

Bay Area Air Quality Management District

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

**for
Kirby Canyon Landfill
Facility #A1812**

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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 designated facility as defined by BAAQMD Regulation 2-6-204. The Emission Guidelines (EG) for Municipal Solid Waste Landfills (40 CFR Part 60, Subpart Cc) require the owner or operator of a landfill that is subject to this part and that has a design capacity greater than or equal to 2.5 million mega grams and 2.5 million cubic meters to obtain an operating permit pursuant to Part 70. As discussed in more detail below in Section C.IV of this report, this facility is a designated facility, because it meets the criteria listed in 40 CFR § 60.32c(c).

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 the identifier for the permit.

B. Facility Description

The Kirby Canyon Landfill is an active 311-acre Class III landfill located approximately 15 miles south of downtown San Jose, adjacent to U.S. Highway 101. The types of wastes the facility accepts include: non-hazardous residential, commercial, industrial, and inert. The landfill has an estimated closure date of June 2018.

As required by local, state, and federal regulations, the landfill is equipped with an active landfill gas (LFG) collection system. Landfill gas collection systems are perforated pipes buried in the refuse at numerous locations. For active collection systems, the perforated pipes are connected to blowers by solid pipes (referred to as laterals and headers). The blowers maintain a vacuum in the buried refuse and draw landfill gas into the perforated pipes. The blowers then vent the gas to control equipment. The landfill gas collection and control system for this facility currently consists of 20 gas collection wells and an enclosed flare. In addition, the District has issued

Authorities to Construct to the Kirby Canyon Landfill for the Internal Combustion Engine/Generator S-2 (#003539) and for up to 20 new wells and collectors. (#002583)

C. Permit Content

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

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 listed sources has previously been issued an authority to construct (A/C) and/or permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. These A/Cs and 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.

Authorities to Construct #002583 (for new landfill gas collection wells) and #003539 (for the IC Engine/Generator S-2) have been issued since the receipt of the original Title V permit application from Kirby Canyon. As a result, the Title V permit contains equipment not included in the initial application.

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.

Sources that are exempt from 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. This facility does not have any significant sources that do not have District permits.

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 is federally enforceable; the non-SIP version are not 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'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

Landfills and landfill gas combustion equipment are subject to BAAQMD Regulation 8, Rule 34. This regulation requires landfills with more than 1 million tons of refuse in place to collect and control the landfill gas that is generated by waste decomposition and specifies numerous operating, monitoring, and reporting requirements for subject operations. Regulation 8, Rule 34 has required that the landfill at this site be controlled by an active landfill gas collection system and a landfill gas control system since 1994.

Landfills and landfill gas combustion equipment may also be subject to either the federal New Source Performance Standards (NSPS) for Municipal Solid Waste (MSW) Landfills or the Emission Guidelines (EG) for MSW Landfills. The federal NSPS for MSW Landfills (40 CFR Part 60, Subpart WWW) applies to landfills that have had a design capacity modification after May 30, 1991. The EG for MSW Landfills (40 CFR Part 60, Subpart Cc) applies to landfills that have had no design capacity modifications since May 30, 1991 but that have accepted waste after November 8, 1987.

The California State Plan (40 CFR Part 62.1115) implements the federal EG regulations for existing landfills in California. The BAAQMD implemented these requirements by amending Regulation 8, Rule 34 on October 6, 1999. On September 20, 2001, EPA published a notice in the Federal Register of its intent to adopt revisions to the California State Plan for MSW Landfills by direct final rule. The revisions listed in the 9/20/01 Federal Register notice include the addition of the October 1999 version of BAAQMD Regulation 8, Rule 34 into the California State Plan with an effective date of November 19, 2001. The amended BAAQMD Regulation 8, Rule 34 was adopted into the SIP effective August 30, 2002.

In accordance with the federal emission guidelines, BAAQMD Regulation 8, Rule 34 also requires landfills with a design capacity of more than 2.5 million Mg (2.755 million tons) and more than 2.5 million m³ (3.269 million yd³) to be equipped with an active landfill gas collection system and a landfill gas control system. The design capacity of the Kirby Canyon Landfill exceeds these applicability criteria. Subject landfills and the associated collection and control systems are required to meet numerous operating, monitoring, and reporting requirements. These requirements are listed in Section IV of the permit.

Landfill operations and landfill gas combustion devices are also subject to other BAAQMD regulations and permit conditions. All applicable requirements are described in Section IV of the permit.

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.”

Since the District has not determined that the facility is out of compliance with an applicable requirement, the schedule of compliance for this permit contains only sections 2-6-409.10.1 and 2-6-409.10.2.

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 during the past year. The compliance report is contained in Appendix A of this permit evaluation and statement of basis.

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.

While the District has authority to revise the existing permits, and is doing so here concomitantly with the Title V process, it also has authority to supplement the terms of existing permits through the Title V process itself. When 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.

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 so as to help ensure compliance with District rules addressing preconstruction review, Regulation 2-1-301. For a grandfathered source (which in this case is the landfill itself) these limits are being added to the existing permits pursuant to the authority in 2-1-403, which provides the District with authority to “impose any permit condition [it] deems reasonably necessary to insure compliance with federal or California law or District regulations.” Creating throughput limits for grandfathered sources is not required by either Part 70 or the District’s MFR rules. However, issuance of the Title V permit is an opportunity for the District to exercise authority under 2-1-403 by adding conditions to the District operating permit through a parallel process, that is, by revising the P/O concurrently with the Title V permit issuance. The District believes the addition of these throughput limits is authorized under Regulation 2-6-409.2.2, as these limits will help “assure compliance” with the District preconstruction review program.

The applicability of preconstruction review (2-1-301) depends on whether there is a “modified source” 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 “emission level.” 2-1-234 defines what will be considered an emissions level increase, and takes a somewhat different approach depending on whether a source has previously permitted by the District. Sources that were modified or constructed since the District began issuing new source review permits generally 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 “grandfathered” sources that have never been through preconstruction review, 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, 3) 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.

In proposing throughput limits for grandfathered sources, the District has described the limits differently based on the factual support in the record. The limit may be a reporting threshold, in which case if the limit is exceeded and not reported, a permit violation has occurred. Secondly, it may be a firm throughput limit, in which case a permit violation occurs whenever the limit is exceeded. Thirdly, it may be a Regulation 2-1-234.3 modification threshold, in which case exceedence of the limit triggers a requirement to obtain an A/C. Where the information in the record is indicative of a 2-1-234.3 threshold, but not definitive in that regard, the limit is structured as a reporting threshold, and as presumptively an emissions limit and a modification threshold. Where, on the other hand, the District believes the information in the record is definitive, the limit is structured as a firm throughput limit and a modification threshold. It would be redundant for a limit to function as both a reporting threshold and a throughput limit, and so the latter will normally preclude the former.

As noted, for presumptive limits, exceedence of the limit is not per se a violation of the permit. *Failure to report an exceedence would be a permit violation.* 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. There is no Title V “permit shield” associated with throughput limits for grandfathered sources, as they are being proposed.

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 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 pursuant to Regulation 2, Rule 2.
- TRMP: This term is used for a condition imposed by the APCO to ensure compliance with limits that arise from the District’s Toxic Risk Management Policy.

Parameter monitoring has been added for each abatement device. Additional monitoring has been added, where appropriate, to assure compliance with the applicable requirements.

The reasons for the changes to each condition are discussed further below.

Condition #1437

Part 1: Waste acceptance rate limits were added to define the capacity of the landfill, which is a grandfathered source. The tons-per day limit pertains to regulation of particulate emissions from waste transport and disposal. The total cumulative waste disposal limit and the design capacity limit pertain to regulation of VOC emissions from decomposing waste in the landfill. The tons per day limit and the design capacity limit were provided in Kirby Canyon’s Initial Design Capacity and Emission Rate Reports and in the Collection and Control System Design Plan. These limits are proposed as firm throughput limits and modification thresholds, so that any change to these rates constitutes a modification of the landfill source as defined in Regulation 2-1-234.4 and is subject to the Authority to Construct requirements of Regulation 2-1-301. The total cumulative limit is based on assumptions regarding compaction density and current

cover practices. The correlation between the total cumulative limit and emissions is therefore changeable based on these variables. Accordingly, this limit is proposed as a reporting threshold and as a presumptive throughput limit and modification threshold.

- Part 2: The District has been adding contaminated soil handling procedures to any landfills that accept contaminated soil in order to assure compliance with the aeration prohibitions and emission minimization requirements of Regulation 8, Rule 40. The Kirby Canyon Landfill is authorized to accept contaminated soils.
- Part 3: This part adds a surface monitoring requirement for low VOC soils (soil that contains 50 ppmw or less of VOC) so that such soils may be used as landfill cover material without restriction. Regulation 8-40-205 defines contaminated soil as soil which has an organic content exceeding 50 ppmw or that registers an organic concentration greater than 50 ppmv (expressed as methane, C1). Soil that exceeds either of these limits is subject to Regulation 8, Rule 40 and could not be used as cover material. Therefore, if a "lot" of soil accepted by the landfill is found to have a VOC concentration ≤ 50 ppmw (as determined pursuant to part 2 of these conditions), it must also have a surface organic vapor concentration ≤ 50 ppmv (expressed as methane, C1) to be excluded from Regulation 8-40. This added monitoring also subsumes the Regulation 8, Rule 2 VOC test procedure for the Landfill S-1 because the surface monitoring performed in accordance with Regulation 8-40-604 will rule out the need to monitor using the Regulation 8-2-601 procedures.
- Part 4: Standard condition added to require the use of water and/or dust suppressants as necessary to prevent visible particulate emissions.
- Part 5: Text was added to clarify that this landfill is required to control all collected gas and is prohibited from intentionally venting collected landfill gas.
- Part 6: The text of this condition describes the current and proposed components for the gas collection system. This part also describes the types of collection system changes that require prior District approval in the form of an Authority to Construct.
- Part 7: The text of this condition states the current standard continuous operation requirement for landfill gas collection systems.
- Part 8: This part identifies the maximum rated capacity of the A-10 Landfill Gas Flare by imposing heat input limits. These limits were derived from the information reported in Permit Application #12951. These heat input limits will ensure that replacement or modification will not lead to an emission increase.
- Part 9: The District requires a minimum temperature of no less than 1400 °F in order to ensure adequate destruction of toxic compounds. The current minimum temperature limit (with no averaging time) was changed to a limit averaged over any three-hour period for consistency with the federal Emission Guidelines for MSW Landfills. This part also incorporates the EG procedure for establishing a minimum temperature limit based on source test results.

- Part 10: All landfill gas combustion equipment is subject to the 9-2-302 limit of no more than 300 ppmv of SO₂ in the exhaust (dry basis). Under theoretical combustion conditions, 300 ppmv of SO₂ in the exhaust is equal to 1300 ppmv of H₂S in landfill gas. Although the sulfur content of landfill gas can vary considerable over time, samples taken in 1998, 1999, and 2000 have averaged 46-ppm (vol) sulfur. Therefore, the District has determined that quarterly monitoring of the H₂S content in the landfill gas is appropriate.
- Part 11: The annual source test required by 8-34-412 is described in more detail in Part 11.
- Part 12: An annual landfill gas characterization test was added to measure the amounts of specific toxic air contaminants that may be emitted from the site. This test is also required by Regulation 8-34-412.
- Part 13: This part, referring to the landfill gas condensate injection rate to the flare, is essentially identical to the previous part 12.
- Part 14: Record keeping requirements were added to ensure compliance with applicable regulations and permit limits.

Condition #18696

- Part 1: Existing requirements were clarified.
- Part 2: Existing requirements were clarified.
- Part 3: This part identifies the maximum rated capacity of the S-2 IC Engine by imposing heat input limits. These limits were derived from the information reported in Permit Application #003539. These heat input limits will ensure that replacement or modification will not lead to an emission increase.
- Part 5: (Previously Part 4) A NO_x concentration limit was added to the gram per brake horsepower limit to provide a better source test reference.
- Part 6: (Previously Part 5) Similar to Part 5 above, a CO concentration limit was added.
- Part 7: (Previously Part 6) The NMOC requirement from NSPS Subpart WWW “Standards of Performance for Municipal Solid Waste Landfills” was removed and replaced with the requirement from District Regulation 8-34-301.4. The landfill is not subject to Subpart WWW.
- Part 8: (Previously Part 7) The requirement for control device temperature monitoring was removed and replaced with key emission control system operating parameter monitoring. This monitoring is intended to demonstrate compliance with Regulation 8-34-301.4.

Part 9: (Previously Part 8) Clarifications were made to the source test requirements for S-2 and the NSPS rule citation was deleted.

Part 10: (Previously Part 9) Heat input recordkeeping was added and the NSPS rule citation was deleted.

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 contained in Sections IV, Source-Specific Applicable Requirements, and VI, Permit Conditions, of the permit.

The District has reviewed all monitoring and has determined the existing monitoring is adequate with the exceptions below.

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

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

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

SO₂ Sources

# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
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SO₂ Sources

# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
A-10, Landfill Gas Flare	BAAQMD 9-1-301	Property Line Ground Level Limits: ≤ 0.5 ppm for 3 minutes and ≤ 0.25 ppm for 60 min. and ≤ 0.05 ppm for 24 hours	None
A-10, Landfill Gas Flare	BAAQMD 9-1-302	300 ppm (dry)	Quarterly Sulfur Analysis of Landfill Gas
S-2, IC Engine Generator Set	BAAQMD 9-1-301	Property Line Ground Level Limits: ≤ 0.5 ppm for 3 minutes and ≤ 0.25 ppm for 60 min. and ≤ 0.05 ppm for 24 hours	None

SO₂ Discussion:

Regulation 9-1-302 limits SO₂ emissions from the exhaust stream of any source (other than a ship) to 300 ppm (dry). As a surrogate to this limit, the facility will be subject to a federally enforceable limit of 1300 ppmv of total reduced sulfur (TRS) compounds in the landfill gas. Since the sulfur dioxide (SO₂) emissions will vary directly with the amount of sulfur (S) compounds present in the fuel, a mass balance calculation can be performed to determine the maximum SO₂ emissions from the Flare A-10 and the IC Engine Generator Set S-2 based on the concentration limit for sulfur compounds in the landfill gas. Assuming all sulfur is converted into SO₂ upon combustion, the SO₂ emission factor will be:

$$\begin{aligned}
 \text{SO}_2 &= (1,300 \times 10^{-6} \text{ lb-mole S/lb-mole gas})(\text{lb-mole SO}_2/\text{lb-mole S})(64.06 \text{ lb SO}_2/\text{lb-mole SO}_2)(\text{lb-mole gas}/387 \text{ scf}) \\
 &= 2.152 \times 10^{-4} \text{ lb SO}_2/\text{scf LFG}
 \end{aligned}$$

Based on the EPA landfill gas model, Kirby Canyon projects the landfill gas generation rate at the site will peak in 2031. At a LFG methane content of 53%, the maximum gas generation rate is projected to be 4,087 scfm. Assuming a 75% collection efficiency, the maximum gas flow to the IC engine and/or flare will be 3,065 scfm (183,915 scf/hr)

Therefore, the maximum allowable SO₂ emission rate is 39.6 lb/hr. At zero percent excess oxygen, a (53% methane/47% non-combustible) landfill gas produces 4.99 dscf exhaust per scf LFG. Therefore, the maximum exhaust flow from the IC engine and/or flare at zero percent oxygen will be 917,736 dscf/hr. The maximum concentration of SO₂ in the engine or flare exhaust can then be determined as follows:

$$\begin{aligned}
 \text{ppm SO}_2 &= (39.6 \text{ lb SO}_2/\text{hr})(\text{hr}/917,736 \text{ dscf})(\text{lb-mole SO}_2/64 \text{ lb SO}_2)(386 \text{ dscf}/\text{lb-mole gas}) \\
 &= 2.60 \times 10^{-4} \text{ lb-mole SO}_2/\text{lb-mole gas} \\
 &= 260 \text{ ppm SO}_2
 \end{aligned}$$

Since the calculated SO₂ concentration is less than 300 ppm, compliance with the landfill gas TRS limit will assure compliance with Regulation 9-1-302.

BAAQMD Regulation 9-1-301: As discussed above for BAAQMD Regulation 9-1-302, this facility will be subject to a federally enforceable limit, which will ensure compliance with the BAAQMD Regulation 9-1-302 emission limit of 300 ppmv of SO₂ in the flare and IC engine exhausts. Sources complying with the 9-1-302 limit are not expected to exceed the ground level concentration limits listed in BAAQMD Regulation 9-1-301. Monitoring for ground level SO₂ concentrations in addition to the proposed landfill gas monitoring would not be appropriate.

Maximum potential emissions from the A-10 Landfill Gas Flare and IC Engine Generator Set S-2 based on landfill gas with a total reduced sulfur content of 1300 ppmv are 173.5 tons/year of SO₂. However, sampling conducted in 1998, 1999, and 2000 found the average total concentration of sulfur in the landfill gas to be 46.3 ppm (vol). Therefore, the maximum SO₂ emissions will more realistically be about 6 tons/yr and are not significant.

PM Sources

# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1, Landfill	BAAQMD 6-301	Ringelmann 1.0	Records of all site watering and road cleaning events
A-10, Landfill Gas Flare	BAAQMD 6-301	Ringelmann 1.0	None
A-10, Landfill Gas Flare	BAAQMD 6-310	0.15 gr/dscf	None
S-2, IC Engine Generator Set	BAAQMD 6-301	Ringelmann 1.0	None
S-2, IC Engine Generator Set	BAAQMD 6-310	0.15 gr/dscf	None

PM Discussion:

BAAQMD Regulation 6-301 for S-1 Landfill: The active filling operations and associated vehicle traffic can generate significant particulate emissions. Presently this facility has no means of demonstrating compliance with the Regulation 6-301, which 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). Additional monitoring is required pursuant to Part 70 of the Clean Air Act. Typically, landfills maintain compliance with Regulation 6-301 by employing a dust mitigation program and using visual monitoring by site operators to ensure that dust mitigation measures are adequate. Dust mitigation measures include the application of water and/or dust suppressants on unpaved roads, fill areas, stockpiles, and other dust prone operations and sweeping, watering, or other cleaning measures on paved roads and parking areas. The frequency of watering and sweeping schedules varies from several water applications/day for dry days to no watering or sweeping on rainy days. Kirby Canyon's watering requirements are specified in Condition #1437, Part 4 (proposed). The District is proposing to add record keeping requirements of all water and/or dust suppressant applications and road cleaning activities (Part 14e), in order to

demonstrate compliance with the Regulation 6-301. District inspectors will occasionally observe the landfill operations on dry days to ensure that the dust mitigation measures in place are adequate to maintain compliance with the Ringelmann 1.0 limit.

BAAQMD Regulation 6-301 for A-10 Landfill Gas Flare and S-2 IC Engine Generator Set: Visible particulate emissions are normally not associated with combustion of gaseous fuels, such as natural gas or landfill gas.

The AP-42 PM emission factor for an enclosed ground flare burning landfill gas is 0.0171 pounds/MM BTU. Therefore, the maximum potential emissions from the A-10 Flare (rated capacity 38 MMBTU/hr) are approximately 3 tons/year of PM₁₀. According to the manufacturer, the IC Engine S-2 emits 0.21 lb/hr of PM₁₀. Therefore, the maximum potential emissions will be less than 1 ton/yr of PM₁₀. Since particulate emissions are not significant and violations of Ringelmann 1.0 limit are not expected, periodic monitoring for the Ringelmann limit would not be appropriate for this flare.

BAAQMD Regulation 6-310 for A-10 Landfill Gas Flare and S-2 IC Engine Generator Set: Regulation 6-310 limits filterable particulate (FP) emissions from any source to 0.15 grains per dry standard cubic foot (gr/dscf) of exhaust volume. This can be compared to the AP-42 emission factor for landfill gas combustion in a flare (0.0171 pounds PM₁₀/MM BTU) as follows:

The Landfill Gas Flare A-2 can combust up to 38 MMBTU/hr (i.e. 73,134 scf/hr) of landfill gas. Therefore, the maximum expected FP emission rate is 0.65 lb/hr. At zero percent excess oxygen, a (53% methane/47% non-combustible) 527 BTU/scf landfill gas produces 4.99 dscf exhaust per scf LFG. Therefore, the maximum exhaust flow from the A-10 Flare at zero percent oxygen will be 364,939 dscf/hr.

The maximum particulate grain loading (FP) in the flare exhaust based on the AP-42 factor can then be determined as follows:

$$\begin{aligned} \text{FP} &= (0.65 \text{ lb/hr})(\text{hr}/364,939 \text{ dscf})(7,000 \text{ gr/lb}) \\ &= 0.012 \text{ gr/dscf @ } 0\% \text{ O}_2 \end{aligned}$$

According to the manufacturer, the IC Engine S-2 emits 0.21 lb/hr of PM₁₀ and has an exhaust flow rate of 3,414 dscfm at peak operating conditions. The S-2 FP emissions are equivalent to 0.007 gr/dscf as follows:

$$(0.21 \text{ lb/hr})(\text{hr}/60\text{min})(\text{min}/3,414 \text{ dscf})(7,000 \text{ gr/lb}) = 0.007 \text{ gr/dscf}$$

Since the Regulation 6-310 grain-loading limit (0.15 gr/dscf) is far above any expected PM emissions from either the flare or the IC engine, it would therefore not be appropriate to add periodic monitoring for this standard.

Organic Compound Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1, Landfill	BAAQMD Regulation 8-2-301	15 pounds/day or 300 ppm, dry basis (applies only to aeration of or use as cover soil of soil containing < 50 ppmw of volatile organic compounds)	Inspection with Portable Organic Vapor Analyzer and Records

Organic Compound Discussion:

BAAQMD Regulation 8-2-301: Regulation 8-2-301 places a 15 lb/day limit on VOC emissions having a concentration greater than 300 ppm (total carbon, dry basis) as determined by the procedures of Regulation 8-2-601. However, since the facility is required to monitor low VOC soil (soil that contains 50 ppmw or less of VOC) pursuant to Condition #1437, part 3, the Regulation 8, Rule 2 VOC test procedure is subsumed by the Regulation 8, Rule 40 VOC test procedure (see Title V permit Part IX, Subsumed Requirements). Compliance with the 300 ppm limit of Regulation 8-2-301 will be demonstrated by the monitoring required by Regulation 8-40-604 and Condition #1437, part 3. The 15 lb/day limit will not be applicable to soil handling operations at S-1, because soil with surface emissions greater than 50 ppmv (as C1) will be subject to Regulation 8-40 and not to Regulation 8-2.

H₂S Sources

S# & Description	Emission Limit Citation	Emission Limit (Not Federally Enforceable)	Monitoring
S-1, Landfill	BAAQMD 9-2-301	Property line ground level limits: ≤ 0.06 ppm Averaged over 3 minutes and ≤ 0.03 ppm Averaged over 60 minutes	None
A-10, Landfill Gas Flare	BAAQMD 9-2-301	Property line ground level limits: ≤ 0.06 ppm Averaged over 3 minutes and ≤ 0.03 ppm Averaged over 60 minutes	None
S-2, IC Engine Generator Set	BAAQMD 9-2-301	Property line ground level limits: ≤ 0.06 ppm Averaged over 3 minutes and ≤ 0.03 ppm Averaged over 60 minutes	None

Hydrogen Sulfide (H₂S) Discussion:

Regulation 9-2-301: Hydrogen sulfide can be detected by its odor at concentrations as low as 0.0005 ppmv and is generally identified by its characteristic rotten egg smell at a concentration of 0.005 ppmv or less. Therefore, hydrogen sulfide emissions are typically discovered by smell well before the concentration approaches the 9-2-301 emission limit of 0.03 ppmv. The District rarely receives complaints about hydrogen sulfide odors from Bay Area landfills and has never received any complaints about hydrogen sulfide odors from this facility. Since hydrogen sulfide odors have not been detected at this facility, the concentration of hydrogen sulfide at the property line is expected to be well below the Regulation 9-1-301 limits. Therefore, monitoring for ground level H₂S is not appropriate.

Other Limits

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
A-10, Flare	BAAQMD Condition #1437, Part 8	≤ 912 MM BTU per day and ≤ 332,880 MM BTU per year	Gas Flow Meter and Records
S-2, IC Engine Generator Set	BAAQMD Condition #18696, Part 3	≤ 316 MM BTU per day and ≤ 115,282 MM BTU per year	Gas Flow Meter and Records

Other Limits Discussion:

The use of a gas flow meter and records is a standard method of monitoring for heat input to flares and other combustion devices.

VIII. Test Methods

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

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

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 that are not applicable to a source or group of sources, or (2) A provision in a major facility review permit that identifies and justifies specific federally enforceable applicable requirements for monitoring, recordkeeping and/or reporting 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.

The District added the second type of permit shield for the Landfill S-1, subsuming the Regulation 8, Rule 2 VOC test procedure with the Regulation 8, Rule 40 VOC test procedure. This was done so that the Regulation 8-2-601 VOC test procedure, which is not well suited to monitoring fugitive emissions, would not have to be used to monitor surface emissions of low VOC soil.

Regulation 8, Rule 2 "Miscellaneous Operations" only applies to sources of precursor organic compounds that are not otherwise limited by Regulation 8 or Regulation 10 rules. In the case of the Landfill S-1, Regulation 8, Rule 2 would apply only to cover soil that contains some VOC, but is not defined as "contaminated soil" by Regulation 8-40-205. Soil which has an organic content exceeding 50 ppmw or that registers an organic concentration greater than 50 ppmv (expressed as methane, C1) is subject to Regulation 8, Rule 40.

Regulation 8-2-301 places a 15-lb/day limit on VOC emissions having a concentration greater than 300 ppm (total carbon, dry basis). Since soil found not to be contaminated using the procedures of Regulation 8-40-604 would have a surface VOC concentration less than 50 ppmv (expressed as methane, C1), it can reasonably be assumed that the concentration is also less than 300 ppmv (total carbon, dry basis) as determined by the procedures of Regulation 8-2-601. Therefore, this monitoring is sufficient to assure compliance with Regulation 8-2-301.

D. Alternate Operating Scenarios:

No alternate operating scenario has been requested for this facility.

E. Compliance Status:

A July 31, 2002 office memorandum from the Director of Compliance and Enforcement, to the Director of Permit Services, presents a review of the compliance record of Kirby Canyon Landfill (Site #: A1812). The Compliance and Enforcement Division staff has reviewed the records for the Kirby Canyon Landfill for the period of 07/01/01 through 06/31/02. This review was initiated as part of the District's evaluation of the Title V permit application for the facility. During the period subject to review, activities known to the District include:

- There were no Notices of Violation issued during this review period.
- The District did not receive any complaints.
- The facility is not operating under a Variance or an Order of Abatement from the Hearing Board.

The owner certified that all equipment was operating in compliance on April 5, 2001. No compliance issues have been identified to date.

F. Differences between the Application and the Proposed Permit:

The Title V permit application was submitted on April 6, 2001. This application is the basis for constructing the proposed Title V permit. Differences between the application and the proposed permit include the following:

Throughput limits (identified by a basis of Regulation 2-1-301) have been added to all sources with no existing throughput or emission limits.

In their application, the Kirby Canyon Landfill identified the applicable requirements for their facility in very general terms. The District has specifically identified the applicable requirements for this facility. Also, as previously noted, the IC Engine S-2 was added after the submittal of the Title V application.

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APPENDIX A
BAAQMD COMPLIANCE REPORT

APPENDIX B
GLOSSARY

ACT

Federal Clean Air Act

APCO

Air Pollution Control Officer: Head of Bay Area Air Quality Management District

ARB

Air Resources Board

A/C

Authority to Construct

BAAQMD

Bay Area Air Quality Management District

BACT

Best Available Control Technology

Basis

The underlying authority which allows the District to impose requirements.

CAA

The federal Clean Air Act

CAAQS

California Ambient Air Quality Standards

CAPCOA

California Air Pollution Control Officers Association

CEQA

California Environmental Quality Act

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.

CH₄ or CH₄

Methane

CO

Carbon Monoxide

Cumulative Increase

The sum of permitted emissions from each new or modified source since a specified date pursuant to BAAQMD Regulation 2-1-403, Permit Conditions (as amended by the District Board of Directors 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.

District

The Bay Area Air Quality Management District

EG

Emission Guidelines

EPA

The federal Environmental Protection Agency.

Excluded

Not subject to any District regulations.

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 (MACT), and Part 72 (Permits Regulation, Acid Rain), 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.

H₂S or H₂S

Hydrogen Sulfide

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.

LFG

Landfill gas

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.

MAX or Max.

Maximum

MFR

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

MIN or Min.

Minimum

MOP

The District's Manual of Procedures.

MSW

Municipal solid waste

MW

Molecular weight

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 (Same as NMOC)

NMOC

Non-methane Organic Compounds (Same as NMHC)

NO_x or NO_x

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 Federal Clean Air 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 pollutants for which criteria have been established in accordance with Section 108 of the Federal Clean Air Act. Mandated by Title I of the Federal Clean Air Act and implemented by 40 CFR Parts 51 and 52 and District Regulation 2, Rule 2. (Note: There are additional NSR requirements mandated by the California Clean Air Act.)

O₂ or O₂

Oxygen

Offset Requirement

A New Source Review requirement to provide federally enforceable emission offsets for the emissions from a new or modified source. Applies to emissions of POC, NO_x, 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

Particulate Matter

PM₁₀ or 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 those 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.

P/O

Permit to Operate

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 or SO₂

Sulfur dioxide

THC

Total Hydrocarbons (NMHC + Methane)

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

TSP

Total Suspended Particulate

VOC

Volatile Organic Compounds

Units of Measure:

bhp	=	brake-horsepower
btu	=	British Thermal Unit
BTU	=	British Thermal Unit
°C	=	degrees Centigrade

cfm	=	cubic feet per minute
dscf	=	dry standard cubic feet
°F	=	degrees Fahrenheit
ft ³	=	cubic feet
g	=	grams
gal	=	gallon
gpm	=	gallons per minute
gr	=	grains
hp	=	horsepower
hr	=	hour
lb	=	pound
lbmol	=	pound-mole (eq. to molecular weight of compound x lb)
in	=	inches
m ²	=	square meter
m ³	=	cubic meters
min	=	minute
mm	=	million
MM	=	million
MM BTU	=	million BTU
MMcf	=	million cubic feet
Mg	=	mega grams
ppb	=	parts per billion
ppbv	=	parts per billion, by volume
ppm	=	parts per million
ppmv	=	parts per million, by volume
ppmw	=	parts per million, by weight
psia	=	pounds per square inch, absolute
psig	=	pounds per square inch, gauge
scf	=	standard cubic feet
scfm	=	standard cubic feet per minute
sdcf	=	standard dry cubic feet
sdcfm	=	standard dry cubic feet per minute
yd	=	yard
yd ³	=	cubic yards
yr	=	year