

# ***South Coast Air Quality Management District***

## ***Statement of Basis***

### ***Title V Permit Renewal***

(Proposed for Public Notice - 11/5/14)

(Final Title V Permit -12/24/14)

**Facility Name:** Tesoro Refining and Marketing Company, LLC.  
Sulfur Recovery Plant

**Facility ID:** 151798

**NAICS Code:** 324110

**Facility Address:** 23208 S. Alameda St.  
Carson, CA 90810-1919

**Application Number:** 563960

**Application Submittal Date:** 4/24/2014

**AQMD Contact Person:** Thomas Lee, Air Quality Engineer

**Phone Number:** (909) 396-3138

**E-Mail Address:** tlee1@aqmd.gov

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## **1. Introduction and Scope of Permit**

Title V is a national operating permit program for air pollution sources. Facilities subject to Title V must obtain a Title V permit and comply with specific Title V procedures to modify the permit. This permit replaces the facility's other existing permits. Title V does not necessarily include any new requirements for reducing emissions. It does, however, include new permitting, noticing, recordkeeping, and reporting requirements.

The South Coast Air Quality Management District (SCAQMD) implements Title V through Regulation XXX – Title V Permits, adopted by the SCAQMD Governing Board in order to comply with EPA's requirement that local air permitting authorities develop a Title V program. Regulation XXX was developed with the participation of the public and affected facilities through a series of public workshops, working group meetings, public hearings and other meetings.

Pursuant to Title V of the Federal Clean Air Act and SCAQMD Rule 3004(f), a Title V permit shall expire five years from the date of issuance unless such permit has been renewed.

Accordingly, each facility is required to submit a Title V renewal application and request the SCAQMD to renew their Title V permit. The proposed permit incorporates updates to the facility information provided in the facility's Title V renewal application and all rules and regulations that are currently applicable to the facility.

The Title V major source threshold for a particular pollutant depends on the attainment status of the pollutant in the South Coast Air Basin. The Basin is in attainment with National Ambient Air Quality Standards (NAAQS) for NO<sub>2</sub>, SO<sub>2</sub>, CO and PM<sub>10</sub>. The SCAQMD is currently in nonattainment for PM-2.5 and in extreme nonattainment for ozone. Effective December 31, 2010, the Los Angeles County portion of the SCAQMD was designated as non-attainment for the new federal standard for lead (Pb).

The SCAQMD proposes to issue a Title V permit renewal for the Tesoro Sulfur Recovery Plant (SRP) located at 23208 S. Alameda St., Carson, CA 90810. The Tesoro SRP is subject to Title V requirements because its operations, in association with the nearby Tesoro Los Angeles Refinery (ID 800436) in Wilmington and its affiliation with other contiguous facilities of Tesoro Refining & Marketing Company, LLC. - Carson Operations (ID 174655), Carson Product Terminal (ID 174703), Carson Crude Terminal (ID 174694) and Wilmington Terminal (ID 167981), are a major source of criteria air pollutants as defined in Title V and is subject to certain New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements. Each Tesoro facility listed above has applied for its own Title V permit renewal.

## **2. Facility Description**

The Tesoro SRP produces elemental sulfur from Diethanolamine (DEA) solutions and sour water containing hydrogen sulfide and ammonia generated at the Tesoro Los Angeles Refinery located at 2101 E. Pacific Coast Hwy, Wilmington, CA 90744. During the refining process at the refinery, sulfur is removed from crude oil and converted to hydrogen sulfide utilizing the hydrotreating process. The refinery gas produced from this process requires further treatment for the removal of hydrogen sulfide using lean (hydrogen sulfide free) DEA. The spent (hydrogen sulfide rich) DEA solution is transferred, via pipeline, from the refinery to the SRP for sulfur recovery. Water and steam condensate streams from the refining process can also contain hydrogen sulfide and ammonia. This sour water is also sent via pipeline to the SRP for hydrogen sulfide and ammonia removal. The SRP utilizes several processes to remove ammonia and convert hydrogen sulfide to saleable liquid sulfur. The lean DEA solution from the SRP is sent back to the refinery for reuse in the hydrotreating units and stripped water is returned to the refinery for reuse and/or processing before disposal. Because of the operational dependency between the two facilities, the SRP is considered a support facility for the refinery even though the two facilities are neither contiguous nor adjacent to each other.

Operations at the SRP include the following major processes:

### DEA Regeneration

These units are the first major processing units in the plant. DEA rich in hydrogen sulfide is regenerated into lean DEA using steam and stripper columns.

Acid gases (gas containing hydrogen sulfide) generated from the stripper columns are routed to the Claus units for sulfur recovery while lean DEA is sent back to the refinery for reuse.

Sour Water Strippers

Sour water generated at the refinery is pumped to the sour water strippers at the SRP. The strippers are used to remove ammonia and hydrogen sulfide from the sour water. The offgas from the strippers, containing ammonia and hydrogen sulfide, are vented to the Claus units for sulfur recovery. The stripped water is cooled and returned to the refinery for use and/or processing before disposal.

Claus Units

There are four (4) Claus units at the SRP. Acid gases from the DEA and sour water strippers are vented to the Claus units for recovery of hydrogen sulfide and conversion to elemental sulfur. The process consists of a reaction furnace, waste heat boiler, and subsequent converters/condensers. Each stage consists of a gas reheater, a catalytic converter, and a condenser. From the condenser, sulfur is routed to the sulfur pit and pumped to the sulfur storage tanks.

Tail Gas Treating Unit

90 to 95 percent of the total sulfur is typically recovered in the Claus units and the remaining is recovered in the Tail Gas Treating Unit (TGTU). The TGTU consists of a reducing gas generator and a catalytic reactor to convert sulfur compounds into hydrogen sulfide. Absorber is then utilized to capture the hydrogen sulfide gas. Rich solvent from the absorber is sent to the stripper, where the hydrogen sulfide is stripped out and recycled to the Claus units. Absorber off gas is normally vented to atmosphere but is diverted to the incinerator whenever the hydrogen sulfide content exceeds 10 ppmv on a dry basis.

In addition to the above major processes, the SRP operates storage tanks, sulfur loading, and numerous combustion units such as boilers and a flare.

**3. Construction and Permitting History**

The SRP has been in continual operation since 1948. Numerous permits to construct and permits to operate have been issued to the facility since the formation of the Los Angeles County Air Pollution Control District in 1947. The current permit for each permit unit located at the facility is contained in the Title V permit. There have been numerous revisions to the Title V permit since the initial Title V permit was issued to the SRP on October 26, 2009. These revisions are summarized in Table 3.1 below.

**TABLE 3.1**  
Permit Revisions since Initial Title V Permit was issued on 10/26/2009

Revision Date	Revision Type	Permit Action	Permit Section(s)
January 1, 2010	Administrative	Update RECLAIM annual emission allocations.	B

Revision Date	Revision Type	Permit Action	Permit Section(s)
January 1, 2011	Administrative	Update RECLAIM annual emission allocations with adjustment to SOx RTC pursuant to 11/5/2010 amendment of Rule 2002(f)(1).	B
December 2, 2011	Administrative	Impose more frequent monitoring, record keeping/reporting requirements and provide clarification to permit conditions affected by issuance of Rule 1470 compliance plan on 6/24/11.	D
January 1, 2012	Administrative	Update RECLAIM annual emission allocations.	B
January 1, 2013	Administrative	Update RECLAIM annual emission allocations.	B
February 12, 2013	Administrative and Minor	Update TV permit with new facility name (same owner) and revise Section I to include approved 40CFR 63, Subpart UUU Compliance Plan.	All
May 22, 2013	Minor	Issue approved Rule 1118 Compliance Plan in Section I.	I
November 20, 2013	Administrative and Significant	Issue permits to operate for Tail Gas Treating Units for change of condition to enable use of available options under 40CFR 60.105(a) to monitor SO2 emissions instead of §60.105(a)(7)(ii) only. Issue permit to construct new spare compressor for the Vapor Recovery & Fuel Gas Treating System.	D, H
January 1, 2014	Administrative	Update RECLAIM annual emission allocations.	B

#### 4. Regulatory Applicability Determinations

Applicable legal requirements with which this facility must comply with have been identified in the Title V permit (for example, Sections D, E, H and J of the Title V permit). Device level conditions H23.x denote applicability of federal regulations and source specific SCAQMD Rules to permitted equipment. Applicability determinations (i.e., determinations made by the District with respect to what legal requirements apply to a specific piece of equipment, process, or operation) can be found in the Engineering Evaluation Reports located in the permit application folders. Federal NSPS requirements of 40 CFR Part 60 apply to certain units at the facility and the permit terms and conditions may be found in Sections D and H of the Title V permit. Federal NESHAP requirements of 40 CFR Parts 61 and 63 apply to certain units at the facility and the permit terms and conditions may be found in Sections D, H, and J of the Title V permit.

As discussed in Section 2 above, the SRP is considered a support facility for the Tesoro Los Angeles Refinery, and thus, is subject to the NSPS and NESHAP regulations for petroleum refineries even though the facility is a sulfur recovery plant not physically located inside or adjacent to the refinery.

#### 5. Monitoring and Operational Requirements

Applicable monitoring and operational requirements with which the facility is required to comply with are identified in the Title V permit (for example, Sections D, E, F, G, H, J and Appendix B of the proposed Title V permit). Discussion of any applicable operational requirements can be found in the Engineering Evaluation Reports located in the permit

application folders. All periodic monitoring requirements were developed using strict adherence to the following applicable guidance documents: SCAQMD Periodic Monitoring Guidelines for Title V Facilities (November 1997) and CAPCOA/CARB/EPA Region IX Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP (June 1999).

As part of this Title V permit renewal, an applicability determination was conducted for each piece of equipment with control device at the facility to identify those that are subject to the Compliance Assurance Monitoring (CAM) requirements of 40CFR Part 64. As a result of this analysis, it was determined that CAM requirements do not apply to any of the permitted emission sources with control device at this facility. A summary of this applicability determination is provided in Attachment A.

## **6. Permit Features**

### Permit Shield

A permit shield is an optional part of a Title V permit that gives the facility an explicit protection from requirements that do not apply to the facility. A permit shield is a provision in a permit that states that compliance with the conditions of the permit shall be deemed compliance with all identified regulatory requirements. Incorporation of a permit shield into the Title V permit involves submission of applications for change of conditions for each piece of equipment affected by the permit shield. Permit shields are addressed in AQMD Rule 3004 (c). This facility has not applied for a permit shield for any of the equipment at the facility.

### Alternate Operating Scenarios

An alternative operating scenario (AOS) is a set of provisions and conditions in a permit that allow the operator to switch back and forth between alternative modes of operation without submitting an application for a permit revision before each switch. However, each AOS must be evaluated for compliance with AQMD rules and regulations and applicable State and Federal requirements. AOS is addressed in Rule 3005 (j). This facility has not applied for an AOS for any of the equipment at the facility.

### Streamlining Requirements

Some emission units may be subject to multiple requirements which are closely related or redundant. The conditions may be streamlined to simplify the permit conditions and compliance. Emission limits, work practice standards, and monitoring, recordkeeping and reporting requirements may be streamlined. Compliance with a streamlined condition will be deemed compliance with the underlying requirements whether or not the emission unit is actually in compliance with the specific underlying requirement. This facility has not applied for any streamlined conditions.

## **7. Summary of Emissions and Health Risks**

### Summary of Refinery Criteria Air Pollutant and Toxic Air Contaminant Emissions

This section contains a summary of the Criteria Air Pollutant (CAP) and Toxic Air Contaminant (TAC) emissions for the facility as reported in their Annual Emission Report (AER) for reporting year 2013.

**TABLE 7.1**  
Criteria Pollutant Emissions (tons/year)  
from Annual Reported Emissions for Reporting Year 2013

Pollutant	Emissions (tons/year)
NOx	49.428
CO	144.729
VOC	28.739
PM	32.400
SOx	6.935

**TABLE 7.2**  
Toxic Air Contaminants Emissions (TAC)  
Annual Reported Emissions for Reporting Year 2013

The Following TACs Were Reported	Emissions (lbs/yr)
2-Methyl naphthalene [PAH, POM]	0.026
ACENAPHTHENE	0.003
ACENAPHTHYLENE	0.033
ANTHRACENE	0.008
Ammonia	2637.008
Arsenic	0.586
Benz[a]pyrene	0.022
Benz[a]anthracene	0.002
Benzene	29.586
Benzo[a]pyrene	0.022
Benzo[b]fluoranthene	0.036
Benzo[e]pyrene [PAH, POM]	0.005
Benzo[k]fluoranthene	0.007
Beryllium	0.066
Cadmium	0.375
Chromium (VI)	0.014
Chrysene	0.022
FLUORANTHENE	0.035
FLUORENE	0.020
Formaldehyde	408.520
Indeno[1,2,3-cd]pyrene	0.001
Lead (inorganic)	0.675
Naphthalene	3.416
Nickel	3.791
PAHs, total, with components not reported	0.222
PHENANTHRENE	0.072
PYRENE	0.015

Source: SCAQMD "Facility INformation Detail" (FIND) database, available at [http://www3.aqmd.gov/webappl/fim/prog/emission.aspx?fac\\_id=151798](http://www3.aqmd.gov/webappl/fim/prog/emission.aspx?fac_id=151798)

Health Risk from Toxic Air Contaminants

The facility is subject to review by the Air Toxics Information and Assessment Act (AB2588). The Final Facility Health Risk, as reported by the SCAQMD in the Annual Report on AB2588 Air Toxics, was approved on September 24, 1999 with the following risk factors.

Cancer Risk	2.77 in one million
Acute Hazard Index	0.14
Chronic Hazard Index	0

Source: SCAQMD “Annual Report on AB2588 Air Toxics” available at <http://www.aqmd.gov/docs/default-source/planning/risk-assessment/summary-of-facility-risks-for-all-scaqmd-approved-hras.pdf?sfvrsn=0>

## 8. Compliance History

### Notices to Comply and Notices of Violation

As noted, the SRP has been in continual operation since 1948. Since the inception of Los Angeles County Air Pollution Control District the facility has been subject to both self-reporting requirements and AQMD inspections. There have been two (2) Notices of Violation issued in the last five years. All notices are either closed or in compliance status. Further information regarding the facility’s compliance status is available on the SCAQMD website under the FIND database at [http://www3.aqmd.gov/webappl/fim/prog/novnc.aspx?fac\\_id=151798](http://www3.aqmd.gov/webappl/fim/prog/novnc.aspx?fac_id=151798).

The FIND database also maintains compliance documentation for Variances and Abatement Orders.

### Variance(s)

The following is a list of variances petitioned by the facility and has been granted since the initial Title V permit was issued in 2009. All SCAQMD variances are completed and the facility is not operating under any variance currently.

**TABLE 8.1**  
List of Variances Since Initial Title V Permit Issued in 2009

Hearing Board Case No.	Petition Date	Description	Status
4982-88	3/31/2011	Operate facility without VRS while VRS compressor C-115 is removed from service to conduct mandated API 510 inspection.	Completed
4982-93	2/14/2014	Operate facility without VRS compressor C-115 due to breakdown beyond 24 hours allowed by Rule 430.	Withdrawn

### Order(s) for Abatement

The facility is currently not subject to any SCAQMD Orders for Abatement.

## 9. Compliance Certification

By virtue of the Title V permit application and issuance of this permit, the reporting frequency for compliance certification for this facility shall be annual.

**Attachment A: Summary of CAM Applicability at the Tesoro Sulfur Recovery Plant: Basic Equipment with Control Devices**

<b>Basic Equipment</b> <i>Description (Device ID, Process#System#)</i>	<b>Control Device</b> <i>Description (Device ID, Process#System#)</i>	<b>CAM Applicability</b>	<b>Subject to CAM?</b>
Claus Unit No. 300 (various units/multiple devices, P3S1); Tail Gas Treating Units (multiple devices, P3S5,S6)	Incinerator (C54, C56; P3S7)	CAM not required because pre-control H2S emission is below major source threshold of 10 tons/yr pursuant to 62.4(a)(3). Additionally, exemption from CAM per 64.2(b)(1)(vi) also applies because H2S, TRS, SOx continuously monitored using CEMS; No controls for pollutants with emission limits (CO, NOx, VOC, PM); No emission limit for VOC	No
Claus Unit No. 600 (various units/multiple devices, P3S2); Tail Gas Treating Units (multiple devices, P3S5,S6)	Incinerator (C54, C56; P3S7)	CAM not required because pre-control H2S emission is below major source threshold of 10 tons/yr pursuant to 62.4(a)(3). Additionally, exemption from CAM per 64.2(b)(1)(vi) also applies because H2S, TRS, SOx continuously monitored using CEMS; No controls for pollutants with emission limits (CO, NOx, VOC, PM); No emission limit for VOC	No
Claus Unit No. 700 (various units/multiple devices, P3S3); Tail Gas Treating Units (multiple devices, P3S5,S6)	Incinerator (C54, C56; P3S7)	CAM not required because pre-control H2S emission is below major source threshold of 10 tons/yr pursuant to 62.4(a)(3). Additionally, exemption from CAM per 64.2(b)(1)(vi) also applies because H2S, TRS, SOx continuously monitored using CEMS; No controls for pollutants with emission limits (CO, NOx, VOC, PM); No emission limit for VOC	No

<b>Basic Equipment</b> <i>Description (Device ID, Process#System#)</i>	<b>Control Device</b> <i>Description (Device ID, Process#System#)</i>	<b>CAM Applicability</b>	<b>Subject to CAM?</b>
Claus Unit No. 750 (various units/multiple devices, P3S4); Tail Gas Treating Units (multiple devices, P3S5,S6)	Incinerator (C54, C56; P3S7)	CAM not required because pre-control H2S emission is below major source threshold of 10 tons/yr pursuant to 62.4(a)(3). Additionally, exemption from CAM per 64.2(b)(1)(vi) also applies because H2S, TRS, SOx continuously monitored using CEMS; No controls for pollutants with emission limits (CO, NOx, VOC, PM); No emission limit for VOC	No
Accumulator Sulfur Pit, D62; P3S1	Sulfur Vapor Collection System (P8S1) routes vapor back to Claus Unit(s) for processing – technically not a standalone control device.	No controls for pollutants with emission limits (H2S, SOx, SO2); No emission limit for CO, VOC, PM, NOx	No
Accumulator Pits, D63, D65; P3S2S3S4 (Common to SRU Unit(s) 600, 700, 750)	Sulfur Vapor Collection System (P8S1) routes vapor back to Claus Unit(s) for processing – technically not a standalone control device.	No controls for pollutants with emission limits (H2S, SOx, SO2); No emission limit for CO, VOC, PM, NOx	No
Storage Tanks, D64, D66, P3S8	Sulfur Vapor Collection System (P8S1) routes vapor back to Claus Unit(s) for processing – technically not a control device.	No control for pollutants with emission limits (SOx); No emission limit for VOC, PM, NOx, CO	No
Liquid Sulfur Loading Arm – Tank Truck, D57, P4S1	Sulfur Vapor Collection System (P8S1) routes vapor back to Claus Unit(s) for processing – technically not a control device.	No control for pollutants with emission limits (SOx); No emission limit for VOC, PM, NOx, CO	No
Boilers, D76, D77, P7S1	None for CO, PM and VOC; NOx, SOx subject to RECLAIM	No control for pollutants with emission limits (CO, PM, VOC); NOx, SOx exempt per 64.2(b)(1)(vi) (permit requires CEMS); No emission limit for VOC	No