

**Bay Area Air Quality Management District**

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**Permit Evaluation  
and  
Statement of Basis  
for  
MAJOR FACILITY REVIEW PERMIT**

**for  
Phillips 66 Company – San Francisco Refinery  
Facility #A0016**

**Facility Address:**  
1380 San Pablo Avenue  
Rodeo, CA 94572

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1380 San Pablo Avenue  
Rodeo, CA 94572

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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 Volume 40 of the Code of Federal Regulations (CFR), and BAAQMD Regulation 2, Rule 6, Major Facility Review because it is a major facility as defined by BAAQMD Regulation 2-6-212. It is a major facility because it has the “potential to emit,” as defined by BAAQMD Regulation 2-6-218, of 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 number that consists of a letter and a 4-digit number. This facility number is also considered to be the identifier for the permit.

### **B. Facility Description**

This facility is a typical full-scale oil refinery, which processes crude oils and other feedstocks into refined petroleum products, primarily fuel products such as gasoline and fuel oils. Feedstocks are received via marine tanker vessels and pipeline, and petroleum products are shipped from the refinery the same way. Refining byproducts include:

- wastewater, which is treated and discharged to the San Francisco Bay
- waste gases, which are collected and burned as fuel for refinery heaters, boilers, turbines, and flares
- sulfur, a salable by-product which is removed from feedstocks and intermediate products in the form of hydrogen sulfide and other sulfur-containing gases, and converted to a pure, solid form which is sold
- coke, a salable by-product that is the leftover solid material remaining after crude oil has been completely refined

Auxiliary facility operations include:

- a three-turbine power plant that burns refinery waste gases and natural gas, and which produces electrical power for the refinery and steam for various processing operations

- two hydrogen plants which produce pure hydrogen for use in various processing operations

Air emissions include both organic and inorganic gases that are emitted from storage tanks and from leakage from pipes and process vessels, as well as combustion emissions from refinery heaters and other combustion devices, and particulate emissions from operations such as coke and sulfur handling.

In summary, refining is a process which takes crude oil 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 salvage any light ends or middle distillates that did not get separated under atmospheric pressure; the heaviest bottoms are eventually processed into coke. Other product components are processed by downstream units to be cleaned (hydrotreated), “cracked” into smaller molecules (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 diesel and other fuel oils.

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

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.

Phillips also owns the Phillips Carbon Plant (Plant # A0022) . Because the refinery and the carbon plant are so close together, have a common owner, and are in the same industrial grouping, they are considered to be one facility. Because District review of the original permit

applications was close to completion at the time of the determination, the carbon plant will be issued a separate Title V permit, which is authorized by Title V regulations.

The District has determined that no refinery source is subject to additional applicable requirements due to the refinery's association with the carbon plant. See Section IV below for additional discussion of this issue.

### **C. Permit Content**

Additional information concerning the legal and factual basis of the Title V permit conditions is presented below. The information is organized by the relevant section of the Title V permit.

#### **I. Standard Conditions**

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

The standard conditions also contain references to BAAQMD Regulation 1 and Regulation 2. These are the District's General Provisions and Permitting rules.

Condition I.J has been added to clarify that the capacity limits shown in Table II-A are enforceable limits.

#### **II. Equipment**

This section of the permit lists all permitted or significant 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 BAAQMD Rule 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.

All abatement (control) devices that control permitted or significant 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 this table but will have an "S" number. An abatement device that is also a source (such as a thermal oxidizer that burns fuel) will have an "A" number.

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

Following are explanations of the differences in the equipment list between the time that the facility originally applied for a Title V permit and the permit proposal date:

***Devices Removed from Service Since Application was Submitted:***

The following sources, including exempt sources, that were listed in the permitted source list in Part 3 of the application, have been removed from service and are not addressed in the proposed permit:

S-25, S-26, S-32, S-33, S-34, S-35, S-38, S-39, S-40, S-67, S-85, S-91, S-130, S-131, S-132, S-141, S-142, S-143, S-144, S-145, S-146, S-148, S-157, S-162, S-163, S-167, S-197, S-198, S-201, S-202, S-203, S-204, S-206, S-207, S-210, S-212, S-213, S-215, S-218, S-219, S-220, S-221, S-222, S-223, S-224, S-225, S-226, S-227, S-228, S-229, S-230, S-231, S-232, S-233, S-237, S-240, S-241, S-243, S-244, S-245, S-246, S-247, S-250, S-251, S-252, S-264, S-265, S-266, S-267, S-288, S-297, S-299, S-311, S-312, S-313, S-316, S-317, S-331, S-391, S-411, S-412, S-430, S-431, S-1004, S-1005, S-1006

The following abatement devices, listed in the list of abatement devices, have been removed from service and are not addressed in the proposed permit:

A-5, A-42, A-43, A-44, A-45, A-297, A-298, A-299, A-412, A-434

***Devices Permitted Since Application was Submitted:***

The following sources, NOT listed in the permitted source list in Part 3 of the application because they were not yet permitted, are now permitted and are addressed in the proposed permit.

S-398, S-435, S-436, S-437, S-438, S-439, S-440, S-442, S-444, S-445, S-446, S-447, S-448, S-451

The following abatement devices, NOT listed in the list of abatement devices, because they were not yet permitted, are now permitted and are addressed in the proposed permit.

A-50, A-113

***Devices with Changed Permit Status:***

Cold cleaners S-376, S-377 and S-378 were previously exempt from permit requirements because of their solvent capacity. This exemption, in Regulation 2-1-118.7, has since been changed to require a low VOC content as the exemption criteria. These cold cleaners did not meet the new exemption criteria and required permits.

### ***Corrections to Devices Shown in Application***

The following abatement devices, listed in the list of abatement devices, were listed with incorrect device numbers.

	<i>device # in permit</i>	<i>correct device #</i>
sulfur pit U234 vent scrubber	10	8
sulfur pit U236 vent scrubber	11	9
sulfur pit U238 vent scrubber	12	10

Tank S-118 was listed as an exempt source in the exempt source list of the application. However, this tank was at that time, and continues to be, a permitted source.

### **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 a significant source pursuant to the definition in BAAQMD Rule 2-6-239.

### **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) listed following the corresponding District Rules. SIP rules are District rules that have been approved by EPA into 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 portions of the SIP rule are cited separately after the District rule. The SIP portions will be federally

enforceable; the non-SIP versions will not be federally enforceable, unless EPA has approved them 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's or EPA's websites, or in the permit conditions, which are found in Section VI of the permit. All monitoring requirements are cited in Section IV. Section VII is a cross-reference between the limits and monitoring requirements. A discussion of monitoring is included in Section C.VII of this permit evaluation/statement of basis.

### **Complex Applicability Determinations:**

#### **District Regulation 8, Rule 2 Applicability:**

The District has determined that the definition of "miscellaneous operation" in Regulation 8-2-201 excludes sources that are in a source category regulated by another rule in Regulation 8, even if they are exempt from the other rule. This is because such sources limited by the terms of the exemption. Thus, for example, a hydrocarbon storage tank that stores liquids with a vapor pressure less than 0.5 psia is exempt from Regulation 8, Rule 5, Storage of Organic Liquids (8-5-117), and is not subject to Regulation 8, Rule 2, Miscellaneous Operations.

The policy justification for this determination is that the District considered appropriate controls for the source category when it adopted the rule governing that category. Part of the consideration includes determination of sources and activities that are not subject to controls.

#### **Facility Tanks:**

In both Table IV and Table VII, facility tanks have been grouped into several sub-tables such that each sub-table includes a number of tanks that have a common set of requirements. Specific requirements are triggered by various criteria, which include: tank size, tank construction date, vapor pressure of the tank contents, toxicity of the tank contents, tank roof design (floating roof versus fixed roof) and whether or not the tank is vented to a control device. For example, the fewest requirements apply to tanks which are relatively old and therefore are not subject to the federal New Source Performance Standard (NSPS), and which store low-vapor pressure materials and therefore are not subject to District Regulation 8, Rule 5. Such tanks are shown in sub-table IV-BB and VII-BB. More requirements apply to newer tanks that store high vapor-pressure materials. Such tanks are shown in sub-table IV-BG and VII-BG.

#### **Relationship between Phillips Carbon (Plant A0022) and Phillips Refinery (Plant A0016):**



The District has determined that Phillips Carbon and Phillips Refinery are the same facility.

Federal Title V regulations allow the District to issue separate Title V permits to distinct operations within a facility. 40 CFR 70.2. Because the plants are separately managed, because processes at the two facilities are very different, and because both draft permits are very close to completion, the District has decided to issue separate permits to these two facilities. Before doing so, however, requirements that arise due to the facilities' association with each other must be added to the draft permits.

The District has determined that no additional requirements apply to sources at the refinery due to the determination that Federal regulations applicable to the Carbon Plant may be applicable to the refinery as well. Any additional requirements that apply to the carbon plant due to its association with the refinery will be addressed in the carbon plant Title V permit.

### Discussion

Phillips Carbon and Phillips Refinery are physically separated by a 200 ft-wide strip of property belonging to the railroad. The facilities are therefore not contiguous. They are, however, "adjacent" properties. The Standard Industrial Classification (SIC) code for Phillips Carbon is 2999 (Petroleum Products, Miscellaneous). The SIC code for Phillips Refinery is 2911 (Petroleum Refineries).

The federal definition of "facility" is the basis for BAAQMD Regulation 2-2-215. Under this definition, Phillips Carbon and Phillips Refinery are the same facility for the following purposes:

- District permits
- Federal New Source Review and Prevention of Significant Deterioration
- Federal National Emission Standards for Hazardous Air Pollutants (NESHAPS) (40 CFR 61 and 63)
- Federal New Source Performance Standards (NSPS) (40 CFR 60)
- Title V operating permits
- District regulation

As a result, the emissions from both plants must be combined to determine whether or not they exceed the Title V applicability thresholds. Also, any requirements under the above programs that are applicable to refineries are also applicable to Phillips Carbon. All such requirements will be addressed in the Phillips Carbon Title V permit.

Any requirements under the above programs that are applicable to carbon plants are also applicable to Phillips Refinery. There are no such requirements that apply to any sources at Phillips refinery.

In addition to the Federal regulations, the District has several regulations that apply to refineries. These include: Regulation 8-18 (Equipment leaks), 8-28 (Pressure Relief Devices), and Regulation 9-10 (Combustion emissions from furnaces and boilers).

The applicability of Regulations 8-18 and 8-28 to the carbon plant will be discussed in the carbon plant permit evaluation.

Regulation 9-10 requires that NO<sub>x</sub> emissions from refinery boilers, steam generators, and process heaters, on a refinery-wide basis, must be below 0.033 pounds NO<sub>x</sub> per million BTU of heat

Input. The District has determined that none of the combustion devices at Phillips Carbon are boilers, steam generators, or process heaters. As a result, they are not included in the refinery-wide average for determination of compliance.

A boiler or steam generator is defined in 9-10-202 as “Any combustion equipment used to produce steam or heat water.” The rotary kilns at Phillips Carbon are used to calcine coke; off-gases from calcining are sent to the pyroscrubbers, where organics and sulfur compounds are oxidized fully. Until 1983, the hot gases from the pyroscrubbers were vented directly to the atmosphere. The kilns and pyroscrubbers were not designed with any intention to generate produce steam or heat water.

In 1983, the facility installed heat recovery equipment. The hot stack gases were used to make steam, which generates electricity in a steam turbine.

The District has determined that the addition of equipment to produce steam by recovering waste heat does not mean that the original combustion equipment is “used to produce steam.” The equipment is, in this case, “used to calcine coke.” As a result, the rotary kilns and pyroscrubbers are not steam generators, and are therefore not subject to Regulation 9-10.

## **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.”

Because the District has not determined that this facility is out of compliance with an applicable requirement, the schedule of compliance for this permit only contains elements 2-6-409.10.1 and 2-6-409.10.2. It also contains the text of an ongoing "unconditional order for abatement" (Docket 3134) that has been imposed on this facility. This order was issued on December 19, 1996 as a result of approximately 100 odor complaints that were lodged against the facility. The District determined that the odors were caused, at least in part, by various failures of the gas recovery system that collects gases from fixed-roof tanks and other sources. Specific failures

included leaks from pressure/vacuum relief valves, control valves and seals, and failures of two gas compressors that led to actuation of system pressure/vacuum relief valves. The facility has made some corrective actions, including replacement of the two original engine-driven gas compressors with three electric compressors. However, because the order is "unconditional" it does not specify any corrective actions which the facility must make and does not contain a schedule for compliance. The order was issued without conditions because the District did not feel that it could endorse any particular set of corrective actions as a remedy for the odor problem. The order simply requires that the facility "cease and desist" activities which result in nuisance odors. As is typical of unconditional orders, this order does not include an expiration date and remains in effect until the order is terminated by the District Hearing Board at the request of the District or the facility. Neither party has petitioned for a termination of this order. In the 12-month period between 4/1/01 and 4/1/02, six complaints, all unconfirmed, were lodged against this facility for odors. This represents a significant improvement compared to the period that resulted in this order. The compliance review discussed in the next paragraph includes all aspects of compliance, including the odor problem that was the basis for this order for abatement.

The BAAQMD Compliance and Enforcement Division has conducted a review of compliance over the past year and has no records of compliance problems at this facility. The compliance report is contained in Appendix A of this permit evaluation and statement of basis. Note that Regulation 7, "Odorous Substances," does not apply until the facility has received complaints from 10 or more complainants within a 90-day period.

## **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.

Where necessary to meet Title V requirements, additional monitoring, recordkeeping, or reporting has 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; all "underline" language will be retained, subject to consideration of comments received.

The existing permit conditions are generally derived from previously issued District Authorities to Construct (A/C) or Permits to Operate (P/O). It is also possible for permit conditions to 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 following table illustrates the hourly or daily and annual limits with a brief explanation of the basis for the throughput limit. Short-term throughput limits (hourly or daily) are indicators of

the equipment's physical capacity. Long-term throughput limits are indicators of the equipment's capacity to operate in a sustained manner. An increase in capacity may indicate that a source has been modified, triggering the District's preconstruction review process. In general, tanks have annual limits and other sources have hourly or daily limits. Tanks are not subject to daily throughput limits because the tank's capacity is more appropriately characterized by volume than throughput. As explained above, throughput limits are being added to the permit for pre-1979 "grandfathered" sources so as to facilitate the implementation of Regulation 2-1-234.3.

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 considered to be the legally binding "emission level" for purposes of 2-234.1 and 2-1-234.2. By contrast, for older sources that have never been through preconstruction review (commonly referred to as "grandfathered" sources), an "increase" in "emission level" is addressed in 2-1-234.3. A grandfathered source is not subject to preconstruction review unless its emission level increases above the highest of either: 1) the design capacity of the source, 2) the capacity listed in a permit to operate, or 3) highest capacity demonstrated prior to March 2000. However, if the throughput capacity of a grandfathered source is limited by upstream or downstream equipment (i.e., is "bottlenecked"), then the relaxing of that limitation ("debottlenecking") is considered a modification.

The District has written throughput limits into the Title V permit for grandfathered sources. As discussed above, these limits are written for the purpose of determining whether an increase in emission levels has occurred. The purpose of these limits is to facilitate implementation of 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 2-10234.1) 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.

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 required monitoring that provide 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 2-1-234.3. 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 grandfathered source has undergone a "modification" as defined in 2-1-234.3, 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 for purposes of 2-1-234.3.

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

Conditions have also been deleted due to the following:

- Redundancy in record-keeping requirements.
- Redundancy in other conditions, regulations and rules.
- The condition has been superseded by other regulations and rules.
- The equipment has been taken out of service or is exempt.
- The event has already occurred (i.e. initial or start-up source tests).

The regulatory basis has been referenced following each condition. The regulatory basis may be a rule or regulation. The District is also using the following codes for regulatory basis:

- BACT: This code 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 code 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 code 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 code is used for a condition imposed by the APCO to ensure compliance with a Prevention of Significant Deterioration permit issued pursuant to Regulation 2, Rule 2.
- TRMP: This code is used for a condition imposed by the APCO to ensure compliance with limits that arise from the District's Toxic Risk Management Policy.

Abatement device operating parameter monitoring has been added for each abatement device.

Additional monitoring has been added, where appropriate, to assure compliance with the applicable requirements.

A PSD permit that was originally issued and subsequently modified by the U.S. EPA is shown in the permit with other permit conditions. This permit governed the construction of the refinery

steam power plant and includes ongoing emission limits and other requirements. This permit has been delegated to the District by EPA, and is administered by the District.

### **Changes to Permit Conditions / New Conditions:**

Per BAAQMD Regulation 2-1-234.3, throughput limits were added to a majority of the sources in Section VI of this permit so that increases in throughput would trigger a permit modification. These limits were based on original permit submittals.

Refinery processes are usually operated in steady state (constant flow and temperature conditions). The process controls react to fluctuations in conditions by adjusting flow rates and fuel use to bring the process back to the desired conditions. Excess emissions are more likely to occur when operating conditions are being changed from one set of values to another. They are most likely to occur when the change is greatest: during startup and shutdown.

The District has imposed a permit condition on all of the refineries, pursuant to the authority granted by BAAQMD Rule 2-1-403, requiring the facility to notify the District no less than three calendar days in advance of any startup or shutdown. This will enable District staff to observe the activity, and respond if appropriate.

### **VII. Applicable Limits and Compliance Monitoring Requirements**

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

The tables below contain only the limits for which there is no monitoring or inadequate monitoring in the applicable requirements. The District has examined the monitoring for other limits and has determined that monitoring is adequate to provide a reasonable assurance of compliance. Calculations for potential to emit will be provided when no monitoring is proposed due to the size of a source. In all other cases, the column will have “N/A”, meaning “Not applicable”.

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.

A summary of all monitoring is contained in Section VII, Applicable Limits and Compliance Monitoring Requirements, of the permit. The summary includes a citation for each monitoring requirement, frequency, and type. The applicable requirements for monitoring are completely contained in Sections IV, Source-Specific Applicable Requirements, and VI, Permit Conditions, of the permit.

NOx Sources

<b>S# &amp; Description</b>	<b>Federally Enforceable Limit Citation</b>	<b>Federally Enforceable Limit</b>	<b>Monitoring</b>
S-2-S-5, S-7-S-17, S-19-S-22, S-29-S-31, S-43, S-44, S-336, S-337, S-351, S-371, S-372, S-438	BAAQMD 9-10-302	Interim emissions: 50% of affected units: 0.033 lbs NOx/MMBTU	None. This is a temporary interim limit which expires on 7/1/02
S-2-S-5, S-7-S-17, S-19-S-22, S-29-S-31, S-43, S-44, S-336, S-337, S-351, S-371, S-372, S-438	BAAQMD 9-10-303	Refinery-wide emissions: 0.20 lbs NOx/MMBTU	None. This is a temporary interim limit which expires on 7/1/02
S-352 – S-357	BAAQMD Condition 12122, Part 9a	combined NOx emissions from S- 352 - S-357 shall not exceed 66 lb/hr (averaged over any 3 hour period), nor 167 tons in any consecutive 365 day period. NOx emissions from each turbine/duct burner set shall not exceed 528 lb/day	BAAQMD Condition 12122, Part 9b is a new requirement for a CEM, although the CEM itself is not new and is already in use

**NOx Discussion:**

Every source at the refinery that is subject to a NOx limit is also subject to NOx monitoring. These monitoring requirements come either from Regulation 9-10, existing permit conditions, or both. For more detailed information on this matter, see Table VII. Sources that are subject to this rule are found in the tables in Section VII Applicable Limits and Compliance Monitoring Requirements of the permit.

BAAQMD Regulation 9, Rule 10 “Inorganic Gaseous Pollutants: NOx and CO from Boilers, Steam Generators and Process heaters in Petroleum Refineries”

Regulation 9-10-502 requires continuous emission monitoring systems (CEMS) or “equivalent” verification systems to demonstrate compliance with Regulation 9, Rule 10. A BAAQMD Policy Memorandum, dated June 23, 2000, outlines in detail emission monitoring requirements for petroleum refinery heaters, furnaces, and boilers that are subject to the rule. Exact monitoring requirements for NOx are dependent upon emission control devices in use, firing rate, and source test results. The District Policy is contained in Appendix B. Sources that are subject to this rule are found in the tables in Section VII, Applicable Limits and Compliance Monitoring Requirements, of the permit.

No additional monitoring will be imposed for the limits that will expire before the issuance of the Title V permit.

CO Sources

<b>S# &amp; Description</b>	<b>Federally Enforceable Limit Citation</b>	<b>Federally Enforceable Limit</b>	<b>Monitoring</b>
S-352 – S-357	BAAQMD Condition 12122, Part 7	CO emissions from each turbine/duct burner set shall not exceed 39 ppmv at 15% oxygen, averaged over any consecutive 30 day period. Emissions during startup periods, which shall not exceed four hours, and shutdown periods, which shall not exceed two hours, may be excluded when averaging emissions	BAAQMD Condition 12122, Part 10b is a new requirement for a CEM, although the CEM itself is not new and is already in use



### CO Sources

S# & Description	Federally Enforceable Limit Citation	Federally Enforceable Limit	Monitoring
S-352 – S-357	BAAQMD Condition 12122, Part 10a	The combined CO emissions from S-352, S-353, S-354, S-355, S-356 and S-357 shall not exceed 200 tons in any consecutive 365 day period	BAAQMD Condition 12122, Part 10b is a new requirement for a CEM, although the CEM itself is not new and is already in use

### **CO Discussion:**

Every source at the refinery that is subject to a CO limit is also subject to CO monitoring. These monitoring requirements come either from Regulation 9-10, existing permit conditions, or both. For more detailed information on this matter, see Table VII. Sources that are subject to this rule are found in the tables in Section VII Applicable Limits and Compliance Monitoring Requirements of the permit.

### BAAQMD Regulation 9, Rule 10 “Inorganic Gaseous Pollutants: NO<sub>x</sub> and CO from Boilers, Steam Generators and Process heaters in Petroleum Refineries”

Regulation 9-10-502 requires continuous emission monitoring systems (CEMS) or “equivalent” verification systems to demonstrate compliance with Regulation 9, Rule 10. A BAAQMD Policy Memorandum, dated June 23, 2000, outlines emission monitoring requirements for petroleum refinery heaters, furnaces, and boilers that are subject to the rule in detail. Exact monitoring requirements for CO are dependent upon emission control devices in use, firing rate, and source test results. The District Policy is contained in Appendix B. Sources that are subject to this rule are found in the tables in Section VII Applicable Limits and Compliance Monitoring Requirements of the permit.

### SO<sub>2</sub> Sources

S# & Description	Federally Enforceable Limit Citation	Federally Enforceable Limit	Monitoring
S-301, S-302, S-303 Sulfur Pits, S-1001, S-1002, S-1003 Sulfur Plants	BAAQMD Regulation 9-1-313.2	operation of a sulfur removal and recovery system that removes and recovers: 95% of H <sub>2</sub> S from refinery fuel gas, 95% of H <sub>2</sub> S and ammonia from process water streams (sulfur recovery is required when a facility removes 16.5 ton/day or more of elemental sulfur)	Condition 19278, Part 1 is a new annual source test requirement. (Note 1)

### SO2 Sources

S# & Description	Federally Enforceable Limit Citation	Federally Enforceable Limit	Monitoring
S-301, S-302, S-303 Sulfur Pits, S-1001, S-1002, S-1003 Sulfur Plants	BAAQMD Regulation 6-330	0.08 grain/dscf exhaust concentration of SO3 and H2SO4, expressed as 100% H2SO4	Condition 19278, Part 2 is a new annual source test requirement. (Note 2)
S-350 Crude Unit	BAAQMD Condition 383, Part 1	Sulfur content of crude processed in Crude Unit #267 (S-350) shall not exceed 1.5 weight%	BAAQMD Condition 383, Part 3b is a new requirement to maintain records of the sulfur content of crude oil
S-438 Furnace	BAAQMD Condition 1694, Part E.3	1 ppmw TRS by wt in PSA offgas used as fuel, at S-438	None. (Note 3)
All combustion sources	BAAQMD 9-1-302	300 ppm (dry) SO2 in any combustion exhaust stream	None. (Note 4)
Combustion sources permitted for liquid fuel use	BAAQMD 9-1-304	Sulfur content of liquid fuel <0.5%, by weight	Low-Sulfur Fuel Certification by Supplier for each lot (Note 5)

#### **SO2 Discussion:**

Note 1: Sulfur plants (S-1001, S-1002, and S-1003) will require annual source testing to demonstrate compliance with 9-1-313.2. This H2S and ammonia removal standard is more of a design standard than a performance standard. The entire removal system is designed to achieve the required removal. The District has determined that annual testing will assure compliance by verifying that the system continues to operate as designed. In addition, other monitored parameters (e.g., sulfur plant SO2 emissions and refinery fuel gas sulfur content, which are continuously monitored) will alert the operator if the system is not functioning properly.

The likelihood of undetected non-compliance is low. The tests required to demonstrate compliance are cumbersome, expensive, and dangerous (because of the nature of the sources). Direct measurement is not feasible. As a result, compliance must be demonstrated by source test. The cost of more frequent tests is not justified by the incremental improvement in compliance assurance.

Note 2: Sulfur plants (S-1001, S-1002, and S-1003) will require annual source testing to demonstrate compliance with 6-330. More frequent monitoring is not required, because the system will exceed the standard only under upset conditions. The monitors and alarms that alert the operator to abnormal conditions are adequate to ensure that upsets are detected and corrected. The cost of more frequent tests is not justified by the incremental improvement in compliance assurance.

Note 3: The PSA offgas normally operates well below a 1 ppmv TRS level, and the offgas is only a portion of the fuel used at S-438. As a result, the a violation of the standard is unlikely.

Note 4: All facility combustion sources are subject to the SO2 emission limitations in District Regulation 9, Rule 1 (ground-level concentration and emission point concentration). Area monitoring to demonstrate compliance with the ground level SO2 concentration requirements of Regulation 9-1-301 has been required by the APCO (per BAAQMD Regulation 9-1-501). No monitoring is required for BAAQMD regulation 9-

Permit Evaluation and Statement of Basis: Site #A0016, Phillips 66 Company – San Francisco Refinery, 1380 San Pablo Avenue, Rodeo, CA 94572

1-302 because it only applies when the ground level monitors (GLMs) are not operating, which is infrequent.

Note 5: Per CAPCOA/ARB/EPA Agreement, certification by fuel supplier for each fuel delivery. California Diesel Fuel shall not exceed a sulfur content of 0.05 %, by weight. Certification may be provided once for each purchase lot, if records are also kept of the purchase lot number of each delivery.

PM Sources

<b>S# &amp; Description</b>	<b>Federally Enforceable Limit Citation</b>	<b>Federally Enforceable Limit</b>	<b>Monitoring</b>
Gaseous-fired combustion sources: S-4, S-30, S-31, S-43, S-44, S-296, S-336, S-337, S-351, S-352-S-357, S-371, S-372, S-398, S-438	BAAQMD 6-301	Ringelmann 1 for more than 3 minutes in any hour	N/A (Note 1)
Combustion sources permitted for discretionary liquid fuel use: S-2, S-3, S-7-S-22, S-29	BAAQMD 6-301	Ringelmann 1 for more than 3 minutes in any hour	Visible emissions inspection after every 1 million gallons diesel combusted, to be counted cumulatively over a 5 year period. (Note 2)
Combustion sources rated over 140 MM BTU/hr (with tubes): S-8, S-10, S-13, S-14, S-43, S-355, S-356, S-357, S-438	BAAQMD 6-304	During tube cleaning, Ringelmann No. 2 for 3 min/hr and 6 min/billion BTU in 24 hours	Condition 1694, Part A.2b is a new requirement for monitoring of visible emissions during tube cleaning (Note 5)
Gaseous-fired combustion sources: S-4, S-30, S-31, S-43, S-44, S-296, S-336, S-337, S-351, S-352-S-357, S-371, S-372, S-398, S-438	BAAQMD 6-310.3	0.15 grain/dscf @ 6% O2	None. (Note 1)

### PM Sources

S# & Description	Federally Enforceable Limit Citation	Federally Enforceable Limit	Monitoring
Combustion sources permitted for discretionary liquid fuel use: S-2, S-3, S-7 – S-22, S-29	BAAQMD 6-310.3	0.15 grain/dscf @ 6% O <sub>2</sub>	Visible emissions inspection after every 1 million gallons diesel combusted, to be counted cumulatively over a 5 year period. (Note 2)
S-380, S-389 baghouses	BAAQMD 6-301	Ringelmann 1 for more than 3 minutes in any hour	Differential Pressure Gauges (Note 3)
S-380, S-389 baghouses	BAAQMD 6-310.3	0.15 grain/dscf @ 6% O <sub>2</sub>	Differential Pressure Gauges (Note 3)
S-296, S-398 flares	BAAQMD 6-301	Ringelmann 1 for more than 3 minutes in any hour	Visual Inspection (Note 4)

Note 1: Gaseous Fuels: BAAQMD Regulation 6-301 limits visible emissions to no darker than 1.0 on the Ringelmann Chart (except for periods or aggregate periods less than 3 minutes in any hour). Visible emissions are normally not associated with combustion of gaseous fuels, such as natural gas. No monitoring is required for sources that burn gaseous fuels exclusively, per the EPA's June 24, 1999 agreement with CAPCOA and ARB titled "Summary of Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP".

Note 2: Liquid Fuels: Per CAPCOA/ARB/EPA Agreement, adequate monitoring for combustion of liquid fuels is a visible emissions inspection after every 1 million gallons diesel combusted, to be counted cumulatively over a 5 year period. If a visible emissions inspection documents opacity, a method 9 evaluation shall be completed within 3 working days, or during the next scheduled operating period if the unit ceases firing on diesel fuel within the 3 working day time frame. Condition 1694, Part A.2c is a new requirement to monitor visible emissions before every 1 million gallon of fuel is combusted. This frequency was selected by balancing the likelihood of undetected significant non-compliance with the expense of more frequent inspections. The cost of more frequent monitoring is not justified for sources with liquid fuel usage that is infrequent or small. The cost of conducting method 9 evaluations is not justified unless a less formal inspection indicates that the source is emitting smoke.

Note 3: Condition 18251, Part 2a is a new requirement for differential pressure gauges on these baghouses to detect either clogged or broken filter bags; Part 2b requires a monthly gauge check and Part 3 requires records of monthly readings. A properly functioning baghouse (all bags intact) cannot exceed the standard, and the differential pressure gauges allow such malfunctions to be detected.

Note 4: Condition 18255, Part 1 is a new requirement for a visual inspection of flares as soon as possible after a release begins. Hourly observation of the flare during operation will ensure that improper flare operation is detected and corrected.

Note 5: Tube cleaning is periodically performed on furnaces that burn liquid fuels, to remove built-up soot from the outside of furnace tubes. If improperly performed, it can result in visible emissions. Hourly observation of the stack during tube cleaning will ensure that improper tube cleaning performance is detected and corrected.

POC Sources

<b>S# &amp; Description</b>	<b>Federally Enforceable Limit Citation</b>	<b>Federally Enforceable Limit</b>	<b>Monitoring</b>
S-324 Oil/Water Separator	BAAQMD Condition 1440, Part 6	maximum design throughput	None for maximum design throughput. Average throughput is monitored through the annual throughput records required by Section VI of this permit
S-294 Gasoline Dispensing Facility	BAAQMD Regulation 8-7-301.10	98% or highest vapor recovery rate specified by CARB	None
S-294 Gasoline Dispensing Facility	BAAQMD Regulation 8-7-313.1	Fugitives $\leq 0.42$ lb/1000 gallon	None (Certification requirement)
S-294 Gasoline Dispensing Facility	BAAQMD Regulation 8-7-313.2	Spillage $< 0.42$ lb/1000 gallon	None (Certification requirement)
S-294 Gasoline Dispensing Facility	BAAQMD Regulation 8-7-313.3	Liquid Retain + Spitting $< 0.42$ lb/1000 gallon	None (Certification requirement)
S-294 Gasoline Dispensing Facility	SIP Regulation 8-7-301.2	95% recovery of gasoline vapors	None
S-294 Gasoline Dispensing Facility	BAAQMD Condition 7523	400,000 gal/yr gasoline throughput	Annual records required by District permit renewal program as allowed by BAAQMD Regulation 1-441
S-352, S-353, S-354 Turbines, S-355, S-356, S-357 Duct Burners	BAAQMD Condition 12122, Part 8	POC emissions from each turbine/duct burner set shall not exceed 6 ppmv at 15% oxygen, except during startup periods, which shall not exceed four hours, and shutdown periods, which shall not exceed two hours.	Condition 12122, Part 15 is a new annual POC source test requirement.

### POC Sources

S# & Description	Federally Enforceable Limit Citation	Federally Enforceable Limit	Monitoring
S-352, S-353, S-354 Turbines, S-355, S-356, S-357 Duct Burners	BAAQMD Condition 12122, Part 11	The combined POC emissions S-352, S-353, S-354, S-355, S-356 and S-357 shall not exceed 8.3 lb/hr nor 30.5 tons in any consecutive 365 day period	Condition 12122, Part 15 is a new annual POC source test requirement.

**POC Discussion:**

**Source S-324, Oil / Water Separator:**

The maximum throughput is fixed by the source design and construction and is not normally subject to monitoring. Modification of S-324 to increase maximum throughput, as at any permitted sources, would require prior District evaluation and approval.

**Source S-294, Gasoline Dispensing Facility:**

The standard District POC emission factor for uncontrolled aboveground tanks is 1.52 lb/1000 gallon pumped. Based on this emission factor, the maximum estimated POC emissions from this source are:

$$(400,000 \text{ gallon/year}) \times (1.52 \text{ lb/1000 gallon}) = 608 \text{ lb POC/year} = 0.3 \text{ ton POC/yr}$$

The potential to emit is low. Therefore, additional monitoring of this source is not required. Regulation 8, Rule 7, Gasoline Dispensing Facilities requires records of throughput. Regulation 8, Rule 7, Section 313 requirements are requirements to install CARB-certified equipment; the standards are not performance standards.

**Source S-352, 353, 354, Turbines:**

Annual source tests to ensure that VOC emissions do not increase above design levels. Compliance with the CO (which is continuously monitored) limit is a good indicator of good combustion, and therefore that VOC emissions are not excessive.

**Discussion of Other Pollutants:**

HAP: There was no need for additional monitoring of HAPs. All HAP limits contained adequate monitoring requirements. For more information on HAP monitoring see Table VII.

**VIII. Test Methods**

This section of the permit lists test methods that are associated with standards in District or other rules. It is included only for reference. In most cases, the test methods in the rules are source

test methods that can be used to determine compliance but are not required on an ongoing basis. They are not applicable requirements.

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

**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 that identifies and justifies specific federally enforceable regulations and standards which the APCO has confirmed are not applicable to a source or group of sources, or (2) A provision in a major facility review permit that identifies and justifies specific federally enforceable applicable requirements for monitoring, recordkeeping and/or reporting which are subsumed because other applicable requirements for monitoring, recordkeeping, and reporting in the permit will assure compliance with all emission limits.

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

This facility has the first type of permit shield, shown below.

This permit has no streamlining.

**Table IX A - 1  
Permit Shield for Non-applicable Requirements  
ALL SOURCES**

Citation	Title or Description (Reason not applicable)
<b>BAAQMD Regulation 8, Rule 51</b>	<b>"Organic Compounds – Adhesive and Sealant Products" (5/2/01)</b> The applicant has certified that none of the regulated activities specified in this rule are currently taking place at this facility.
<b>BAAQMD Regulation 11, Rule 1</b>	<b>"Hazardous Pollutants – Lead" (3/17/82)</b> The applicant has certified that there are no sources at this facility with the potential to emit in excess of 15 pounds per day (11-1-301) each, or with the potential to result in ground level lead concentrations in excess of 1.0 microgram/m <sup>3</sup> averaged over 24 hours (11-1-302).

**D. Alternate Operating Scenarios:**



No alternate operating scenario has been requested for this facility.

**E. Compliance Status:**

The Compliance and Enforcement Division has prepared an Annual Compliance Report for 2001. This report is a summary of District enforcement activities at the Phillips refinery during the Calendar Year 2001. A copy of the report is attached as Appendix A.

The information contained in the compliance report has been evaluated during the preparation of the Statement of Basis for the proposed Major Facility Review Permit. The main purpose of this evaluation is to identify ongoing or recurring problems that should be subject to a schedule of compliance. No such problems have been identified. A second purpose of this evaluation is to identify activities that require additional monitoring to assure compliance. No such activities have been identified.

The facility operator currently operates under an unconditional order of abatement (Docket # 3051) as a result of leaking and venting sour (containing H<sub>2</sub>S) tanks and a major odor episode that occurred in August 1996, while the refinery was owned and operated by Unocal. The order was issued by the Hearing Board in December 1996. The order covers all regulated fixed-roof tanks connected to the odor abatement system, as well as associated compressors and the collection system itself. Phillips has made some improvements to the vapor recovery system which abates these tanks and has installed new equipment and instrumentation to closely monitor the pressure at most of the tanks, all in order to increase its ability to control venting.

Five notices of violation were issued during 2001. Four of the five involved discrete incidents or breakdowns, which were promptly corrected.

The fifth violation concerned NO<sub>x</sub> emissions that exceeded permit limits. This problem has been resolved. Stack monitoring, imposed under Regulation 9-10, will assure compliance by ensuring that deviations from the limits will be detected and reported.

All affected sources are now in compliance.

As part of the permit application, the owner certified that all equipment was operating in compliance on July 24, 1996.

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

Differences related to sources and abatement devices included in the application are explained in Section C.II of this evaluation.

The Title V permit application was originally submitted on July 24, 1996. This version is the basis for constructing the proposed Title V permit.

Throughput limits (identified by a basis of Regulation 2-1-234.3) have been added to all sources with no existing throughput or emission limits.

Source and abatement device lists have been revised since the application was first submitted, because of the removal from service of sources and the permitting of new sources and abatement devices. All new sources have been evaluated in accordance with District New Source Review regulations.

APPENDIX A  
ANNUAL COMPLIANCE REPORT  
2001

## APPENDIX B

### BAAQMD Policy Memorandum: NO<sub>x</sub>, CO, and O<sub>2</sub> Monitoring Compliance with Regulation 9, Rule 10

APPENDIX C  
GLOSSARY

**ACT**

Federal Clean Air Act

**APCO**

Air Pollution Control Officer

**API**

American Petroleum Institute

**ARB**

Air Resources Board

**BAAQMD**

Bay Area Air Quality Management District

**BACT**

Best Available Control Technology

**Basis**

The underlying authority that allows the District to impose requirements.

**C5**

An Organic chemical compound with five carbon atoms

**C6**

An Organic chemical compound with six carbon atoms

**CAA**

The federal Clean Air Act

**CAAQS**

California Ambient Air Quality Standards

**CAPCOA**

California Air Pollution Control Officers Association

**CEQA**

California Environmental Quality Act

**CEM**

A "continuous emission monitor" is a monitoring device that provides a continuous record of some parameter (e.g. NO<sub>x</sub> concentration) in an exhaust stream.

**CFR**

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

**CO**

Carbon Monoxide

**CO2**

Carbon Dioxide

**Cumulative Increase**

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

**DAF**

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

**District**

The Bay Area Air Quality Management District

**DNF**

Dissolved Nitrogen Flotation

**dscf**

Dry Standard Cubic Feet

**dscm**

Dry Standard Cubic Meter

**E 6, E 9, E 12**

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

**EFRT**

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

**EPA**

The federal Environmental Protection Agency.

**ETP**

Effluent Treatment Plant

**Excluded**

Not subject to any District Regulations.

**FCC**

Fluid Catalytic Cracker

**Federally Enforceable, FE**

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

**FP**

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

**FR**

Federal Register

**FRT**

Floating Roof Tank

**GDF**

Gasoline Dispensing Facility

**grains**

7000 grains per pound

**HAP**

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

**H<sub>2</sub>S**

Hydrogen Sulfide

**H<sub>2</sub>SO<sub>4</sub>**

Sulfuric Acid

**Hg**

Mercury

**IFRT**

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

**ISOM**

Isomerization plant

**Lighter**

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



organic liquids produces organic vapor emissions.

**Long ton**

2200 pounds

**Major Facility**

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

**MDEA**

Methyl Diethanolamine

**MFR**

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

**MOP**

The District's Manual of Procedures

**MOSC**

Mobil Oil Sludge Conversion (licensed technology)

**MSDS**

Material Safety Data Sheet

**MTBE**

methyl tertiary-butyl ether

**NA**

Not Applicable

**NAAQS**

National Ambient Air Quality Standards

**NESHAPs**

National Emission Standards for Hazardous Air Pollutants. See in 40 CFR Parts 61 and 63.

**NMHC**

Non-methane Hydrocarbons

**NMOC**

Non-methane Organic Compounds (Same as NMHC)

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

Oxides of nitrogen.

**NSPS**

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

**NSR**

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

**O2**

The chemical name for naturally-occurring oxygen gas.

**Offset Requirement**

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

**Phase II Acid Rain Facility**

A facility that generates electricity for sale through fossil-fuel combustion and is not exempted by 40 CFR 72 from Titles IV and V of the Clean Air Act.

**POC**

Precursor Organic Compounds

**PM**

Total Particulate Matter

**PM10**

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

**PSD**

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

**Regulated Organic Liquid**

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

**SCR**

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

**SIP**

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

**SO2**

Sulfur dioxide

**SO2 Bubble**

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

**SO3**

Sulfur trioxide

**THC**

Total Hydrocarbons (NMHC + Methane)

**therm**

100,000 British Thermal Unit

**Title V**

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

**TOC**

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

**TPH**

Total Petroleum Hydrocarbons

**TRMP**

Toxic Risk Management Plan

**TRS**

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

**TSP**

Total Suspended Particulate

**TVP**

True Vapor Pressure

**VOC**

## Volatile Organic Compounds

### Units of Measure:

bbbl	=	barrel of liquid (42 gallons)
bhp	=	brake-horsepower
btu	=	British Thermal Unit
C	=	degrees Celcius
F	=	degrees Farenheight
f <sup>3</sup>	=	cubic feet
g	=	grams
gal	=	gallon
gpm	=	gallons per minute
hp	=	horsepower
hr	=	hour
lb	=	pound
in	=	inches
max	=	maximum
m <sup>2</sup>	=	square meter
min	=	minute
M	=	thousand
Mg	=	mega-gram, one thousand grams
µg	=	micro-gram, one millionth of a gram
MM	=	million
MMBtu	=	million btu
mm	=	millimeter
mm Hg	=	millimeters of Mercury (pressure)
MW	=	megawatts
ppmv	=	parts per million, by volume
ppmw	=	parts per million, by weight
psia	=	pounds per square inch, absolute
psig	=	pounds per square inch, gauge
scfm	=	standard cubic feet per minute
yr	=	year

### Symbols:

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