for particulate matter apply to S802 but are monitored [after S901 at the FCCU Complex Main Stack](#).



**Table IV – C.1.1  
Source-specific Applicable Requirements  
S901- No. 7 BOILER - FCCU CO BOILER  
ABATES S802**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
9-10-602	Determination of Carbon Monoxide and Stack-Gas Oxygen	N	
9-10-603	Compliance Determination	Y	
9-10-604	Determination of Higher Heating Value	Y	
<b>SIP Regulation 9 Rule 10</b>	<b>Inorganic Gaseous Pollutants - Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators, and Process Heaters in Petroleum Refineries (04/02/2008)</b>		
9-10-502	Monitoring for sources subject to 9-10-303	Y	
9-10-504.1	Recordkeeping for sources subject to 9-10-303	Y	
9-10-505	Reporting for sources subject to 9-10-303 and/or 306	Y	
<b>BAAQMD Manual of Procedures, Volume V</b>	<b>Continuous Emission Monitoring Policy and Procedures (01/20/1982)</b>	N	
<b>BAAQMD Condition 7397</b>		Y	
Part 1	Limit on Ammonia Injection at A-30 (basis: toxics)	Y	
Part 2	Requirement for Ammonia Flow Meter and Recorder Record Keeping (basis: toxics, cumulative increase, offsets)	Y	
Part 3	Gaseous Fuel Requirement (basis: Cumulative increase)	Y	
<b>BAAQMD Condition 8077</b>			
Part B1	Definitions (basis: definitions)	Y	
Part B2	Emissions (basis: cumulative increase, BACT, offsets)	Y	
Part B3	Emission reductions (basis: cumulative increase, offsets, bubble)	Y	
Part B4	Monitoring	Y	
Part B4D	Monitoring per Table D of Appendix to this permit condition (cumulative increase, offsets)	Y	
Part B5	Reporting and Record Keeping (cumulative increase, offsets)	Y	
Part B10	Access (cumulative increase, offsets)	Y	
Part B11	Enforcement (basis: cumulative increase, offsets)	Y	
Part B12	Miscellaneous (basis: cumulative increase, offsets)	Y	
Part B12C	Maintain equipment in good working order (basis: cumulative increase, offsets)	Y	
Part B12D	Nothing in this condition shall be construed to allow violation of any other law or regulation (basis: cumulative increase, offsets)	Y	

**Table IV – C.1.1  
Source-specific Applicable Requirements  
S901- No. 7 BOILER - FCCU CO BOILER  
ABATES S802**

<b>Applicable Requirement</b>	<b>Regulation Title or Description of Requirement</b>	<b>Federally Enforceable (Y/N)</b>	<b>Future Effective Date</b>
Part B12E	Emission reductions required by this condition shall not be eligible for banking or credited as emission reductions against cumulative increases (basis: cumulative increase, offsets)	Y	
Part B12F	Annual limits in B2 shall be adjusted consistent with BAAQMD rule changes (basis: cumulative increase, offsets)	Y	
Part B12G	Baseline emissions (basis: cumulative increase, offsets)	Y	
Part B12J	Instrument downtime (basis: cumulative increase, offsets)	Y	
Part B12K	Breakdowns, malfunctions, and other causes for emission exceedances (basis: cumulative increase, offsets)	Y	
Part B12L	Adjustment of CO limits based on modeling (basis: cumulative increase, offsets)	Y	
Part B13	Severability (basis: cumulative increase, offsets)	Y	
Part B14	Environmental Management Plan (basis: cumulative increase, offsets)	Y	
<b>BAAQMD Condition 11433</b>			
Part 1	Requirement for abatement by A-30 Electrostatic Precipitator (basis: cumulative increase, BACT, offsets)	Y	
Part 2	Annual emission limits by pollutant (basis: cumulative increase, BACT, offsets)	Y	
Part 2A	NOx and SO2 CEM requirement (basis: cumulative increase, BACT)	Y	
Part 2B	Continuous Opacity Monitor (basis: Reg. 6-1-302)	Y	
Part 4	Requirement to monitor and calculate emissions (basis: cumulative increase, BACT, offsets)	Y	
Part 5	Procedure for development of new emission factors (basis: cumulative increase, offsets)	Y	
Part 6	Record keeping (basis: cumulative increase, offsets, BACT)	Y	
<a href="#">Part 7a</a>	<a href="#">Consent decree Interim NOx Emission Limits at FCCU Complex Main Stack (basis: Regulation 2-1-403, Consent Decree §§ 43a, 43d)</a>	<a href="#">Y</a>	
<a href="#">Part 7b</a>	<a href="#">Consent Decree Final Short Term NOx Emission Limits at FCCU Complex Main Stack (basis: Regulation 2-1-403, Consent Decree §§ 43b, 43d)</a>	<a href="#">Y</a>	
<a href="#">Part 7c</a>	<a href="#">Consent Decree Final Long Term NOx Emission Limits at FCCU Complex Main Stack (basis: Regulation 2-1-403, Consent Decree §§ 43b, 43d)</a>	<a href="#">Y</a>	
<a href="#">Part 7d</a>	<a href="#">NOx emission limits in 7a, 7b and 7c do not apply when the FCCU CO Boiler is operating and firing only fuel gas. (basis: Rule 2-1-403 and Consent Decree §§ 43e)</a>	<a href="#">Y</a>	

**Table IV – C.1.1**  
**Source-specific Applicable Requirements**  
**S901- No. 7 BOILER - FCCU CO BOILER**  
**ABATES S802**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
Part 8	<del>Consent decree SO2 Emission Limits from FCCU and CO Boiler (basis: Regulation 2-1-403, Consent Decree Appendix A-2 §§ B1a)</del> <del>Consent decree SO2 Emission Limits (basis: Consent Decree §§ 82)</del>	Y	
Part 9	<del>Consent decree CO Emission Limits from FCCU and CO Boiler (basis: Rule 2-1-403 and Consent Decree §§ 45)</del> <del>Consent decree CO Emission Limits (basis: Consent Decree §§ 94)</del>	Y	
Part 10	<del>Consent decree Particulate Emission Limits from FCCU and CO Boiler (basis: Regulation 2-1-403, Consent Decree Appendix A-2 §§ C4a)</del> <del>Consent decree Particulate Emission Limits (basis: Consent Decree §§ 95)</del>	Y	
Part 11	<del>Consent Decree NSPS Applicability: SO2, CO, opacity, particulate matter. NSPS Limits not applicable during startup, shutdown or malfunction (basis: Regulation 2-1-403 and Consent Decree Appendix A-2 §§ B2, C4b, C5, D7b, D8)</del> <del>Consent Decree NSPS Applicability and CEMS requirements: SO2, CO, opacity, particulate matter. NSPS limits not applicable during startup, shutdown or malfunction (basis: Consent Decree §§ 99, 102, 107A, 110)</del>	Y	
Part 12a	<del>Consent Decree short-term NOx limit is not applicable during FCCU startup, shutdown or malfunction. Consent Decree long-term limit is applicable at all times, including periods of FCCU startup, shutdown or malfunction. (basis: Regulation 2-1-403 and Consent Decree §§ 43c)</del> <del>Consent Decree short-term NOx and SO2 limits not applicable during hydrotreater outage, including startup, shutdown or malfunction (basis: Consent Decree §§ 85)</del>	Y	
Part 12b	<del>Consent Decree short-term SO2 limit not applicable during hydrotreater outage, including startup, shutdown or malfunction, provided the owner operator complies with the FCCU Hydrotreater Outage Plan. (basis: Rule 2-1-403 and Consent Decree Appendix A-2 §§ B1b)</del>	<u>Y</u>	
Part 13	<del>Consent Decree NOx monitoring requirements (basis: Regulation 2 1 403 and Consent Decree §§ 44)</del>	<u>Y</u>	
Part 14	<del>Consent Decree SO2 monitoring requirements (basis: Regulation 2-1-403 and Consent Decree Appendix A-2 §§ B3)</del> <del>Consent Decree §§ 90, 91)</del>	Y	
Part 15	<del>Consent Decree exemptions from NSPS notification requirements (basis: Consent Decree §§ 100, 108)</del>	<u>N</u>	
Part 16	<del>Consent Decree CEMS accuracy test allowances (basis: Regulation 2 1 403 and Consent Decree §§ 44, 46 and Appendix A-2, §§ B3 and D9)</del> <del>Consent Decree §§ 62, 90, 101, 109)</del>	Y	

**Table IV – C.1.1  
Source-specific Applicable Requirements  
S901- No. 7 BOILER - FCCU CO BOILER  
ABATES S802**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
<a href="#">Part 17</a>	<a href="#">Restrictions on generation and use of emission reductions from compliance with Part 7 [NOx limits], Part 8 [SO2 limits] Part 11 [CD NSPS J]. (Basis: Rule 2-1-403 and Consent Decree Paragraphs 159 and 161).</a>	Y	
<b>BAAQMD Condition 22150</b>			
Part 1	Continuous opacity monitoring of A-30 ESP (basis: Regulation 6-1-310, 2-6-503)	Y	
Part 2	Operate with opacity emissions no more than one 6-minute average in an hour that exceeds 30%. An exceedance of opacity limit deemed an exceedance of BAAQMD 6-1-310) (basis: Regulation 2-6-503)	Y	

Changes to Condition 11433 in Section VI are shown in the evaluation section on permit conditions.

Changes to Section VII:

**Table VII – B.1  
Applicable Limits and Compliance Monitoring Requirements  
S802- FCCU FLUID CATALYTIC CRACKING UNIT  
ABATED BY S901 CO BOILER  
ABATED BY A30 ESP**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
SO2	BAAQMD 9-1-310.1	Y		1000 ppmv	BAAQMD 9-1-502, BAAQMD 1-520.5	C	SO2 CEM
NOx	BAAQMD Condition 11433, Part 2	Y		Total from S802 and S901 <= 354.4 tons/yr [at exit of S901 CO Boiler]	BAAQMD Condition 11433, Parts 2A and 4 Condition 8077, Part B4D	C	CEM

**Table VII – B.1**  
**Applicable Limits and Compliance Monitoring Requirements**  
**S802- FCCU FLUID CATALYTIC CRACKING UNIT**  
**ABATED BY S901 CO BOILER**  
**ABATED BY A30 ESP**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
					BAAQMD Condition 11433, Part 4 Condition 8077, parts B5A, B5B	P/M	Calculations and report [EMIT Report]
<u>NOx</u>	<u>BAAQMD Condition 11433, Part 7a and 7d</u>	<u>Y</u>		<u>52.5 ppmvd @ 0% O2, 365-calendar day rolling average, measured at the FCCU Complex Main Stack. Limit does not apply when the FCCU CO Boiler is operating and firing only refinery fuel gas.</u>	<u>BAAQMD Permit Condition 11433, Part 13</u>	<u>C</u>	<u>NOx and O2 CEMs</u>
<u>NOx</u>	<u>BAAQMD Condition 11433, Part 7a and 7d</u>	<u>Y</u>		<u>175.1 ppmvd @ 0% O2, 24-hour average, measured at the FCCU Complex Main Stack. Limit does not apply when the FCCU CO Boiler is operating and firing only refinery fuel gas.</u>	<u>BAAQMD Permit Condition 11433, Part 13</u>	<u>C</u>	<u>NOx and O2 CEMs</u>
NOx	BAAQMD Condition 11433, Part 7c and 7d	Y	<u>7/1/2018</u>	20 ppmvd @ 0% O2, -365-calendar day rolling average, measured <u>at the FCCU Complex Main Stack. Limit does not apply when the FCCU CO Boiler is operating and firing only refinery fuel gas. prior to commingling with other streams</u>	BAAQMD Permit Condition 11433, Part 13	C	NOx and O2 CEMs

**Table VII – B.1**  
**Applicable Limits and Compliance Monitoring Requirements**  
**S802- FCCU FLUID CATALYTIC CRACKING UNIT**  
**ABATED BY S901 CO BOILER**  
**ABATED BY A30 ESP**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
NOx	BAAQMD Condition 11433, Parts 7b and 7d- & 12a	Y	<a href="#">7/1/2017</a>	40 ppmvd @ 0% O2, 7-calendar day rolling average, measured <a href="#">at the FCCU Complex Main Stack</a> . <a href="#">Limit does not apply when the FCCU CO Boiler is operating and firing only refinery fuel gas, or during FCCU startup, shutdown, or malfunction prior to commingling with other streams, except during feed hydrotreater outages</a>	BAAQMD Condition 11433, Part 13	C	NOx and O2 CEMS
Opacity	BAAQMD 6-1-302	N		20% opacity, except for 3 minutes in any one hour	BAAQMD 1-520.5, 1-522, 6-1-501., 6-1-502	C	COMs
Opacity	BAAQMD SIP 6-302	Y		20% opacity, except for 3 minutes in any one hour	BAAQMD 1-520.5, 1-522 SIP 6-501, 6-502	C	COMs
Opacity	BAAQMD Condition 11433, Part 2B	Y		20% opacity, except for 3 minutes in any one hour [at exit of S901 CO Boiler when S901 is burning CO gas from the FCCU	BAAQMD Condition 11433, Part 2B	C	COMs

**Table VII – B.1**  
**Applicable Limits and Compliance Monitoring Requirements**  
**S802- FCCU FLUID CATALYTIC CRACKING UNIT**  
**ABATED BY S901 CO BOILER**  
**ABATED BY A30 ESP**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Opacity	40 CFR 60.102(a)(2) 63.1564 (a)(1) BAAQMD 1-520.8 BAAQMD Condition 11433, Part 11	Y		30% opacity, except for one 6 minute average opacity reading in 1 hour [at exit of S901 CO Boiler]	40 CFR 60.105(a)(1) 60.105(e)(1) 63.1564(b)(1) 63.1564(c)(1) BAAQMD Condition 11433, Parts 2B & 11	C	COMs
PM	40 CFR 60.102(a)(1) 63.1564 (a)(1) BAAQMD Condition 11433, Parts 10 & 11	Y		1.0 lb per 1000 lb of coke burn-off <u>from the FCCU and CO Boiler</u> .	40 CFR 60.105(c), 63.1564(b)(5) 63.1564(c)(1) BAAQMD Condition 11433, Part 10	P/Initial and when required by APCO	Source Test
PM/PM10	BAAQMD Condition 11433, Part 2	Y		Total from S802 and S901 <= 151.5 tons/yr	BAAQMD Condition 11433, part 4 Condition 8077, Part B4D, and Appendix C.4(b)	P/monthly every other year	Source Test
					BAAQMD Condition 11433, part 4 Condition 8077, parts B5A, B5B	P/M	Calculations and Report [EMIT Report]
POC	BAAQMD Condition 11433, Part 2	Y		Total from S802 and S901 <= 5.8 tons/yr	BAAQMD Condition 11433, part 4 Condition 8077, parts B4, B5A, B5B	P/M	Calculations and Report [EMIT Report]

**Table VII – B.1**  
**Applicable Limits and Compliance Monitoring Requirements**  
**S802- FCCU FLUID CATALYTIC CRACKING UNIT**  
**ABATED BY S901 CO BOILER**  
**ABATED BY A30 ESP**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
SO2	BAAQMD Condition 11433, Part 2	Y		Total from S802 and S901 <= 1335.5 tons/yr [at exit of S901 CO Boiler]	BAAQMD Condition 11433, Parts 2A and 4 Condition 8077, Part B4D	C	CEM
					BAAQMD Condition 11433, Part 4 Condition 8077, parts B5A, B5B	P/M	Calculations and report [EMIT Report]
SO <sub>2</sub>	40CFR 60.104(b)(2) 60.104(c) BAAQMD Condition 11433, Part 11	Y		9.8 kg/Mg (20 lb/ton) coke burn-off, 7-day rolling average	40 CFR 60.105(c), 60.106(i)(12) BAAQMD Condition 11433, Part 11	P/D	AMP
SO <sub>2</sub>	BAAQMD Condition 11433, Part 8	Y		25 ppmvd @ 0% O <sub>2</sub> , 365-day rolling average <a href="#">[at exit of S901 CO Boiler]</a>	BAAQMD Condition 11433, Part 14	C	SO <sub>2</sub> and O <sub>2</sub> CEMs
SO <sub>2</sub>	BAAQMD Condition 11433, Parts 8 & <a href="#">12b</a>	Y		50 ppmvd @ 0% O <sub>2</sub> , 7-day rolling average <a href="#">[at exit of S901 CO Boiler]</a> , except during feed hydrotreater outages, <a href="#">provided the owner operator complies with the FCCU Hydrotreater Outage Plan at all times (including periods of startup, shutdown or malfunction)</a>	BAAQMD Condition 11433, Part 14	C	SO <sub>2</sub> and O <sub>2</sub> CEMs



**Table VII – B.1**  
**Applicable Limits and Compliance Monitoring Requirements**  
**S802- FCCU FLUID CATALYTIC CRACKING UNIT**  
**ABATED BY S901 CO BOILER**  
**ABATED BY A30 ESP**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
CO	40 CFR 60.103(a) 63.1565 (a)(1) BAAQMD Condition 11433, Part 11	Y		500 ppmvd, 1-hour average	BAAQMD 1-520.8, 1-522  40 CFR 60.105(a)(2), 60.105(c) 60.105(e)(2) 63.1565(b)(1) 63.1565(c)(1)  BAAQMD Condition 11433, Part 11	C	CO CEMs
CO	BAAQMD Condition 11433, Part 2	Y		Total from S802 and S901 <= 121.9 tons/yr	BAAQMD Condition 11433, Part 11	C	CO CEM
					BAAQMD Condition 11433, part 4 Condition 8077, parts B4, B5A, B5B	P/M	Calculations and Report [EMIT Report]
CO	BAAQMD Condition 11433, Part 9	Y		<del>180500</del> ppmvd @ 0% O2, <a href="#">365-calendar day rolling average [at exit of S901 CO Boiler] 1-hour block average</a>	BAAQMD Condition 11433, Parts 9 & 11	C	CO & O2 CEMs
Visible Emissions	BAAQMD 6-1-301	N		Ringelmann No. 1 < 3 minutes/hour	None	N	N/A
Visible Emissions	SIP 6-301	Y		Ringelmann No. 1 < 3 minutes/hour	None	N	N/A

**Table VII – B.1**  
**Applicable Limits and Compliance Monitoring Requirements**  
**S802- FCCU FLUID CATALYTIC CRACKING UNIT**  
**ABATED BY S901 CO BOILER**  
**ABATED BY A30 ESP**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Visible Particles	BAAQMD 6-1-305	N		Prohibition of nuisance	None	N	N/A
Visible Particles	SIP 6-305	Y		Prohibition of nuisance	None	N	N/A
FP	BAAQMD 6-1-310	N		0.15 grain/dscf	Condition 22150, Part 1	C	COMs
FP	SIP 6-310	Y		0.15 grain/dscf	BAAQMD Condition 22150, Part 1	C	COMs
FP	BAAQMD 6-1-310 6-1-311 SIP 6-310 SIP 6-311 BAAQMD Condition 22150, Part 2	Y		30% opacity, except for one 6 minute average opacity reading in 1 hour	BAAQMD Condition 22150, Part 2	P/E	Source Test

**Table VII – C.1.1  
Applicable Limits and Compliance Monitoring Requirements  
S901-NO. 7 BOILER, FCCU CO BOILER  
ABATES S802**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
NOx	BAAQMD Condition 11433, Part 2	Y		Total from S-802/S-901 ≤ 354.4 tpy [at exit of S901]	BAAQMD Condition 11433, Part 4 and Part 2A Condition 8077, Part B4D	C	CEM
					BAAQMD Condition 11433, Part 4 Condition 8077, parts B5A, B5B	P/M	Calculations and EMIT Report
NOx	BAAQMD 9-10-303.1	Y		Federal interim emissions: CO Boiler emissions: 300 ppm (dry, 3% O <sub>2</sub> ), operating day average	BAAQMD 9-10-502.1; BAAQMD Condition 11433, Part 2A	C	CEM
NOx	BAAQMD 9-10-304	N		CO Boiler emissions: 150 ppm (dry, 3% O <sub>2</sub> ), operating day average or >50% abatement	BAAQMD 9-10-502.1; BAAQMD Condition 11433, Part 2A	C	CEM
<u>NOx</u>	<u>BAAQMD Condition 11433, Part 7a and 7d</u>	<u>Y</u>		<u>52.5 ppmvd @ 0% O<sub>2</sub>, 365-calendar day rolling average, measured at the FCCU Complex Main Stack. Limit does not apply when the FCCU CO Boiler is operating and firing only refinery fuel gas.</u>	<u>BAAQMD Permit Condition 11433, Part 13</u>	<u>C</u>	<u>NOx and O<sub>2</sub> CEMs</u>

**Table VII – C.1.1  
 Applicable Limits and Compliance Monitoring Requirements  
 S901-No. 7 BOILER, FCCU CO BOILER  
 ABATES S802**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
<u>NOx</u>	<u>BAAQMD Condition 11433, Part 7a and 7d</u>	<u>Y</u>		<u>175.1 ppmvd @ 0% O2, 24-hour average, measured at the FCCU Complex Main Stack. Limit does not apply when the FCCU CO Boiler is operating and firing only refinery fuel gas.</u>	<u>BAAQMD Permit Condition 11433, Part 13</u>	<u>C</u>	<u>NOx and O2 CEMs</u>
<u>NOx</u>	<u>BAAQMD Condition 11433,</u>	<u>Y</u>	<u>7/1/2018</u>	<u>20 ppmvd @ 0% O2, 365-calendar day rolling average, measured at the FCCU Complex Main Stack. Limit does not apply when the FCCU CO Boiler is operating and firing only refinery fuel gas.</u>	<u>BAAQMD Permit Condition 11433, Part 13</u>	<u>C</u>	<u>NOx and O2 CEMs</u>

**Table VII – C.1.1  
Applicable Limits and Compliance Monitoring Requirements  
S901-NO. 7 BOILER, FCCU CO BOILER  
ABATES S802**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
NO <sub>x</sub>	<a href="#">BAAQMD Condition</a>	Y	<a href="#">7/1/2017</a>	<a href="#">40 ppmvd @ 0% O<sub>2</sub>, 7-calendar day rolling average measured at the FCCU Complex Main Stack. Limit does not apply when the FCCU CO Boiler is operating and firing only refinery fuel gas, or during FCCU startup, shutdown, or malfunction.</a>	<a href="#">BAAQMD Condition 11433, Part 13</a>	C	<a href="#">NO<sub>x</sub> and O<sub>2</sub> CEMS</a>
O <sub>2</sub>		Y		No limit	BAAQMD 9-10-502.1	C	Monitor
CO	BAAQMD Condition 11433, Part 2	Y		Total from S-802/S-901 ≤ 121.9 tpy [at exit of S901 CO Boiler]	BAAQMD Condition 11433, Part 4 Condition 8077, parts B4, B5A, B5B	P/M	Calculations and Refinery Emissions Cap "EMIT" Report
CO	BAAQMD 9-10-305	N		400 ppmv (dry, 3% O <sub>2</sub> )	BAAQMD 9-10-502 BAAQMD Condition 11433, Part 11	C	CO CEM

**Table VII – C.1.1  
Applicable Limits and Compliance Monitoring Requirements  
S901-No. 7 BOILER, FCCU CO BOILER  
ABATES S802**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
CO	<a href="#">BAAQMD Condition 11433, Part 9</a>	Y		<a href="#">180 ppmvd @ 0% O<sub>2</sub>, 365-calendar day rolling average [at exit of S901 CO Boiler]</a>	<a href="#">BAAQMD Condition 11433, Parts 9 &amp; 11</a>	C	<a href="#">CO &amp; O<sub>2</sub> CEMs</a>
PM	<a href="#">40 CFR 60.102(a)(1) 63.1564 (a)(1) BAAQMD Condition 11433, Parts 10 &amp; 11</a>	Y		<a href="#">1.0 lb per 1000 lb of coke burn-off from the FCCU and CO Boiler</a>	<a href="#">40 CFR 60.105(c), 63.1564(b)(5) 63.1564(c)(1) BAAQMD Condition 11433, Part 10</a>	<a href="#">P/Initial and when required by APCO</a>	<a href="#">Source Test</a>
PM/PM10	BAAQMD Condition 11433, Part 2	Y		Total from S-802/S-901 ≤ 151.5 tpy	BAAQMD Condition 11433, part 4 Condition 8077, parts B5A, B5B	P/M	Calculation and EMIT Report
PM/PM10	BAAQMD Condition 11433, part 2	Y		Total from S-802/S-901 ≤ 151.5 tpy	BAAQMD Condition 11433, part 4 Condition 8077, Part B4D, and Appendix C.4(b)	P/Monthly every other year	Source Test
Visible Emissions	BAAQMD 6-1-301	N		≥ Ringelmann No. 1 for no more than 3 minutes/hour	BAAQMD Condition 11433, Part 2B; BAAQMD Condition 22150, Part 1	C	COM

**Table VII – C.1.1  
Applicable Limits and Compliance Monitoring Requirements  
S901-No. 7 BOILER, FCCU CO BOILER  
ABATES S802**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Visible Emissions	SIP 6-301	Y		≥ Ringelmann No. 1 for no more than 3 minutes/hour	BAAQMD Condition 11433, Part 2B; BAAQMD Condition 22150, Part 1	C	COM
Opacity	BAAQMD 6-1-304	N		During tube cleaning, ≥ Ringelmann No. 2 for 3 min/hr and 6 min/billion btu/24 hours	BAAQMD Condition 11433, Part 2B; BAAQMD Condition 22150, Part 1	C	COM
Opacity	SIP 6-304	Y		During tube cleaning, ≥ Ringelmann No. 2 for 3 min/hr and 6 min/billion btu/24 hours	BAAQMD Condition 11433, Part 2B; BAAQMD Condition 22150, Part 1	C	COM
FP	BAAQMD 6-1-310	N		0.15 grain/dscf	BAAQMD Condition 11433, Part 2B; BAAQMD Condition 22150, Part 1	C	COM
FP	SIP 6-310	Y		0.15 grain/dscf	BAAQMD Condition 11433, Part 2B; BAAQMD Condition 22150, Part 1	C	COM
FP	BAAQMD 6-1-310.3	N		0.15 grain/dscf @ 6% O2	BAAQMD Condition 11433, Part 2B; BAAQMD Condition 22150, Part 1	C	COM

**Table VII – C.1.1  
Applicable Limits and Compliance Monitoring Requirements  
S901-No. 7 BOILER, FCCU CO BOILER  
ABATES S802**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
FP	SIP 6-310.3	Y		0.15 grain/dscf @ 6% O2	BAAQMD Condition 11433, Part 2B; BAAQMD Condition 22150, Part 1	C	COM
FP	BAAQMD 6-1-311	N		4.10 P <sup>0.67</sup> lb/hr particulate, where P is process weight rate in ton/hr	BAAQMD Condition 11433, Part 2B; BAAQMD Condition 22150, Part 1	C	COM
FP	SIP 6-311	Y		4.10 P <sup>0.67</sup> lb/hr particulate, where P is process weight rate in ton/hr	BAAQMD Condition 11433, Part 2B; BAAQMD Condition 22150, Part 1	C	COM
POC	BAAQMD Condition 11433, Part 2	Y		Total from S-802/S-901 ≤ 5.8 tpy [at exit of S901 CO Boiler]	BAAQMD Condition # 11433, part 4 Condition 8077, parts B4, B5A, B5B	P/M	Calculations and Report [EMIT Report]
SO2	BAAQMD Condition 11433, Part 2	Y		Total from S-802/S-901 ≤ 1335.5 tpy [at exit of S901 CO Boiler]	BAAQMD Condition 11433, Parts 2A and 4 BAAQMD Condition 8077, Part B4D	C	CEM
					BAAQMD Condition 11433, part 4 Condition 8077, parts B5A, B5B	P/M	Calculations and report [EMIT Report]



**Table VII – C.1.1  
Applicable Limits and Compliance Monitoring Requirements  
S901-No. 7 BOILER, FCCU CO BOILER  
ABATES S802**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
SO <sub>2</sub>	<a href="#">BAAQMD Condition 11433, Part 8</a>	Y		<a href="#">25 ppmvd @ 0% O<sub>2</sub>, 365-day rolling average [at exit of S901 CO Boiler]</a>	<a href="#">BAAQMD Condition 11433, Part 14</a>	C	<a href="#">SO<sub>2</sub> and O<sub>2</sub> CEMs</a>
SO <sub>2</sub>	<a href="#">BAAQMD Condition 11433, Parts 8 &amp; 12b</a>	Y		<a href="#">50 ppmvd @ 0% O<sub>2</sub>, 7-day rolling average [at exit of S901 CO Boiler], except during feed hydrotreater outages, provided the owner operator complies with the FCCU Hydrotreater Outage Plan at all times (including periods of startup, shutdown or malfunction)</a>	<a href="#">BAAQMD Condition 11433, Part 14</a>	C	<a href="#">SO<sub>2</sub> and O<sub>2</sub> CEMs</a>
Fuel Flow	Table IIA	Y		668 MMBtu/hr, 5,851,680 MMBtu/yr	BAAQMD 9-10-502.2; BAAQMD Condition 8077, Part B4D	C	Fuel Flow meter
Ammonia Injection	BAAQMD Condition # 7397, part 1	Y		Ammonia injection ≤ 1800 lbs/ consecutive 24-hr period	BAAQMD Condition # 7397, part 2	C	Ammonia Flow meter

## **Application 28445, S-963 Gas Turbine Motor Replacement**

**ENGINEERING EVALUATION (Public Copy)**  
**Tesoro Refining & Marketing Company LLC**  
**Plant: 14628**  
**Application: 28445**

### **BACKGROUND**

Tesoro Refinery has applied to obtain an Authority to Construct (AC) and/or a Permit to Operate (PO) for the following equipment:

#### **S-1009 Alkylation Unit**

The application is to install a 12,000 HP electric motor to replace the following equipment:

#### **S-963 Gas Turbine 177, 8450 HP, driving Alkylation Unit Refrigeration Compressor**

This permit application qualified for the Regulation 2-1-302.2 Accelerated Permitting Program. A Temporary Permit to Operate was approved June 1, 2017.

Tesoro also submitted Banking Application 28419 for emission reduction credits.

### **EMISSIONS**

There are no emission increases associated with this permit application. The decommissioning of the S-963 gas turbine will reduce emissions.

The installation of a larger electric motor in place of the S-963 gas turbine has potential to debottleneck S-1009 Alkylation Unit. This permit application does not propose increasing the permitted capacity of S-1009 from the 22,300 BPD (permitted when S-1009 was modified in 1995 Clean Fuels Project Application 10912). However, utilization of S-1009 over the past [REDACTED] ranges from [REDACTED]. Per Regulation 2-1-234.1.2 (effective 8/31/2016), for sources that cannot physically operate at the full extent of a legally enforceable limit, the source's potential to emit shall be determined by the source's actual physical ability to emit air pollution. Therefore, any project that increases the attainable capacity of a source is a modification. Tesoro provided historical S-1009 throughput information that demonstrates the Alkylation Unit is capable of and has attained the 22,300 BPD permitted throughput when the refrigeration compressor is driven by the 8450 HP S-963 Gas Turbine. Therefore, it was determined that the installation of the 12,000 HP electric motor will not debottleneck the S-1009 Alkylation Unit.

### **PLANT CUMULATIVE INCREASE**

The project permitted by this application only reduces emissions from existing operations. Therefore, there are no chargeable emissions for this permit application.

### **TOXIC RISK SCREENING ANALYSIS**

The project permitted by this application only reduces emissions from existing operations. Therefore, a toxic risk screen is not required.

### **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, NO<sub>x</sub>, CO, SO<sub>2</sub>, PM<sub>2.5</sub> or PM<sub>10</sub>.

Since there are no emission increases for this project, BACT is not triggered.

### **OFFSETS**

Offsets are not required for this permit application.

### **STATEMENT OF COMPLIANCE**

This application does not change the compliance requirements of S-1009 Alkylolation Unit. S-1009 is expected to remain in compliance with District and Federal regulations.

The removal of S-963 Gas Turbine will also remove the requirements to comply with Regulation 9 Rule 9, Nitrogen Oxides from Stationary Gas Turbines, NESHAPS Subpart YYYYY, National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines, and 40 CFR 64 Compliance Assurance Monitoring (CAM)..

This application is categorically exempt from CEQA pursuant to the District's Regulation 2-1-312.7:

**2-1-312 Other Categories of Exempt Projects:** In addition to ministerial projects, the following categories of projects subject to permit review by the District will be exempt from the CEQA review, either because the category is exempted by the express terms of CEQA (subsections 2-1-312.1 through 312.9) or because the project has no potential for causing a significant adverse environmental impact (subsections 2-1-312.10 and 312.11). Any permit applicant wishing to qualify under any of the specific exemptions set forth in this Section 2-1-312 must include in its permit application CEQA-related information in accordance with subsection 2-1-426.1. In addition, the CEQA-related information submitted by any permit applicant wishing to qualify under subsection 2-1-312.11 must demonstrate to the satisfaction of the APCO that the proposed project has no potential for resulting in a significant environmental effect in connection with any of the environmental media or resources listed in Section II of Appendix I of the State CEQA Guidelines.

312.7 Permit applications for the replacement or reconstruction of existing sources or facilities where the new source or facility will be located on the same site as the source or facility replaced and will have substantially the same purpose and capacity as the source or facility replaced.

Tesoro has completed Form Appendix H in support of this CEQA exemption. The District will publish a Notice of Exemption with the Clerk of Contra Costa County.

NSPS, NESHAPS, BACT, Offsets, Toxics and PSD are not applicable.

This facility is located greater than 1,000 feet from the nearest school and therefore is not subject to the public notification requirements of Regulation 2-1-412.

### **PERMIT CONDITIONS**

S-963 will be removed from Bubble Condition 8077.

Once the Banking Application 28491 is approved, the mass emission limits on Condition 8077 Parts B2 will be reduced by the approved credits.

Condition 19528 will be revised as shown below.

COND# 8077 -----

Application 27769 The No. 3 HDS Unit (1981)

PERMIT NO. 3318 (1991): REFINERY MODERNIZATION  
PROJECT PERMIT  
CONDITIONS NEW PERMIT CONDITIONS FOR PERMIT NO.  
3318 Permit

Application 14047: Clarify conditions to allow  
owner/operator to shutdown ammonia injection to A-  
31 SCR during both startup and shutdown of S-974  
(Part A2A).

Application 19300 (December 2008) Added S-904 No. 6  
Boiler House

Application 19647 (March 2009) Consolidate With  
Condition 4357

Administratively Revised by Application 19874 (July 2009)  
Updates for Combustion Sources

Administratively Changed by Application 21711 (May 2010)  
Deleted Parts A10-A14 (redundant or completed items).  
Revised Part B6B and deleted Part B6D (S848 out of service)

Administratively Changed by Application 24056 (June 2012).  
Corrected source list and CO limits and monitoring in Part  
B7.

Administratively Changed by Application 26272 (May 2014).  
Lowered mass emission limits of Parts B2A and B2B to  
reflect  
emission credits granted for the Coker Modification Project  
(Application 17798) and the transfer of the No 2 Hydrogen  
Plant to Air Products.

Administratively Changed per Part B12F (March 2015)  
Reduced NOx limits in Parts B2A and B2B by the reductions  
required by Regulation 9, Rule 10 Amendments.

Modified by Application 27309 (August 2015). Increased  
startup and shutdown duration and emissions for S-973 and  
S-  
974 in Part A2A.

Revised by Application 23322 (January 2016). Added Parts  
C3  
and C4 for S-928 through S-935 based on Application 548.

[Administratively Changed by Application 28445 \(September 2017\). Removed S-963.](#)

Appendices A-D  
Hyperlink to Appendix A to go here.

[http://www.baaqmd.gov/~media/Files/Engineering/Title%20V%20Permits/B2758%209/B2758-9\\_2005-08\\_reopen\\_02a.ashx](http://www.baaqmd.gov/~media/Files/Engineering/Title%20V%20Permits/B2758%209/B2758-9_2005-08_reopen_02a.ashx)

Hyperlink to Appendix B to go here.

[http://www.baaqmd.gov/~media/Files/Engineering/Title%20V%20Permits/B2758%209/B2758-9\\_2005-08\\_reopen\\_02b.ashx](http://www.baaqmd.gov/~media/Files/Engineering/Title%20V%20Permits/B2758%209/B2758-9_2005-08_reopen_02b.ashx)

Hyperlink to Appendix C to go here.

[http://www.baaqmd.gov/~media/Files/Engineering/Title%20V%20Permits/B2758%209/B2758-9\\_2005-08\\_reopen\\_02c.ashx](http://www.baaqmd.gov/~media/Files/Engineering/Title%20V%20Permits/B2758%209/B2758-9_2005-08_reopen_02c.ashx)

Hyperlink to Appendix D to go here.

[http://www.baaqmd.gov/~media/Files/Engineering/Title%20V%20Permits/B2758%209/B2758-9\\_2005-08\\_reopen\\_02d.ashx](http://www.baaqmd.gov/~media/Files/Engineering/Title%20V%20Permits/B2758%209/B2758-9_2005-08_reopen_02d.ashx)

S57 Tank A-57  
S323 Tank A-323  
S850 No. 3 HDS Unit (Permitted by Application 27769)  
S851 Ammonia Recovery Unit (Permitted by Application 27769)  
S854 East Air Flare (Permitted by Application 27769)  
S856 Spare DEA Stripper (Permitted by Application 27769)  
S901 No. 7 Boiler  
S904 No. 6 Boiler  
S908 No. 3 Crude Heater (F8)  
S909 No. 1 Feed Prep Heater (F9)  
S912 No. 1 Feed Prep Heater (F12)  
S913 No. 2 Feed Prep Heater (F13)  
S915 Platformer Intermediate Heater

S916 No. 1 HDS Heater (F16)  
S917 No. 1 HDS Prefract Reboiler (F17)  
S919 No. 2 HDS Depent Reboiler (F19)  
S920 No. 2 HDS Charge Heater (F20)  
S921 No. 2 HDS Charge Heater (F21)  
S922 No. 5 Gas Debutanizer Reboiler (F22)  
S927 No. 2 Reformer Heat/Reheating (F27)  
S928 HDN Reactor A Heater (F28)  
S929 HDN Reactor B Heater (F29)  
S930 HDN Reactor C Heater (F30)  
S931 Hydrocracker Reactor 1 Heater (F31)  
S932 Hydrocracker Reactor 2 Heater (F32)  
S933 Hydrocracker Reactor 3 Heater (F33)  
S934 Hydrocracker Stabilizer Reboiler (F34)  
S935 Hydrocracker Splitter Reboiler (F35)  
S937 Hydrogen Plant Heater (F37)  
S950 50 Unit Crude Heater (F50)  
S951 No. 2 Reformer Aux Reheater (F51)  
S952 Internal Combustion Engine  
S953 Internal Combustion Engine  
S954 Internal Combustion Engine  
S955 Internal Combustion Engine  
S956 Internal Combustion Engine  
S957 Internal Combustion Engine  
S958 Internal Combustion Engine  
S959 Internal Combustion Engine  
S960 Internal Combustion Engine  
~~S963 Gas Turbine 177~~  
S971 No. 3 Reformer UOP Furnace (F53)  
S972 No. 3 Reformer Debutanizer Reboiler (F54)  
S973 No. 3 HDS Recycle Gas Heater (F55) (Permitted by  
Application 27769)  
S974 No. 3 HDS Fract Feed Heater (F56) (Permitted by  
Application 27769)  
S1009 Alkylolation Unit  
S1024 No 3 HDS Feed Tank (Permit Exemption by Application  
27769)  
S1401 Sulfur Recovery Unit  
S1421 Sour Water Feed Tank (Permitted by Application 27769)

[Parts A2A through B1 unchanged.]

B2. Emissions. The specific emission points covered by the various limitations listed in B2A-B2D below are set forth in Table A of the Appendix to these

Conditions. Emission limits of this section to be adjusted when emission credits for the S-963 decommissioning are approved in Application 28419.

B2A. Listed below are the permitted annual emission limits for the emission points covered by this permit. If the permitted annual emission limit for any pollutant is exceeded, the applicable provisions of Part B3A shall apply.

Particulates	417.5 tons/year
Hydrocarbons	217.83 tons/year
NOx	1231.60 tons/year
S02	1675.04 tons/year
CO	495.37 tons/year

(basis: cumulative increase, removal of Air Products No.2 Hydrogen Plant S-1030 and S-1031 from cap March 2012. First permitted in 1991 via Application 3318. Total reductions: NOx- 16.1 tons/yr; CO- 21.9 tons/yr; HC- 3.9 tons/yr; S02- 4.5 tons/yr; PM- 12.9 tons/yr)

B2B. Listed below are the permitted monthly maximum emission limits for the emission points covered by this permit. If the permitted monthly maximum emission limit for any pollutant is exceeded, the applicable provisions of Part B3B shall apply.

Particulates	43.875 tons/month
Hydrocarbons	76.677 tons/month
NOx	203.328 tons/month
S02	441.920 tons/month
CO	50.531 tons/month

(basis: cumulative increase)

B2C. Listed below are the permitted monthly compensatory emission limits applicable to the emission points covered by this permit and Permittee/Owner/Operator shall ensure that the emission limits are met. If the permitted monthly compensatory emission limit for any pollutant is exceeded, the applicable provisions of Part B3C shall apply.

Particulates	42 tons/month
CO	49.1 tons/month

(basis: cumulative increase, BACT, offsets)

B2D. If, at the end of any calendar month, the total emissions accumulated so far in that calendar

year exceed the permitted annual emissions prorated to the number of months elapsed so far that year plus the amounts set forth below, the informational requirements of Part B3D shall apply.

Particulates	9 tons
Hydrocarbons	35 tons
NOx	69 tons
S02	258 tons
CO	8.1 tons

(basis: cumulative increase, offsets)

B2E. The limits set forth in B2A & B2B above are legal limits which must not be exceeded. Accordingly, in the event that any such limit ever is exceeded, Permittee/Owner/Operator will be immediately subject to the applicable sanctions in Part B3 below. (basis: cumulative increase, offsets)

[The remaining parts of Condition 8077 are unchanged.]

COND# 19528 -----

6 Modified by App 18739 (Nov 2008) Removal of S924 from Part

Administratively Modified by Application 19326 (Feb2009),  
Removed Part 2 and 2A

Administratively changed by Application 19419 (June 2009).  
Updated to remove parts 7 and 7A redundant with District  
regulations.

Administratively Revised by Application 19874 (July  
2009) Updates for Combustion Sources

Administratively Revised in August 2009 to add Part 19 for  
Gas Turbine S963.

Administratively Revised in September 2009 by Application  
18261 Title V Renewal. Added Parts 20 and 20A for S-1411  
SAP CAM.

Administratively Changed by Application 21711 (May 2010).  
Deleted Parts 8/8A. Deleted S1416 from Part 10/10A.  
Renumbered Part 11C.



Administratively Changed by Application 23232 (April 2012).  
Added Parts 21, 22 and 23: 40 CFR 64 CAM requirements for  
S963 Gas Turbine.

Revised by Application 27030 (November 2015). Removal of  
Part 14a. A-9 was demolished.

Administratively Changed by Application 27791 (October  
2016). Corrected Part 21, 40 CFR 64 CAM requirements  
for S963 Gas Turbine.

Administratively Changed by Application 28445 (September  
2017). Removed Parts 19, 21, 22 and 23 for S-963.

[Parts 1 through 18 unchanged.]

19. ~~Deleted. (S-963 removed from service)The  
owner/operator of S963 shall conduct a semi annual  
District approved source test to demonstrate compliance  
with  
Regulation 9 9 301.1 (NOx not to exceed 42 ppmv, dry, at  
15%  
O2, fired on natural gas. The test results shall be  
provided to the District's Compliance and Enforcement  
Division no less than 45 days after the test. These  
records  
shall be kept for a period of at least 5 years from the  
date  
of entry and shall be made available to District staff upon  
request. (Basis: Regulation 9 9 301.1)~~

20. For S1411, Permittee/Owner/Operator shall ensure that  
not less frequently than once each calendar year a District  
approved source test is conducted for S-1411 measuring its  
SO3 and H2SO4 emission rate per dry standard foot of  
exhaust  
volume, expressed as 100% H2SO4.  
(basis: Regulation 6-1-330, Regulation 2-1-403, Regulation  
2-6-503; 40 CFR 64)

20A. Permittee/Owner/Operator shall ensure that within 60  
days of the date of completion of the (each) District  
approved source test required by condition 19528 part 20,  
two identical copies of the results of the source test and

supporting documentation, each referencing S-1411, condition 19528 part 20 and part 20A, and plant #14628 are received by the District and that both copies are addressed to the District's Engineering Division.  
(basis: Regulation 2-1-403; Regulation 6-1-330, Regulation 2-6-503, 40 CFR 64)

21. ~~Deleted. (S-963 removed from service) For S963 Gas Turbine, the Owner/Operator shall install, calibrate, maintain and operate a continuous monitoring system to monitor and record the fuel consumption, steam injection and ratio of steam injection to fuel being fired in the turbine. When the turbine is in normal operation, the steam to fuel ratio calculated by the monitoring system shall be greater than or equal to 2.0:1 steam to fuel (3 hour average) to ensure compliance with the NOx limit in SIP Regulation 9, Rule 9. During normal operation a steam to fuel ratio less than 2.0:1 (3 hour average) shall be considered an excursion under the CAM 40 CFR 64 rule and an exceedance of SIP Regulation 9, Rule 9 NOx limit for S963. (Basis: Regulations 2 1 403, 2 6 503, 40 CFR 64)~~

22. ~~Deleted. (S-963 removed from service) For S963 Gas Turbine, the Owner/Operator shall keep the following records in a District approved log:~~  
~~a. The rate of fuel consumption, steam injection, and the steam to fuel ratio.~~  
~~b. Monitor performance data and corrective actions taken for monitor downtime.~~  
~~c. Written Quality Improvement Plan(s) as required by 40 CFR 60.8 and activities undertaken to implement such plans.~~  
~~d. Other supporting information as needed.~~  
~~(Basis: Regulations 2 1 403, 2 6 503, 40 CFR 64)~~

23. ~~Deleted. (S-963 removed from service) For S963 Gas Turbine, the Owner/Operator shall submit a semiannual monitoring report that includes the following information:~~

- ~~a. Summary of the number, duration and cause of the steam to fuel ratio excursions and exceedances.~~
  - ~~b. Corrective actions taken for each excursion or exceedance.~~
  - ~~c. Summary of the number, duration and cause of monitor downtime incidents for the S963 fuel and steam monitors.~~
  - ~~d. Description of actions taken to implement a Quality Improvement Plan (QIP) during the reporting period.~~
  - ~~e. Documentation that the implementation of the QIP has been completed and reduced the likelihood of similar excursions or exceedances occurring.~~
- ~~(Basis: Regulations 2 1 403, 2 6 503, 40 CFR 64.9)~~

### **RECOMMENDATION**

It is recommended that Tesoro Refinery be issued a Permit to Operate for the following equipment:

**S-1009 Alkylation Unit**

**Replacement of the S-963 gas turbine with a 12,000 HP electric motor**

Prepared by: \_\_\_\_\_  
**Art Valla, Senior Air Quality Engineer**

Date: \_\_\_\_\_  
**9/20/17**

## **Application 28553, 4Gas Emergency Generator**

### **ENGINEERING EVALUATION Tesoro Refining & Marketing Company LLC Plant: 14628 Application: 28553**

## **BACKGROUND**

Tesoro Refinery has applied to obtain an Authority to Construct (AC) and/or a Permit to Operate (PO) for the following equipment:

### **S-1572 Emergency Standby Diesel Generator Set 2010 Caterpillar, Model: 3516C 2722 bhp, 18.1 MMBtu/hr Model Year 2010, EPA Tier 2 Engine**

The Emergency Diesel Engine Generator Set (S1572) will be located at the No 4 Gas Plant in Tesoro and is equipped with the best available control technology (BACT) for minimizing the release of air borne criteria pollutants and harmful air toxins due to fuel combustion. The criteria pollutants are nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), precursor organic compounds (POC) from unburned diesel fuel, sulfur dioxide (SO<sub>2</sub>) and particulate matter (PM<sub>10</sub>).

S-1572 is CARB Certified (Executive Order U-R-001-0401) and meets the Environmental Protection Agency and California Air Resources Board (EPA/CARB) Tier 2 Off-road standard. The engine will burn commercially available California low sulfur diesel fuel. The sulfur content of the diesel fuel will not exceed 0.0015% by weight.

The engine is subject to attached condition no. 23811.

## **EMISSIONS**

Basis:

- 2722 hp output rating.
- 50 hr/yr operation for testing and maintenance.
- 128.4 gallons/hr max fuel use rate.
- NMHC + NO<sub>x</sub>, CO, and PM<sub>10</sub> emission factors are CARB-certified emission levels (for EPA engine family name of ACPXL78.1T2X)
- SO<sub>2</sub> emissions are quantified based on the full conversion of 0.0015 wt% (~ 15 ppm) sulfur in the ULS diesel fuel. The SO<sub>2</sub> emission factor was derived from EPA AP-42, Table 3.4-1.

### **Annual Average Emissions:**

Annual emissions are calculated based on the number of hours per year of operation for testing and maintenance. See Table 1. PM<sub>2.5</sub> emissions are assumed to be the same as PM<sub>10</sub> emissions.

**Daily Emissions:**

Daily emissions are calculated to establish whether a source triggers the requirement for BACT (10 lb/highest day total source emissions for any class of pollutants). 24-hr/day of operation will be assumed since no daily limits are imposed on intermittent and unexpected operations. See Table 1.

**Table 1. Annual and Daily Emissions from CARB/EPA Certified Data**

Source	Operating Hours (hr/yr)	Max Rated Output (bhp)	Fuel Use Rate (gal/hr)	Calculated MMBtu/hr	Pollutant	E.F. (g/bhp-hr)	Max Daily Emissions (lb/day)	Annual Emissions (lb/yr)	Annual Emissions (TPY)
S-1572	50	2772	128.4	18.1	NO <sub>x</sub>	4.56	657	1368	0.6841
					POC	0.24	34.6	72.0	0.0360
					CO	2.6	375	780	0.3901
					PM <sub>10</sub>	0.15	21.6	45	0.0225
					PM <sub>2.5</sub>	0.15	21.6	45	0.0225
					SO <sub>2</sub> <sup>1</sup>	0.00175	0.011	0.525	0.0003

<sup>1</sup>Notes: SO<sub>2</sub> emission factor from AP-42 Table 3.4-1, SO<sub>2</sub> (15 ppm) E.F. is 0.001515 lb SO<sub>2</sub>/MMBtu = 0.00175 gm/HP-hr.

**PLANT CUMULATIVE INCREASE**

Table 2 summarizes the cumulative increase in criteria pollutant emissions that will result at Plant 14628 from the operation of S-1572.

**Table 2. Plant Cumulative Emissions Increase, Post 4/5/91**

Pollutant	Existing Emissions, Post 4/5/91 (TPY)	New Increase with This Application (TPY)	Cumulative Emissions (TPY)
NO <sub>x</sub>	0.000	0.6841	0.6841
POC	0.000	0.0360	0.0360
CO	64.727	0.3901	65.1171
PM <sub>10</sub>	0.832	0.0225	0.8545
PM <sub>2.5</sub>	0.000	0.0225	0.0225
SO <sub>2</sub>	0.000	0.0003	0.0003

**TOXIC RISK SCREENING ANALYSIS**

This application required a Toxics Risk Screening Analysis because the diesel particulate emissions from the operation of S-5633 are greater than the toxic trigger level. Regulation 2-5 requires that the cumulative impacts from all related projects permitted within the last two years be included in the risk screening analysis. Table 3 tabulates the project associated with this permit application. There were no related projects within the last two years.

**Table 3. Diesel Exhaust Particulate Matter Emissions**

<b>Applicati on No.</b>	<b>Sour ce No.</b>	<b>A/C Issuance Date</b>	<b>P/O Issuance Date</b>	<b>Max. Rated Outp ut (bhp)</b>	<b>PM10 EF (g/bhp -hr)</b>	<b>Annual Operatin g Hours (hrs/yr)</b>	<b>Diesel Exhaust Particula te Emission s (lb/yr)</b>	<b>TAC Trigger Level (lb/yr)</b>
28553	1572	(None)	(None)	2722	0.15	50	45	0.26

S-1572 meets Best Available Control Technology for toxics (TBACT) since the diesel particulate emissions are less than 0.15 g/bhp-hr. For a project with engines that meet the TBACT requirement, it must also pass the toxic risk screening level of less than ten in a million. Estimates of residential risk assume exposure to annual average toxic air contaminant concentrations occur 24 hours per day, 350 days per year, for a 30 years. Risk estimates for offsite workers assume exposure occurs 8 hours per day, 250 days per year, for 25 years.

Based on 50 hours per year of operation, the emergency generator set passed the Health Risk Screening Analysis (HRSA) conducted on June 30, 2017 by the District's Toxics Section. The source poses no significant toxic risk, since the increased cancer risk to the maximally exposed receptor (Resident) is 0.21 in a million. The hazard index for a resident is 5.8 E-5. The increased cancer risk to workers is 0.075 in a million and the hazard index is 5.8 E-5. The source is not located near students. Thus, in accordance with Regulation 2-5, this source is in compliance with the TBACT and project risk requirements.

**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, SO2, PM2.5 or PM10.

BACT is triggered for POC, NOx, CO, PM2.5 or PM10 since the maximum daily emissions of each of these pollutants exceed 10 lb/day per source. BACT for this source is presented in the current BAAQMD BACT/TBACT Workbook for IC Engine – Compression Ignition: Stationary Emergency, non-Agricultural, non-direct drive fire pump, > 50 bhp, Document #96.1.3, Revision 7 dated 12/22/2010. For POC, NOx and CO, BACT(2) is the CARB ATCM standard for the respective pollutant at applicable horsepower rating. For PM2.5 or PM10, BACT(2) is an emission ratenot to exceed 0.15 g/bhp-hr.

S-1572 satisfies the current BACT(2) standards for POC, NOx and CO (4.8 g/bhp-hr of NOx+NMHC, when NOx and POC is 4.56 g/bhp-hr and 0.24 g/bhp-hr, respectively, and 2.6 g/bhp-hr of CO). The more restrictive BACT(1) standards are not applicable to this engine because it will be limited to operation as an emergency standby engine.

**OFFSETS**

Per Regulation 2-2-302, before an Authority to Construct or a Permit to Operate is issued for a new source at a facility with potential to emit 35 tons per year or more, on a pollutant specific basis, of POC or NOx, emission offsets shall be provided, for the emissions from the new source

and any pre-existing cumulative increase, minus any onsite contemporaneous emission reductions, at a 1.15 to 1.0 ratio.

Per Regulation 2-2-303, before an Authority to Construct or a Permit to Operate is issued for a new source at a facility with potential to emit 100 tons per year or more, on a pollutant specific basis, of SO<sub>2</sub>, PM<sub>2.5</sub> or PM<sub>10</sub>, emission offsets shall be provided, for the emissions from the new source and any pre-existing cumulative increase, minus any onsite contemporaneous emission reductions, at a 1.0 to 1.0 ratio.

A summary of the offsets for this application follows:

Pollutant	Current Emissions (tpy)	Project Emissions (tpy)	Total Cumulative Increase (tpy)	Offset Ratio	Offsets Required (tpy)
SO <sub>2</sub>	0.0	0.0003	0.000	1.0	0.000
NO <sub>x</sub>	0.0	0.6841	0.6841	1.15	0.786
CO	64.727	0.3901	65.1171	N/A	
POC	0.0	0.0360	0.0360	1.15	0.041
PM-2.5	0.0	0.0225	0.0225	1.0	0.023
PM-10	0.832	0.0225	0.8545	1.0	0.855

The offsets for PM-2.5 also offset PM-10. Therefore, if offsets were provided today, the required PM-10 offsets are 0.855 – 0.023 = 0.832 tons.

Per Regulation 2-2-303, Tesoro has elected to defer the offsets for PM<sub>2.5</sub> and PM<sub>10</sub> since the cumulative increase for these pollutants do not exceed 1 ton. Offsets will be provided per the following table:

Tons/yr	SO <sub>2</sub>	POC	NO <sub>x</sub>	PM <sub>2.5</sub>	PM <sub>10</sub>
Offsets Required	0.000	0.041	0.786	0.023	0.832
Bank 1568		0.041			
Bank 1144	0.000		0.786		0
Remaining Cumulative Increase	0.000	0.000	0.000	0.023	0.832

**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).

S-1572 engine has a total displacement of 78.1 liters and has 6 cylinders. Therefore, each cylinder has a volume of less than 30 liters. The engine is a 2010 model year engine and is no fire pump. Section 60.4205(b) requires these engines to comply with the emission standards in Section 60.4202, which refers to 40CFR89.112 and 40CFR89.113 for all pollutants.

For engines greater than 600 hp, these standards are:

NMHC+NOx: 4.77 g/hp-hr

CO: 2.61 g/hp-hr

PM: 0.15 g/hp-hr

According to the CARB certification for EPA engine family name of ACPXL78.1T2X, the engine will comply with the standards.

Sections 60.4206 and 60.4211(a) 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. The owner/operator is expected to comply with this requirement.

Section 60.4207(b) requires that the owner/operator must use fuel that complies with 40 CFR 80.510(b). This means that the fuel must have a sulfur content of 15 parts per million (ppm) maximum, and the same cetane index or aromatic content as above. The owner/operator is expected to comply with this requirement because CARB diesel is required to be used in California.

Section 60.4209(a) requires a non-resettable hour meter. This requirement is included in the Tesoro standard permit conditions (23811).

The engine will comply with the requirements of Section 60.4211(c) because it has been certified in accordance with 40 CFR Part 89.

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 it 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(b) states that owner/operators do not have to submit an initial notification to EPA for emergency engines.

Because the engine does not have a diesel particulate filter, the owner/operator is not subject to Section 60.4214(c).

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

### **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, per 40 CFR 63.6590(a)(2)(i), because it is a new engine, over 500 bhp,



located at a major source, constructed after 12/19/2002. However, S-1572 is subject to limited requirements. Per 40 CFR 63.6590(b)(1)(i), S-1572 does not have to meet the requirements of 40 CFR 63, Subpart ZZZZ or Subpart A, except for the initial notification requirements of 63.6645(f).

**CARB Stationary Diesel Engine ATCM**

The State Office of Administrative Law approved the Airborne Toxic Control Measure (ATCM) on November 8, 2004. The latest amendment of this ATCM is effective May 19, 2011. State law requires the local Air Districts to implement and enforce the requirements of the ATCM. Effective January 1, 2005, there is a prohibition on the operation of new diesel emergency standby engines greater than 50 bhp unless the following operating requirements and emission standards of 93115.6(a)(3)(A)(1) are met:

- a. meet the applicable emission standards for all pollutants for the same model year and maximum horsepower rating as specified in Table 1 Emission Standards for New Stationary Emergency Standby Diesel-Fueled CI Engines, in effect on the date of acquisition or submittal, as defined in section 93115.4, and

<b>Table 1: Emission Standards for New Stationary Emergency Standby Diesel-Fueled CI Engines g/bhp-hr (g/kW-hr)</b>				
<b>Maximum Engine Power</b>	<b>Model year(s)</b>	<b>PM</b>	<b>NMHC+NOx</b>	<b>CO</b>
50 ≤ HP < 75 (37 ≤ kW < 56)	2007	0.15 (0.20)	5.6 (7.5) 3.5 (4.7)	3.7 (5.0)
	2008+			
75 ≤ HP < 100 (56 ≤ kW < 75)	2007	0.15 (0.20)	5.6 (7.5) 3.5 (4.7)	3.7 (5.0)
	2008+			
100 ≤ HP < 175 (75 ≤ kW < 130)	2007	0.15 (0.20)	3.0 (4.0)	3.7 (5.0)
	2008+			
175 ≤ HP < 300 (130 ≤ kW < 225)	2007	0.15 (0.20)	3.0 (4.0)	2.6 (3.5)
	2008+			
300 ≤ HP < 600 (225 ≤ kW < 450)	2007	0.15 (0.20)	3.0 (4.0)	2.6 (3.5)
	2008+			
600 ≤ HP < 750 (450 ≤ kW < 560)	2007	0.15 (0.20)	3.0 (4.0)	2.6 (3.5)
	2008+			
HP > 750 (kW > 560)	2007	0.15 (0.20)	4.8 (6.4)	2.6 (3.5)
	2008+			

1. May be subject to additional emission limitations as specified in current applicable district rules, regulations or policies.

- b. after December 31, 2008, be certified to the new nonroad compression-ignition (CI) engine emission standards for all pollutants for 2007 and later model year engines as specified in 40 CFR, PART 60, Subpart IIII-Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (2006); and
- c. not operate more than 50 hours per year for maintenance and testing purposes, except as provided in 93115.6(a)(3)(A)2. This subsection does not limit engine operation for emergency use and for emission testing to show compliance with 93115.6(a)(3).

Emergency standby diesel engine S-1572 meets (1) the emission standards for all pollutants set in Table 1 Emission Standards for New Stationary Emergency Standby Diesel-Fueled CI Engines, (2) is subject to and in compliance with the EPA Tier 2 off-road CI engine standards, and (3) will operate for no more than 50 hours per year for maintenance and reliability testing per engine. Therefore, the diesel engine is in compliance with the above ATCM requirements.

## **STATEMENT OF COMPLIANCE**

Source S-1572 is subject to and expected to be in compliance with the requirements of District Regulation 1-301 (Public Nuisance), Regulation 6-1 (Particulate Matter General Requirements), Regulation 9-1 (Sulfur Dioxide) and Regulation 9-8 (NO<sub>x</sub> and CO from Stationary Internal Combustion Engines).

From Regulation 1-301, no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property. For purposes of this section, three or more violation notices validly issued in a 30 day period to a facility for public nuisance shall give rise to a rebuttable presumption that the violations resulted from negligent conduct.

S-1572 is subject to the limitations of Regulation 6-1-303 (*Ringelmann No 2 Limitation*). Regulation 6-1-303 states that a person shall not emit for a period or periods aggregating more than three minutes in any hour, a visible emission that is as dark or darker than No. 2 on the Ringelmann Chart, or of such opacity as to obscure an observer's view to an equivalent or greater degree, nor shall said emission, as perceived by an opacity sensing device in good working order, where such device is required by District Regulations, be equal to or greater than 40% opacity. This low PM<sub>10</sub> emitting engine is not expected to produce visible emissions or fallout in violation of this regulation, and it will be assumed to be in compliance with Regulation 6 pending a regular inspection.

S-1572 is also subject to the SO<sub>2</sub> limitations of Regulation 9-1-301 (*Limitations on Ground Level Concentrations of Sulfur Dioxide*), Regulation 9-1-302 (*Limitations Sulfur Dioxide Emissions*) and 9-1-304 (*Burning of Solid and Liquid Sulfur Dioxide Fuel*). From Regulation 9-1-301, the ground level concentrations of SO<sub>2</sub> will not exceed 0.5 ppm continuously for 3 consecutive minutes or 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours. Per Regulation 9-1-302, a person shall not emit from any source a gas stream containing sulfur dioxide in excess of 300 ppm (dry). And Regulation 9-1-304, states that a person shall not burn any liquid fuel having sulfur content in excess of 0.5% by weight. Compliance with Regulation 9-1 is very likely since diesel fuel with a 0.0015% by weight sulfur is mandated for use in California.

From Regulation 9-8 (*NO<sub>x</sub> and CO from Stationary Internal Combustion Engines*), Section 110.5 (*Emergency Standby Engines*), S-1572 is exempt from the requirements of 9-8-304 (*Emission Limits – Compression-Ignited Engines*), 9-8-501 (*Initial Demonstration of Compliance*) and 9-8-503 (*Quarterly Demonstration of Compliance*). However, it is subject to the monitoring and record keeping procedures described in Regulation 9-8-530 (*Emergency Standby Engines, Monitoring and Recordkeeping*). The requirements of this Regulation are included in the permit conditions below.

S-1572 is also subject to and expected to comply with Regulation 9-8-330 (*Emergency Standby Engines, Hours of Operation*) since non-emergency hours of operation will be limited in the permit conditions to 50 hours per year.

This application is considered to be ministerial under the District's 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 2.3.1.

PSD is not triggered.

This facility is located greater than 1,000 feet from the nearest school and therefore is not subject to the public notification requirements of Regulation 2-1-412.

### **PERMIT CONDITIONS**

Tesoro Condition 23811 will be revised as follows:

COND# 23811 -----

Application 14917, September 2006  
Modified by Application 16495, November 2007  
Modified by Application 19330, February 2009  
Modified by Application 21713, May 2010  
Modified by Application 22152, October 2010  
Modified by Application 25942, February 2014 Added S-1557  
Modified by Application 27990, January 2017, Added S-1561  
[Modified by Application 28553, September 2017, Added S-1572](#)  
Plant 14628 (B2758) Emergency Diesel Engines S-1518, S-1519  
Plant 14628 (B2758) Emergency Diesel Engine S-1522, S-1557  
Plant 14629 (B2759) Emergency Diesel Engine S-57  
Plant 14629 (B2759) Emergency Diesel Engine S-58  
Plant 21200 (E1200) Emergency Diesel Engine S-56  
Plant 14628 (B2758) Avon Wharf Berth 1A Emergency Generator  
Diesel Engine S-1561  
[Plant 14628 \(B2758\) No 4 Gas Plant Emergency Generator  
Diesel Engine S-1572](#)

1. Operating for reliability-related activities is limited to 50 hours per year per engine. [Basis: "Stationary Diesel Engine ATCM", CA Code of Regulations, Title 17, Section 93115.6(b)(3)(A)2b and 93115.6(a)(3)(A)1c]
2. The owner or 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 hours while mitigating emergency conditions or while emission testing to show compliance with District, state or Federal emission limits is not

limited. [Basis: Regulation 9-8-330, "Stationary Diesel Engine ATCM", CA Code of Regulations, Title 17, Section 93115.4(29)]

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: Regulation 9-8-530, "Stationary Diesel Engine ATCM", CA Code of Regulations, Title 17, Section 93115.10(d)(1)]
4. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 60 months from the date of entry. 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: Regulation 9-8-530, Regulation 2-6-501, and "Stationary Diesel Engine ATCM", CA Code of Regulations, Title 17, Section 93115.10(f) ]

### **RECOMMENDATION**

I recommend that Tesoro Refinery be issued an Authority to Construct for the following equipment:

**S-1572 Emergency Standby Diesel Generator Set**  
**2010 Caterpillar, Model: 3516C**  
**2722 bhp, 18.1 MMBtu/hr**  
**Model Year 2010, EPA Tier 2 Engine**

**Prepared by:** \_\_\_\_\_  
Art Valla, Senior Air Quality Engineer

**Date:** \_\_\_\_\_  
9/1/17