Bay Area Air Quality Management District

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Permit Evaluation
and
Statement of Basis
for a
Minor Revision of the

MAJOR FACILITY REVIEW PERMIT

for

Potrero Hills Landfill, Inc.
Facility #A2039

Facility Address:
3675 Potrero Hills Lane
Suisun City, CA 94585

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Application Engineer: Tamiko Endow
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Application Numbers: 21019, 26634, 26958

November 2015

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Renewal of Major Facility Review Permit for
Potrero Hills Landfill, Site #A2039
Applications #21019, 26958, 26634

A. Background

The Potrero Hills Landfill is subject to the Operating Permit requirements of Title V of the federal Clean Air Act, Part 70 of Title 40 of the Code of Federal Regulations (CFR), and BAAQMD Regulation 2, Rule 6, Major Facility Review because it is a designated facility as defined in BAAQMD Regulation 2-6-204. The Emission Guidelines for Municipal Solid Waste Landfills (40 CFR Part 60, Subpart Cc) require the owner or operator of a landfill subject to this part and having a design capacity of 2.5 million megagrams and 2.5 million cubic meters or more to obtain a federal operating permit pursuant to Part 70. This facility is a designated facility because it meets the criteria listed in 40 CFR, Section 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, Major Facility Review (MFR). The permits must contain all "applicable requirements" (as defined in BAAQMD Regulation 2-6-202), monitoring requirements, recordkeeping requirements, and reporting requirements. The permit holders must submit reports of all monitoring at least every six months and compliance certifications at least every year.

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

Each facility in the Bay Area is assigned a facility identifier that consists of a letter and a 4-digit number. This identifier is also considered to be the identifier for the permit. The identifier for this facility is A2039.

This facility received its initial Title V permit on August 15, 2003. Several administrative amendments and a minor revision were processed prior to renewal of the permit. Per the deadlines in the Title V permit, a permit renewal Application #17480 was received on January 28, 2008. The permit was renewed on March 12, 2013. An administrative amendment was issued and corrected in 2014. The current permit expires on March 11, 2018. Several applications for minor revisions have been submitted, and the proposed permit has been revised to incorporate the revisions requested under Applications #26958, 26634, and 21019.

Pursuant to Regulation 2, Rule 6, Section 416, the District reviewed the terms and conditions of this Major Facility Review permit and determined that they were valid and correct when the permit was renewed in 2013. This review included an analysis of all applicability determinations for all sources. The review also included an assessment of the sufficiency of all monitoring for determination of compliance with applicable requirements. The changes proposed to the permit under this minor permit revision address only the specific sources and permit terms affected by

the NSR permitting associated with the revisions under the Applications #26958, 26634, and 21019. The proposed permit shows all changes to the permit since the last issuance in strikeout/underline format. These changes are discussed in this Statement of Basis.

B. Facility Description

The Potrero Hills Landfill is an active Class III municipal solid waste (MSW) landfill owned and operated by Waste Connections (previously owned and operated by Republic Services). The site is located in Solano County, approximately 2 miles southeast of Suisun City and south of Travis Air Force Base, within the secondary management area of the Suisun Marsh. The Suisun Marsh, which consists of approximately 85,000 acres of tidal marsh, managed wetlands, and waterways, is the largest contiguous brackish wetland remaining on the west coast. The marsh is a wildlife habitat of nationwide importance, protected under the Suisun Marsh Preservation Act enacted into state law in 1977. The secondary management area is defined as the adjacent uplands to the Marsh and is also protected under the Suisun Marsh Preservation Act.

The landfill accepts non-hazardous residential, commercial, industrial, and inert wastes, including wastewater treatment plant sludge (dewatered biosolids) for use as alternative daily cover. This landfill began accepting waste in July/August 1986 within a 320-acre site. In 1987, and adjacent 210 acre parcel was purchased for future site operations and buffer area. Additional adjacent properties have been acquired, totaling 1,400 acres, but the currently permitted landfill is located entirely within the original 320-acre parcel. The landfill has a design capacity of 21.8 million cubic yards (13.1 million tons).

This landfill was developed to receive wastes from the local central Solano County area and was expected to have a disposal life of over 70 years. With the closure of other Bay Area landfills, the landfill began accepting wastes from the counties of Alameda, Contra Costa, Marin, Mendocino, Napa, Sacramento, Santa Clara, San Mateo, and Yolo County, in addition to Solano County. Due to the larger volume of wastes being accepted, almost the entire original landfill capacity has been filled in the 25 years since the site opened.

The landfill is equipped with an active gas collection system (a system of pipes and blowers). The wells and collectors are perforated sections of pipes that are buried in the refuse at various locations. The perforated pipes are connected to blowers by solid pipes (referred to as laterals and headers). The blowers collect landfill gas by creating a vacuum in the buried refuse that draws landfill gas into the perforated pipes. The blowers vent the collected landfill gas to the Landfill Gas Flare (A-2).

For a number of years, the landfill owner has been seeking permits for a landfill expansion to incorporate an additional 260 acres directly east of the current landfill, to allow an additional 61.6 million cubic yards of fill. The expansion has been held up in court, first over adequacy of the CEQA review and currently over enforcement of a local county measure that prohibits disposal of out of county waste. The facility submitted an application to the District for this proposed landfill expansion in December of 2004, prior to finalization of the original CEQA Initial Study, however the District was unable to act on the application until all of the legal issues

surrounding the CEQA analysis were been resolved. The landfill owner has cancelled the December 2004 application for the proposed expansion and will be submitting a revised application in the near future since the lawsuits over the proposed expansion have been resolved.

In addition to the landfill, there are several other sources of emissions at this site. The site operates a permitted non-retail gasoline dispensing facility onsite. In addition, at the time of the last permit renewal, a number of other existing unpermitted sources and activities had been identified and cited for operating without District permits. Those non-compliant sources and activities were included in the Schedule of Compliance when the Title V permit was renewed. Permitting of those non-compliant sources has been completed in the past year, but the permit revision to incorporate those sources is not being processed at this time. The inclusion of those sources will be addressed under the next permit revision.

At the time of the last Title V permit renewal, two prime diesel internal combustion engine-generators were being operated to provide power to the site, one was operating under a District permit and one which had been installed without a District Authority to Construct. The engine that had been installed with no Authority to Construct (to replace a permitted engine S-12) was cited and when the operator submitted an application requesting a Permit to Operate, the engine was found in violation of applicable emission standards and retrofit was required. The Authority to Construct requiring retrofit had been issued at the time the Title V permit was renewed, but a Permit to Operate had not yet been issued. Therefore, the non-compliant engine was not listed in the permitted source tables in the Title V permit, but was included in the Schedule of Compliance. Since that time, retrofit of the non-compliant engine was completed, and a Permit to Operate was issued. Inclusion of that source into the Title V permit will be addressed under the next permit revision.

The other prime diesel internal combustion engine-generator was operating at that time in violation of the emission limits in District and state regulations. A Schedule of Compliance was included in the last permit renewal with milestones for the retrofit of that engine in order to comply with the applicable emission standards. This permit revision includes one revision to a date in the Schedule of Compliance, which was requested by the landfill operator under the minor permit revision Application #26634.

Since the last Title V permit renewal, a second landfill gas-fired flare A-4 has been installed at the site to expand the facility's capacity to combust collected landfill gas. The flare A-4 was permitted under NSR Application #21018. An Authority to Construct was issued on October 31, 2013, and a Permit to Operate was issued on December 22, 2014. This proposed revision to the Title V permit incorporates the new flare A-4 into the permit, as requested under the minor permit revision Application #21019.

Since the last Title V permit renewal, the landfill operator applied for and was issued a change of permit conditions to allow certain landfill gas collection wells to be operated at temperature and gas content standards other than those defined in Regulation 8, Rule 34. A Change of Conditions setting alternate wellhead standards and associated monitoring for those specified wells was issued on April 24, 2015 under NSR Application #26957. This proposed

revision to the Title V permit incorporates the approved alternate wellhead standards and monitoring into the Title V permit, as requested under the minor permit revision Application #26958.

Emissions

Landfills generate landfill gas due to the waste decomposition process. The landfill gas contains methane and carbon dioxide, which are greenhouse gases (GHG), and small amounts of non-methane organic compounds (NMOC) and sulfur compounds. Many of the NMOCs are precursor organic compounds (POC), and many NMOCs and also toxic air contaminants (TACs) and hazardous air pollutants (HAPs). Hydrogen sulfide, a TAC, makes up about 95% or more of the sulfur compounds. District and EPA regulations require that landfill gas from larger landfills be continuously collected and controlled to reduce emissions of NMOCs to the atmosphere. These collection and control requirements also reduce GHG, TAC, and HAP emissions.

In accordance with these requirements, Potrero Hills Landfill is equipped with a landfill gas collection system and a landfill gas control system. As of the last issuance of the Permit to Operate for the landfill source, the collection system included 73 vertical gas collection wells and 14 horizontal collectors. For the 12-month period ending 7/31/2014, the landfill operator reported an average of 1,353 cfm of landfill gas collected from the landfill.

Currently, the landfill gas control system at this site includes a 45 MM BTU/hour Landfill Gas Flare, A-2, that is capable of burning about 1500 cfm of landfill gas and a new 72 MM BTU/hour Landfill Gas Flare, that is capable of burning approximately 2,400 cfm of landfill gas. Combustion destroys most of the methane, NMOC, TAC, and HAP that are present in the landfill gas; however, landfill gas combustion also produces secondary emissions, comprised of nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter (PM), formaldehyde, and acid gases such as hydrogen chloride (HCl) and hydrogen fluoride (HF).

Also, there is a landfill gas to energy plant under construction at this site that will provide additional landfill gas control capacity in the future. The engines would be located on the landfill and would burn the landfill gas produced by the Potrero Hills Landfill, but will be owned and operated by a separate company. After construction and start-up of the proposed engine facility, any landfill gas that cannot be burned at the engines would be directed to the landfill gas flare.

Operation of the landfill also produces particulate emissions from vehicular traffic, waste and cover material dumping, and other material handling activities such as excavation of waste cells, construction of temporary roads, bulldozing and compacting of waste and cover materials, etc.

At the time of the last Title V permit renewal, Potrero Hills Landfill was operating two diesel-fired prime IC Engines for onsite power, one operating under a District permit and one that was not. Several small onsite-portable diesel tipper engines were also operating onsite without District permits. The diesel engines emit combustion products including: GHG, NO_x, CO, SO_2, POC, PM, and diesel PM (a TAC). The non-retail gasoline dispensing facility operated onsite is a source of POC emissions. There were other unpermitted operations cited at the site – a composting operation, crushing and grinding operations, stockpiles, a sand and aggregate

quarrying operation, leachate and condensate storage tanks - sources of POC, combustion products, and particulate emissions. The permitting of these sources has been addressed in the past year and these sources will be added to the Title V permit under the next minor permit revision.

Changes since the last issuance of the permit:
The following NSR applications have been processed since the last issuance of this permit, and those permitting actions are being incorporated into the Title V permit under this proposed permit revision:

- Application #21018 requesting an Authority to Construct and Permit to Operate a new landfill gas flare
- Application #26957 requesting alternate operating standards for select landfill gas collection wells

In addition, the landfill operator submitted an application for a minor permit revision, which is being addressed with this proposed permit revision:

- Application #26634 requesting a change in the Schedule of Compliance for S-13

The proposed changes to the Title V permit resulting from these three applications have been shown in the proposed permit in strikeout/underline format. The permit evaluations for the two NSR applications have been included in Appendix A for reference.

Other applications to be incorporated in a future permit revision:
Changes to the facility permit from the following NSR applications will be updated to the Title V permit under the next permit revision:

- Application #16322: Miscellaneous existing unpermitted sources
- Application #20057: Retrofit of Unpermitted Prime Diesel Engine, S-33
- Application #21165: Unpermitted Portable Diesel Engines
- Application #24634: Change of Conditions for the Landfill, S-1
- Application #25067: New Prime Diesel Engine, S-36
- Application #25586: Change of Conditions – Leachate Collection System

The District has received the following NSR applications for this facility but has not yet processed them. Any permit changes under these applications will be updated to the Title V permit after the NSR review has been completed:

- Application #27405: Change of Conditions – Landfill Gas Collection Wells
- Application #27451: Change of Conditions – Increase Waste Acceptance Rate

C. Permit Content

The legal and factual basis for the permit follows. The permit sections are described in the order presented in the permit. Routine changes to the standard permit text in Sections I "Standard Conditions", III "Generally Applicable Requirements", and X "Glossary" are not considered part of the Title V permit renewal/revision process, but may be made at the discretion of the District during the term of this permit.

No changes are proposed to the Permit, Title Page.

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. This permit does not include Title IV or accidental release provisions.

Many of these conditions derive from 40 CFR § 70.6, Permit Content, which dictates certain standard conditions that must be placed in the permit. The language that the District has developed for many of these requirements has been adopted into the BAAQMD Manual of Procedures, Volume II, Part 3, Section 4, and therefore must appear in the permit.

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

Changes to the Permit, Section I:

- Per EPA's request, the mailing address for compliance certifications has been revised.

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., S-24). Permitted sources are those sources that require a BAAQMD operating permit pursuant to BAAQMD Rule 2-1-302. Each of the permitted sources has previously been issued a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. These permits are issued in accordance with state law and the District's regulations. The capacities in the permitted sources table are the maximum allowable capacities for each source, pursuant to Standard Condition I.J and Regulation 2-1-403. The permitted sources are listed in Table II-A.

Significant sources are those sources that have a potential to emit of more than 2 tons per year of a "regulated air pollutant" (as defined in BAAQMD Rule 2-6-222) or 400 pounds per year of a "hazardous air pollutant" (as defined in BAAQMD Rule 2-6-210). No significant sources have been reported at this facility.

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-2). If a source is also an abatement device, such as when an engine controls VOC emissions, it will be listed in the abatement device table but will have an "S" number. An abatement device may also be a source (such as a thermal oxidizer that burns fuel) of secondary emissions. If the primary function of a device is to control emissions, it is considered an abatement (or "A") device. If the primary function of a device is a non-control function, the device is considered to be a source (or "S").

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.

Changes to the Permit, Section II:

- The new flare A-4 was added to Table II-B.

III. Generally Applicable Requirements

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

Unpermitted sources are exempt from normal District permits pursuant to an exemption in BAAQMD Regulation 2, Rule 1. They may, however, be specifically described in a Title V permit if they are considered "significant sources" as defined in BAAQMD Rule 2-6-239. This facility does not have any significant sources that do not have District permits except for the sources identified at the last permit renewal which will be incorporated in the next permit revision.

No changes are proposed to the Permit, Section III.

IV. Source-Specific Applicable Requirements

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

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

- BAAQMD permit conditions. The text of BAAQMD permit conditions is found in Section VI of the permit.
- Federal permit conditions. The text of Federal permit conditions, if any, is found in Section VI of the permit.

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

New Complex Applicability Determinations: None

Changes to the Permit, Section IV:

- Table IV-A was revised to list the new flare A-4 as abatement for the landfill S-1.
- References to the permit conditions for the new flare A-4 and changes to the existing flare conditions were added to Table IV-A.
- Reference to the alternate wellhead temperatures was added to Table IV-A.
- Delete obsolete future effective dates in Table IV-B.

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 determined that the facility was out of compliance with applicable requirements, a schedule of compliance was added to the permit at the last permit renewal, addressing all known unpermitted sources and operations and all permitted sources known to be

out of compliance with applicable requirements. The section includes compliance milestones for each source and the reporting requirements of Regulation 2-6-409.10.3.

Changes to the Permit, Section V:

- S-13 Prime Diesel Engine Generator: This existing engine was cited for not complying with the NOx emission limit in Regulation 9, Rule 8 and the PM emission limits in the CARB's ATCM for stationary diesel engines. The source required retrofit with abatement equipment to achieve compliance with these emission limits, however the owner/operator had not submitted an application for the abatement equipment at the time of the last permit renewal. A Schedule of Compliance was included in the permit to ensure that the a permit application was submitted and that the required emission controls were ordered, installed, tested, and operated on a timely basis. The landfill operator elected to install a replacement engine and add-on control equipment, rather than retrofitting the existing older engine. The Schedule of Compliance required operation of the necessary abatement equipment no later than 120 days from issuance of the Authority to Construct. The landfill operator indicated that the earthquake in 2014 impacted the operation of Solano County, and issuance of county building permits for installation of the replacement engine and add-on control equipment was delayed. Therefore, the landfill operator requested extension of the milestone requiring operation of the abatement equipment within 120 days of issuance of the Authority to Construct to 180 days. The District has proposed to extend this deadline as requested.

VI. Permit Conditions

Each permit condition is identified with a unique numerical identifier, up to five digits. 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 regulatory basis is listed following each condition. The regulatory basis may be a rule or regulation. The District is also using the following terms for regulatory basis:

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

- PSD: This term is used for a condition imposed by the APCO to ensure compliance with a Prevention of Significant Deterioration permit issued pursuant to Regulation 2, Rule 2.
- TRMP: 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. This policy was replaced by Regulation 2, Rule 5 in 2005.

Changes to the Permit, Section VI:

- Condition #1948 description and Part 5: The new flare A-4 was added to permit condition #1948 as an abatement device for the landfill, S-1.
- Condition #1948, Part 8: Heat input limits for the new flare A-4 and combined limits for A-2 and A-4 were added.
- Condition #1948, Part 9: The minimum temperature limit for the new flare A-4 was added and the temperature was updated to reflect the minimum limit allowed based the start-up source testing.
- Condition #1948, Part 10: The total reduced sulfur compound content and hydrogen sulfide content were reduced to limit potential sulfur dioxide emissions.
- Condition #1948, Part 11: References to testing of A-4 were added. Carbon monoxide testing of both flares and NOx testing for A-4 were added. Clarification that annual testing of a flare is not required if the flare has not been operated since the last source test was added.
- Condition #1948, Part 13: Reference to the new flare A-4 was added.
- Condition #1948, Parts 17 through 20: The limits for the new flare A-4, combined carbon monoxide limits for A-2 and A-4, and source test requirements for A-4 were added.
- Condition #1948, Part 21: Alternate wellhead limits were added for select landfill gas collection wells.

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

VII. Applicable Limits and Compliance Monitoring Requirements

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

Monitoring decisions are typically the result of balancing 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 requirements only when it can support a conclusion that existing monitoring is inadequate**.**

The tables below list only the emission limits for which there is no monitoring in the applicable requirements that apply to the new abatement device A-4 being added to the permit under this proposed permit revision. For each emission limit without corresponding monitoring, the analysis of the compliance status of the new flare has been documented. If a determination of inadequate monitoring was found, additional monitoring would be proposed through this permit renewal. However, in the cases identified below, no additional monitoring is being recommended for the reasons identified. The District has examined the monitoring for all other emission limits that apply to the new flare and has determined that monitoring is adequate to provide a reasonable assurance of compliance.

Table 1
SO2 Emission Limits with No Associated Monitoring
Site #A2039, Potrero Hills Landfill

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
A-4, Enclosed Landfill Gas Flare	BAAQMD 9-1-301	Ground Level Concentrations of SO2: ≤ 0.5 ppm for 3 consecutive minutes AND ≤ 0.25 ppm averaged over 60 consecutive minutes AND ≤ 0.05 ppm averaged over 24 hours	Not Recommended

SO2 Discussion:
Burning of fuel that contains sulfur compounds will result in emissions of sulfur dioxide (SO_2) as a product of that combustion. The landfill gas burned at the new flare at this facility contains small levels of sulfur compounds which will contribute to ground level concentrations of SO_2.

BAAQMD Regulation 9-1-301
Area monitoring to demonstrate compliance with the ground level SO_2 concentration limitations of Regulation 9-1-301 is required at the discretion of the APCO (per BAAQMD Regulation 9-1-501). Since the ground level monitoring is expensive, such monitoring is not required if the expected levels of SO_2 emissions are low, resulting in a large expected margin of compliance with the emission limit.

Modeling analysis at this site at the time of initial permit issuance has shown that compliance with the fuel sulfur content of 1300 ppmv in the landfill gas to the original flare A-2, plus the expected emissions from the onsite engines based on the diesel fuel sulfur content limits at that time, would not result in exceedance of the ground level SO_2 limit in Regulation 9-1-301. Since the original modeling analysis, the sulfur content limits have been reduced in California diesel, so SO_2 emissions from the two onsite prime diesel engine-generators have been reduced. The majority of the SO_2emissions from the facility are generated by the flares, so the annual SO_2 source test requirement to demonstrate that the flares comply with the 300 ppmv SO_2 limit in Regulation 9-1-302, acts as a surrogate for demonstrating compliance with the ground level limit in Regulation 9-1-301. Therefore, area monitoring of SO_2 has not been required at this facility.

Table 2
PM Emission Limits with No Associated Monitoring
Site #A2039, Potrero Hills Landfill

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
A-4, Enclosed Landfill Gas Flare	BAAQMD Regulation 6-1-301, SIP Regulation 6-301	Ringelmann 1.0 for 3 minutes in any hour	Not Recommended
A-4, Enclosed Landfill Gas Flare	BAAQMD Regulation 6-1-310, SIP Regulation 6-310	$\leq$ 0.15 gr/dscf	Not Recommended

PM Discussion:
BAAQMD Regulation 6, Rule 1 "Particulate Matter – General Requirements"
SIP Regulation 6, "Particulate Matter and Visible Emissions"
BAAQMD Regulation 6-1-301 and SIP Regulation 6-301 limit 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 proper combustion of gaseous fuels, such as landfill gas. Since A-4 burns only landfill gas, no monitoring is required to assure compliance with this limit.

BAAQMD Regulation 6-1-310 and SIP Regulation 6-301 limit filterable particulate (FP) emissions from any source to 0.15 grains per dry standard cubic foot (gr/dscf) of exhaust volume. Using EPA's standard AP-42 emission factor for landfill gas combustion in a flare (0.017

lbs/MMBtu) and the flare's maximum combustion rate of 72 MMBtu/hr (i.e. 144,000 scf/hr) of landfill gas, the maximum expected FP emission rate from the flare is 1.22 pounds per hour.

At 0% excess oxygen, typical landfill gas (50% methane and 50% non-combustibles with a higher heating value of 497 Btu/scf) produces 4.77 dscf exhaust per scf landfill gas. So, the maximum exhaust flow rate from the flare is 686,880 dscf/hr at 0% oxygen. This results in a maximum outlet grain loading in the flare exhaust of 0.012 grains/dscf at 0% oxygen ((1.22 lb/hr)*(7000 grains/lb)/686,880 dscf/hr). As this is far less than the Regulation 6-1-310 limit, no monitoring is required for A-4 to demonstrate compliance with this limit.

Changes to the Permit, Section VII:

- The new flare A-4 was incorporated into Table VII-A, including adding reference to A-4 in all the applicable emission limits for flares, the minimum temperature limit, the NOx and CO limits, individual heat input limit, and combined flare heat input and CO emission limits.
- The revised limits for total reduced sulfur and hydrogen sulfide content in landfill gas were incorporated into Table VII-A.
- The alternate landfill gas wellhead operating parameters were incorporated into Table VII-A.
- Delete obsolete future effective dates in Table IV-B.

VIII. Test Methods

This section of the permit lists test methods that are associated with standards in District or other rules. It is included only for reference. In most cases, the test methods in the rules are source test methods that can be used to determine compliance but are not required on an ongoing basis. They are not "applicable requirements" as defined by Regulation 2-6-202.

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

Changes to the permit, Section VIII: None.

IX. Permit Shield:

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

The second type of permit shield is allowed by EPA's "White Paper 2 for Improved Implementation of the Part 70 Operating Permits Program." The District uses the second type of permit shield for all streamlining of monitoring, recordkeeping, and reporting requirements in

Title V permits. The District's program does not allow other types of streamlining in Title V permits.

This facility does not have a permit shield.

X. Revision History

Changes to the permit, Section X:

- The revision history was updated to include this proposed permit revision.

XI. Glossary

Changes to the permit, Section XI: None

D. Alternate Operating Scenarios:

No alternate operating scenario has been requested for this facility.

E. Differences Between the Applications and the Proposed Permit:

The applications for minor permit revisions of this Title V permit were submitted on 8/20/09, 10/8/14, and 1/30/15. The Applicant requested the addition of the new flare A-4, revision of the Schedule of Compliance for S-13, and incorporation of the alternate operating standards for specified wellheads. These only these changes have been incorporated into the proposed permit.

APPENDIX A

Engineering Evaluations for
NSR Permit Applications #21018 and # 26957

Engineering Evaluation Report

Potrero Hills Landfill, P#2039
3675 Potrero Hills Lane, Suisun City
Application #21018

Background

Potrero Hills Landfill (PHL) is an active municipal solid waste landfill, which is located in Suisun City and currently owned by Waste Connections, Inc.

In December 2004, PHL submitted Application #11378, proposing an expansion of the landfill, referred to as "Phase II." The Phase II expansion proposal included an increase in waste disposal capacity of an additional 61.6 million cubic yards, installation of a larger landfill gas flare to handle the increase in landfill gas, as well as other changes in the site operation. The proposed Phase II expansion has been held up in court, first over adequacy of the CEQA review, then over enforcement of a local county measure that prohibits disposal of out of county waste at this site, and currently based on a challenge to the issuance of the Marsh Development permit by BCDC. Since the proposed expansion is still currently under litigation, the District has not taken action on the landfill expansion application.

Due to the legal delays holding up the proposed Phase II expansion and since the site site is nearing the capacity of the existing flare, A-2, PHL submitted this application to separate permitting of a second flare from the proposed landfill expansion. PHL has proposed addition of the following new abatement device, as a second flare to be operated at this site:

A-4, Landfill Gas Flare, 2,400 scfm landfill gas capacity, 72 MMBtu/hr, maximum

Note that a separate company has applied to install and operate several landfill gas-fired engines at this site. An Authority to Construct has been issued to these engines under Application #23333 in October, 2012, however the terms of that Authority to Construct are currently under appeal and review. If the proposed landfill gas-fired engines are installed, the landfill gas will be preferentially combusted at the engines, with the existing flare and proposed new flare at the site being maintained to combust the excess gas volume that cannot be burned at the engines and also for periods of engine downtime.

Emission Calculations

Landfills are sources of air emissions, including particulate matter from the handling of waste, excavation and compaction activities, as well as vehicular traffic across paved and unpaved roads, and emissions from the combustion of fuel in delivery vehicles and onsite mobile construction equipment. In addition, the decomposition of waste in the landfill generates emissions of methane, volatile organic compounds, and greenhouse gases, which are emitted in the form of fugitive leaks from uncollected landfill gas at the landfill and as the fraction of compounds which are uncombusted at the landfill gas flare.

All of these emissions are attributed to the landfill and are a function of the permitted capacity of the landfill. Under Application #24634, the landfill operation was reviewed to ascertain whether any modification of the landfill had occurred since the time that the landfill was originally permitted in 1985. The District determined that the baseline landfill operation should be based on the 1996 Solid Waste Facility Permit and that no modification of the landfill has occurred since 1996.

Even without any expansion of a landfill, the need for a larger capacity flare is part of a predictable increase in landfill gas production over time. A flare replacement over the life of a landfill is expected because lower capacity flares must be used in the earlier stages of landfill development due to limitations in the amount of turn down that a flare can handle. A flare with enough capacity to handle the peak projected landfill gas production rate does not have the ability to be turned down enough to handle the much smaller gas flows during the earlier landfill stages. Therefore, a flare change within the life span of a landfill's permitted capacity is a foreseeable event, not necessarily related to any modification of the landfill.

Landfill gas control equipment such as flares and engines generate combustion emissions from the combustion of fuel. The increase in emissions associated with the addition of the proposed second flare will be the secondary products of combustion created by the combustion of landfill gas and landfill gas condensate in the additional flare – particulate matter (PM), nitrogen oxides (NOx), carbon monoxide (CO), sulfur dioxide (SO2), acid gases, and greenhouse gases (GHG). Based on state law and input from a landfill industry coalition, the District formulated the following policy for emissions from landfill gas flares:

> *"In accordance with California Health and Safety Code (H&SC) Section 42301.2 and District Regulation 1-240, no offsets will be required for landfill gas flares, provided that there is no increase of capacity at the associated landfill. If the flare is being permitted to handle an increase in capacity at the landfill, then offsets are required only for the emissions associated with the landfill capacity increase. Offsets will not be required for a flare that replaces one of equal or lesser capacity. If the replacement control device has a higher permitted capacity than the existing unit, emissions offsets for secondary pollutants are required only for the increased capacity. New landfills require offsets in accordance with Regulations 2-2-302 and 2-2-303 for all permitted emissions". (Ref. District Responses to Issues Raised by the LFGTE Industry Coalition, agreement reached 11/29/06)*

California Health and Safety Code (H&SC) Section 42301.2:

> *"A district shall not require emission offsets for any emission increase at a source that results from the installation, operation, or other implementation of any emission control device or technique used to comply with a district, state, or federal emission control requirement, including, but not limited to, requirements for the use of reasonably available control technology or best available retrofit control technology, unless there is a modification that results in an increase in capacity of the unit being controlled." (AB 2525 Chapter 771, September 23, 1996)*

The landfill gas generation rates have been calculated using EPA's LandGEM software for the maximum permitted landfill capacity of 13.1 million tons, based on the 1996 Solid Waste Facility Permit limitations. Since the Applicant has indicated that their rainfall data shows the site is considered arid (a 2-year average rainfall of 25 inches of rain or less), the maximum landfill gas generation rate calculated using LandGEM for that landfill capacity and the historical waste acceptance records is 1,496 million standard cubic ft/year (2,847 scfm). Therefore, abatement of the landfill gas at a generation rate of 2,847 scfm is associated with operation of the unmodified landfill.

Note that permitting of the flare is based on abatement of the full gas generation rate from the landfill, even though the quantity of landfill gas actually collected will be less than the generation rate due to fugitive losses. The combined combustion capacity of the existing landfill gas flare A-2 (1,500 scfm landfill gas) and the proposed second flare A-4 (2,400 scfm of landfill gas) is 3,900 scfm. The Applicant has agreed to accept a combined landfill gas limit of 2,847 scfm for the two flares. As this quantity is

required abatement of the unmodified landfill, PHL is not required to provide offsets for the new flare up to this limit. If the collected landfill gas was to exceed this limit, that would signify a modification of the landfill and the emissions associated with that level of operation would be permitted separately.

Since the facility has the option to send all of the collected landfill gas to the proposed second flare up to the limit of 2,847 scfm, it is possible that the proposed flare could be operated at full capacity, 2,400 scfm. Therefore, worst-case secondary emissions associated with operation of the proposed second flare A-4 have been calculated at full capacity, 2,400 scfm landfill gas, 72 MMBtu/hour, below. The small fraction of organic emissions that pass through the flare, uncombusted, is associated with the landfill, rather than associated with the flare, so those emissions are not attributed to the proposed flare.

Criteria Pollutants
NOx and CO Emission Factors:
The facility has proposed that the flare A-4 meet a NOx emission rate of 0.06 lbs/MMBtu and a CO emission rate of 0.2 lbs/MMBtu.

SO2 Emission Factor:
The sulfur content in the landfill gas for this site is currently limited to 1300 ppmv, dry, as a backstop to ensure compliance with the SO2 limit in Regulation 9-1-302 of 300 ppmv, dry in the exhaust gas from the existing flare. This limit, applied to the existing and proposed flare, will result in potential SO2 emissions in excess of 100 tons per year, making the facility a major facility. Since the Applicant does not wish to be subject to the regulatory requirements that apply to major facilities, the sulfur content in the landfill gas will be reduced to 560 ppmv, dry.

Assuming a LFG methane content of 50%, the SO2 emission factor associated with this sulfur concentration is as follows:

SO2 (lb/MMBtu) = (X lb-mol S/lb-mol LFG)(lb-mol SO2/lb-molS)(64.06 lbs SO2/lb-mole SO2)/(387 scf/lb-mole LFG)(scf LFG/500 BTU)(1,000,000 BTU/MMBTU)
= LFG S Concentration (ppmv) x 3.31 E-4

So, 560 ppmv S = 560 x 3.31 E-4 = 0.1854 lb SO2/MMBtu

PM Emission Factor:
EPA's AP-42, Compilation of Air Pollutant Emission Factors, Table 2.4-5 "Emission Rates for Secondary Compounds Exiting Control Devices" specifies a PM emission factor of 17 lbs/million dscf methane. The landfill gas (LFG) at the facility has an average methane content of 50%, and at standard conditions, 50% methane landfill gas will have a higher heating value of 500 Btu/scf. Therefore, the AP-42 emission factor is equivalent to

(17 lbs PM/1e6 dscf methane)(0.5 dscf methane/scf LFG)(1e6 scf LFG/500 MMBtu) = 0.017 lb/MMBtu

Criteria Pollutant Emissions
Assuming continuous use of the flare at the maximum capacity, the secondary pollutant emissions from A-4 are as follows, summarized in Table 1 below:

NOx = (0.06 lb/MMBtu)(72 MMBtu/hr)(24 hr/day)(365 days/yr) = 37,843 lbs/yr = 18.922 tpy
CO = (0.20 lb/MMBtu)(72 MMBtu/hr)(24 hr/day)(365 days/yr) = 126,144 lbs/yr = 63.072 tpy
SO2 = (0.185 lb/MMBtu)(72 MMBtu/hr)(24 hr/day)(365 days/yr) = 116,683 lbs/yr = 58.342 tpy
PM = (0.017 lb/MMBtu)(72 MMBtu/hr)(24 hr/day)(365 days/yr) =10,722 lbs/yr = 5.361 tpy

Table 1
Maximum Secondary Criteria Pollutant Emissions from the Flare, A-4

Pollutant	Daily, lbs/day	Annual, lbs/yr	Annual, tpy
PM10	29.4	10,722	5.361
POC	---	---	---
NOx	103.7	37,843	18.922
SO2	319.7	116,683	58.342
CO	345.6	126,144	63.072

Greenhouse Gas Emissions

Landfill gas contains approximately 50% methane (CH_4), 50% carbon dioxide (CO_2), with trace non-methane organic compounds and 0.001% nitrous oxide (N_2O). Methane, carbon dioxide, and nitrous oxide are greenhouse gases. During the combustion of landfill gas at the flare, methane is converted to CO_2 and nitrous oxide is converted to NO_2. The CO_2 that is present in landfill gas and the CO_2 produced during combustion of landfill gas at the flares are both derived from the decomposition of organic waste materials (primarily vegetable matter) and is considered to be biogenic CO_2. Non-biogenic greenhouse gas emissions consist of the residual methane and residual nitrous oxide that passes through the flares uncombusted.

The maximum biogenic non-fugitive CO_2 emission rates from the flare were calculated using a standard BAAQMD emission factor, assuming the flare operates continuously 24 hours per day and 365 days per year at maximum capacity. Residual non-biogenic methane emissions from the flare were calculated using emission factors derived from CARB's Landfill Methane Control Measure, H&SC Section 95464(b)(2)(A)(1), which requires flares to achieve at least 99% by weight reduction of methane. Residual non-biogenic nitrous oxide emissions were calculated based on a 75% conversion rate.

The greenhouse gas emissions from the proposed flare are summarized in Table 2, below. The emissions of methane and nitrous oxide have been converted to a carbon dioxide equivalent emission rate using the global warming potentials of 21 for methane and 310 for nitrous oxide.

Table 2
Maximum Greenhouse Gas Emissions from the Flare, A-4

Pollutant	Flare, tpy	Global Warming Potential, as CO2	Project, CO2e tons/year
CH4	130.7	21	2745.2
N2O	0.18	310	55.6
Total Non-Biogenic			2800.8
Biogenic CO2	67745.6	1	67745.6
Total Biogenic & Non-Biogenic GHG			70546.5

Cumulative Increase

The District tracks cumulative increases of criteria pollutant emissions for each permitted facility. The cumulative increases for all facilities in the District were reset in 1991. The post 4/5/1991 criteria pollutant emission increases for PHLF are shown below, with the cumulative emission increases for this proposed project, as well as the post-project totals.

Application #21018
Plant #2039, Potrero Hills Landfill
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Table 3
Plant #2039, Facility-wide Cumulative Emissions Since 4/5/1991

Pollutant	Current, tpy	Project Increases, tpy	Post-Project, tpy
PM10	0	5.361	5.361
POC	0	---	0
NOx	0	18.922	18.922
SO2	0.010	58.341	58.351
CO	0.677	63.072	63.749

Compliance Determination

Regulation 1, "General Provisions and Definitions"
The facility is subject to Regulation 1, Section 301, which prohibits discharge of air contaminants resulting in public nuisance. The second flare will be subject to operating limits designed to ensure adequate combustion of the landfill gas. It is required for abatement of the landfill gas from the landfill and is not expected to be a source of public nuisance.

Public Notice Requirements, Regulation 2, Rule 1
The public notification requirements of Regulation 2-1-412 apply to modifications which result in an increase in toxic air contaminant or hazardous air contaminant emission at facilities within 1,000 feet of the boundary of a K-12 school. The applicant has reported no K-12 school within that radius of this facility, and the District's database confirms there is no K-12 school within one mile of the facility. Therefore, the public notice requirements do not apply.

California Environmental Quality Act (CEQA) Requirements, Regulation 2, Rule 1
This project involves only the proposed installation of a second landfill gas flare, A-4. The flare is an abatement device, which is one of the specified control options for compliance with District Regulation 8, Rule 34 for the abatement of landfill gas. In accordance with Regulation 2, Rule 1, Section 312.2, permit application involving the installation of abatement equipment are categorically exempt from CEQA review. Therefore, the proposed installation of A-4 is exempt from CEQA review.

Best Available Control Technology (BACT) Requirements, Regulation 2, Rule 2
Per Regulation 2, Rule 2, Section 112, BACT review does not apply to emissions of secondary pollutants that are the direct result of operation of an abatement device that complies with the BACT or BARCT requirements for the control of another pollutant. Since the proposed flare meets the BARCT requirements of Regulation 8-34-301.3 for control of organic compounds, BACT does not apply to the secondary pollutants from this flare. However, Regulation 2, Rule 2, Section 112 does require secondary pollutants meet the Reasonably Available Control Technology Requirements (RACT). RACT for enclosed landfill gas flares is an emission rates of 0.06 lb NOx/MMBtu and an emission rate of 0.20 lb CO/MMBtu. The proposed flare, A-4, meets RACT for both NOx and CO.

Emission Offsets, Regulation 2, Rule 2
Emission offset requirements for POC and NOx are set out in Regulation 2, Rule 2, Section 302. POC and NOx offsets are required for new or modified sources at a facility that emits or will be permitted to emit 10 tons per year or more of that pollutant.

The California Health and Safety Code Section 42301.2, specifies:

> *"A district shall not require emission offsets for any emission increase at a source that results from the installation, operation, or other implementation of any emission control device or technique used to comply with a district, state, or federal emission control requirement, including, but not limited to, requirements for the use of reasonably available*

control technology or best available retrofit control technology, unless there is a modification that results in an increase in capacity of the unit being controlled."

The proposed landfill gas flare is an abatement device as defined in Regulation 1-240, which is being installed to meet the control requirements in Regulation 8, Rule 34. There is no underlying modification of the landfill itself which has made operation of this flare necessary, so there is no increase in the capacity of the 'unit being controlled.' Therefore, the District does not require the applicant to provide emission offsets for the secondary pollutant emissions from the combustion of landfill gas at the proposed flare.

Note however, that in accordance with District policy for secondary pollutants from landfill gas flares, the District will provide applicable offsets for secondary flare pollutants from the Growth Allowance/Small Facilities banking account (BAAQMD Account #1157) to satisfy no net increase requirements. Offsets are provided on a 1.0 to 1.0 basis.

Emission offset requirements for PM10 and SO2 are defined in Regulation 2, Rule 2, Section 303. PM10 and SO2 offsets are required for emission increases of these pollutants in excess of 1.0 ton per year since April 5, 1991 at a major facility. A major facility of regulated air pollutants is defined as a facility that has the potential to emit 100 tons per year or more of a regulated air pollutant. For fugitive emissions of regulated air pollutants, only the fugitive emissions from facility categories listed in 40 CFR Part 70.2 are included in determining whether the facility is a major facility. Landfills are not listed as a facility category for which fugitive emissions are included in the major facility determination. Since this PHL does not have potential non-fugitive emissions of 100 tons per year or more of PM10 or SO2 (see Table 4), PHL is not a major facility for PM10 or SO2. Therefore, PM10 and SO2 emission offsets are not required.

Prevention of Significant Deterioration (PSD), Regulation 2, Rule 2

The Prevention of Significant Deterioration (PSD) requirements are found in Regulation 2, Rule 2, Section 304. PSD review is required prior to issuance of permits to a new major facility or for a major modification of an existing major facility. A PSD major facility is defined in Regulation 2-2-304.1 as a facility that has the potential to emit 100 tons per year or more of a regulated air pollutant, if it is one of the 28 PSD source categories listed in Section 169(1) of the federal Clean Air Act, or 250 tons per year or more of a regulated air pollutant, if not a listed source category. Fugitive emissions are not included in determining major facility status unless it is one of the listed PSD source categories in 40 CFR Part 51.166. Landfills are not one of the 28 listed PSD source categories, so a landfill is considered major for PSD if it has potential non-fugitive emissions of 250 tons per year or more of a regulated air pollutant.

In addition to regulated air pollutants, EPA's tailoring rule for greenhouse gases (GHG) established an alternative PSD and Title V Major Facility threshold of 100,000 tons/year of CO_2 equivalent GHG emissions. Fugitive emissions are included in this threshold only if they are included for regulated air pollutants. Since for landfills fugitive emissions are not included in establishing major source status, the GHG threshold is 100,000 tons/year of non-fugitive CO2 equivalent GHG emissions. However, PSD permitting of biomass facilities solely due to GHG emissions has been deferred by EPA until July 2014.

Since the potential non-fugitive emissions from this facility will be less than 250 tons per year for each regulated air pollutant (see Table 4), and the deferral of PSD permitting of biomass facilities due to GHG emissions is currently in effect, PHL not a major PSD facility at this time and is not subject to PSD review.

Public Notice Requirements, Regulation 2, Rule 2, Major Facility
Per Regulation 2, Rule 2, Section 405, applications for a new major facility or major modification of an existing major facility are subject to a 30 day public notice process. A major facility is one which has potential emissions of 100 tons per year or more of any regulated air pollutant, excluding fugitive emissions. A major modification of an existing major facility is defined as an increase of 40 tons per year or more of POC, NOx, SO2, or 12 tons per year or more of PM10, or 100 tons per year or more of CO.

The facility's potential non-fugitive emissions have been calculated on the attached spreadsheet and are summarized in Table 4 below:

Table 4
Site #A2039, Potrero Hills Landfill, Potential Non-Fugitive Emissions from Permitted Sources

Source Number/Description	Emissions (tons/year)					
	PM10	VOC	NOx	SO2	CO	GHG (CO2 eq)
S-1, Landfill – Waste Decomposition	--	*	--	--	--	*
S-13, Prime Diesel IC Engine	0.68	1.71	11.79	0.01	14.53	1,215
S-14, Gasoline Dispensing Facility	--	*	--	--	--	--
S-33, Prime Diesel IC Engine	0.31	0.31	5.85	0.01	2.22	1,280
S-202, Landfill - Waste & Cover Material Dumping	*	--	--	--	--	--
S-203, Landfill – Excavating, Bulldozing, Compacting	*	--	--	--	--	--
A-2, Enclosed LFG Flare, 45 MMBtu/hr	3.35	--	13.40	36.46	82.25	83,686
A-4, Enclosed LFG Flare, 72 MMBtu/hr	5.36	--	18.92	58.34		
Total Facility Emissions	**9.7**	**2.02**	**50.0**	**94.8**	**99.0**	**86,181**

*fugitive emissions only

The addition of a second flare at this site could cause the potential CO and SO2 emissions from the facility to exceed 100 tpy, based on the maximum capacity of the new flare. To defer the public notice associated with new major facility status, PHL has agreed to accept a limit on the sulfur content in the landfill gas to limit SO2 emissions from the flares (see discussion of Emission Calculations above) and also proposed to cap potential facility-wide CO emissions to 99 tons CO per year. The sulfur limit and the CO emission cap will be enforced through permit conditions requiring demonstration of compliance through use of sulfur sampling and CO source test data, respectively.

Note that the facility has applied separately for an expansion of the landfill under Application #11378. Permitting of the proposed expansion is expected to trigger the major source public notice, so the CO emission cap proposed by PHL under this application is an interim measure, intended to defer the public notice until the time that the proposed expansion is considered. At the time the landfill expansion is reviewed, the cap on potential emissions may be removed if the public notice requirements are fulfilled under that application.

Since PHL has proposed to cap facility-wide emissions of CO to less than 100 tpy, and since all other post-project, non-fugitive potential emissions from the facility will also be less than 100 tpy, the public notice requirements in Section 405 do not apply at this time.

Health Risk Assessment Requirements, Regulation 2, Rule 5
The District's regulation concerning toxic air contaminant emissions is codified in Regulation 2, Rule 5, New Source Review of Toxic Air Contaminants. All TAC emissions from new and modified sources are subject to risk assessment review, if emissions of any individual TAC exceed either the acute or chronic emission thresholds defined in Table 2-5-1. Since the operation of A-4 will result in emissions of toxic air contaminants, and the possible risk associated with these emissions must be evaluated.

Through EPA's AP-42, California Air Toxic Emission Factors (CATEF), and source testing, the District has identified TAC compounds that are potentially emitted from landfill gas flares. These emitted compounds fall into the following categories:

- Pass-through Emissions: TACs from the landfill gas that are not completely destroyed by combustion
- Acid Gas Emissions: Halogenated compounds converted to acid gases during combustion
- Secondary Organic TACs: Organic compounds converted to TACs during combustion

As previously discussed, installation of a flare is required to reduce organic emissions from the landfill through combustion of the collected landfill gas. There will be no increase organic emissions due to operation of the proposed flare. The pass-through organic emissions are considered emissions associated with the landfill, not generated by the flare.

Any increased health risk associated with installation of the proposed second flare will result from impacts due to acid gas emissions and secondary pollutant emissions only. To quantify these emissions, the constituents of the landfill gas at this site were reviewed for possible TAC emissions. Acid gases, such as hydrogen chloride and hydrogen fluoride, are expected, since compounds containing chlorine and fluorine have been measured in the landfill gas from this site. Formaldehyde and benzene are secondary organic TACs known to be emitted as a product of gas combustion. Therefore, benzene and formaldehyde emissions will increase due to operation of the proposed flare. Emission increases of acid gases, benzene, and formaldehyede have been calculated for comparison to the risk screening trigger levels in Regulation 2, Rule 5.

The acid gas calculations were based on the assumptions that the flare A-4 is operated continuously at maximum capacity, 2,400 scfm, and that complete combustion occurs. The halogenated compound concentrations from the landfill gas analysis at this site were compared to the compounds listed in EPA's AP-42 Chapter 2.4, Solid Waste Disposal – Municipal Solid Waste Landfills, Table 2.4-1. Since the compounds that PHL has been required to speciate is a small subset of the compounds that are represented in Table 2.4-1 of AP-42, the higher concentrations from AP-42 were used to calculate worst-case acid gas emissions, with only a higher site-specific concentration being used only for one compound.

Emission factors from ARB's CATEF database for secondary benzene and formaldehyde emissions from landfill gas combustion at various combustion devices were reviewed. The formaldehyde emission factor for landfill gas combustion at a flare was not deemed reliable, since it is several orders of magnitude higher than for other listed combustion devices and higher than source test data from other bay area landfills. Also, the CATEF factor for landfill gas-fired internal combustion engines was not selected, as there is an established but unexplained variability in formaldehyde emissions from landfill gas-fired internal combustion engines of various models. Therefore, the CATEF emission factors for landfill gas combustion in a turbine were selected as the best estimate of emissions. These factors were combined with the maximum landfill gas flowrate to calculate maximum hourly and annual emissions of benzene and formaldehyde.

The predicted hydrogen chloride, hydrogen fluoride, benzene, and formaldehyde emissions are summarized in Table 4 below with the corresponding acute and chronic trigger levels from District Regulation 2, Rule 5 for each compound. Since the worst-case benzene, formaldehyde, hydrogen chloride, and hydrogen fluoride emissions exceed the chronic risk screening trigger levels for these compounds, a Health Risk Screening Analysis is required per Regulation 2, Rule 5, Section 302.

Table 5
Acid Gas and Secondary Organic TAC Emissions from Flare, A-4

Pollutant	Emissions		Acute Trigger Level, lbs/hr	Chronic Trigger Level, lbs/yr
	lbs/hr	lbs/yr		
Benzene	0.057	**499.5**	2.9	3.8
Formaldehyde	0.026	**227.1**	0.12	18
HCl	1.7	**15,212**	4.6	350
HF	0.28	**2,444**	0.53	540

Once a risk analysis is required, per Section 2-5-216, the analysis must consider all new or modified sources of TAC emissions that are part of a project, including sources that have been permitted within previous 2 years. Within the previous 2 years, the following permits have been issued:

- Application 20057: Unpermitted Prime Diesel Engine, A/C 10/2/12 – Under this application, an Authority to Construct was issued for installation of a catalyzed diesel particulate filer and a selective catalystic reduction system on S-33, a new prime diesel engine-generator that the site installed without first obtaining permits. This prime diesel engine is a new source of TAC emissions and is one of two engines operated to provide power to the site. Since the diesel engine is required to provide power to the gas collection system, including delivery of the collected landfill gas to the flare, the operation of this diesel engine is related to operation of the landfill gas flare. Therefore, the emissions from this engine have been considered as part of the flare project for the purposes of the risk analysis.
- Application 23084: Change of Condition, Waived A/C 6/26/16 – Alterations to the landfill gas collection system were approved under this application. There was no increase in emissions for this alteration, so no TAC emissions must be considered from this application.
- Application 24634: Change of Conditions for the Landfill, Waived A/C 7/31/13 – This evaluation of this application determined that no modification of the landfill had occurred since 1986 and approved a revision to the NSR backstop permit conditions that were added during issuance of the initial Title V permit for this site. There was no increase in landfill emissions associated with this change, so no additional TAC emissions must be considered from this application.

Since the diesel PM emissions from S-33 are considered part of this project, they have been included in the risk analysis. The emissions from this prime engine have been based on continuous operation at the certified emission rate for the engine, abated at 85% by weight, as required by the state Airborne Toxic Control Measure for Stationary Compression Ignition Engines, Section 93115, Title 17 of the CA Code of Regulations. The emissions are summarized in Table 6 below.

Table 6
TAC Emissions from Prime Diesel Engine, S-33

Pollutant	Certified Emission, g/bhp-hr	Level 3 Control, wt%	Abated Emission, g/bhp-hr	Engine Size, hp	Annual Emissions, lbs/yr	Chronic Trigger Level, lbs/yr
Diesel PM	0.1342	85%	0.0201	237	92.15	0.58

The ISCST3 air dispersion computer model was used to estimate annual average average and maximum 1-hour ambient air concentrations resulting from operation of the flare and engine. Model runs were based on Travis Air Force Base meteorological data. Elevated terrain was considered using 10m DEM input from the USGS Denverton, Elmira, Fairfield South, and Fairfield North subareas. Model runs were made with rural dispersion coefficients. Stack and building parameters were based on information provided by the Applicant and by the Applicant for a proposed on-site independently owned power plant (see Application #23333 for Plant #20139).

The employees for this proposed co-located power plant were treated as worker receptors for this project. Since ISCST3 model showed a building cavity region in the vicinity of the power plant, ISCPrime was run to determine cavity region TAC concentrations. The ISCPrime maximum concentrations in this region were found to be lower than the maximum concentrations calculated by ISCST3, so the higher concentrations from ISCST3 were used to calculate the worst-case health impacts for worker receptors.

Estimates of residential risk assume exposure to annual average TAC concentrations occur 24 hours per day, 350 days per year, for a 70-year lifetime. Risk estimates for offsite workers and the potential on-site workers for Plant #20139 assume exposure occurs 8 hours per day, 245 days per year, for 40 years. Cancer risk adjustment factors (CRAFs) were used to calculate all cancer risk estimates. The CRAFs are age-specific weighting factors used in calculating cancer risks for exposure of infants, children, and adolescents to reflect their anticipated special sensitivity to carcinogens.

The maximum annual average TAC concentrations were evaluated for the flare and diesel engine. In addition, the highest one hour TAC concentrations were evaluated for the flare, but not calculated for the diesel engine, since there is no acute reference exposure level for diesel particulate emissions. Attached are maps showing the resulting locations and values of the highest annual average and 1-hour TAC concentrations for worker receptors, the highest estimated annual average and 1-hour TAC concentrations for residential receptors, and highest worker and residential annual average diesel PM concentrations. As there are no schools within 1000 feet of this site, no student risk was calculated.

The cumulative risk for the project has been conservatively estimated as the sum of the individual risks calculated for each source. Note that the since the highest TAC exposures do not occur at the same location for each of the two sources, that this method of summing the risk from both sources overestimates the actual risk from the project.

Table 7
Maximum Project Cancer Risk and Non-Cancer Hazard Quotient

Source	Cancer Risk		Acute Non-Cancer HQ		Chronic Non-Cancer HQ	
	Resident	Worker	Resident	Worker	Resident	Worker
Flare, A-4	0.019	0.012	0.0005	0.0235	0.0013	0.0017
Diesel Engine, S-33	3.325	5.932	n/a	n/a	0.0012	0.0042
Total Project	3.3	5.9	0.0005	0.0235	0.0025	0.0059

The maximum increased cancer risk to the nearest residential receptor and onsite worker receptor is greater than 1 in a million, but less than 10 in a million. In accordance with Regulation 2-5-301, this increase in risk associated with the proposed flare is acceptable, if Toxics Best Available Control Technology is met.

The BACT/TBACT Guideline for landfill gas flares at non-hazardous waste landfills, Document 80.1, 12/16/1991, specifies a ground level enclosed flare with the following characteristics as the standard for control of POC emissions:

- Retention time of 0.6 seconds at 1400 degreesF or more
- Automatic combustion air control
- Automatic shutoff gas valve and automatic re-start system

A-4 is a ground level enclosed flare with a retention time of 0.7 seconds minimum at 1800 degF. The control system to the flare is equipped with automatic combustion control, shutoff valve, and re-start system.

The BACT/TBACT Guideline for compression ignition engines greater than 50 hp, Document 96.1.4, 4/13/2009, specifies an emission rate of 0.01 g/bhp-hp. Compliance with this limit may be demonstrated by use of the Alternative Compliance Demonstration specified in the state Airborne Toxic Control Measure for Stationary Compression Ignition Engines, Section 93115, Title 17 of the CA Code of Regulations. S-33 is currently subject to the 0.01 g/bhp-hr and has elected to use the alternative compliance demonstration of 85% control, by weight, to meet this requirement.

Since both the A-4 and S-33 will meet the TBACT control requirements, the project is approvable under Section 2-5-301.

Major Facility Review, Regulation 2, Rule 6
The Title V federal permitting requirements of 40 CFR Part 70 have been codified and are enforced through District Regulation 2, Rule 6. This facility is a designated facility and is therefore subject to Title V and Regulation 2, Rule 6. As a designated facility, this facility was required to obtain a Title V Federal Operating Permit.

The facility was issued the initial Title V permit on August 15, 2003 and the permit was recently renewed on March 12, 2013. The proposed permit condition changes under this application will be updated to the Major Facility Review/Title V permit under Application #21019.

Regulation 3, Fees
The facility has paid the application fees billed under Invoice 3CC74.

Regulation 6, Rule 1, "Particulate Matter – General Requirements"
The new landfill gas flare will be subject to the Ringelmann 1 limit and visible emissions prohibition in Sections 301 and 305. Visible particulate emissions are normally not associated with combustion of gaseous fuels, such as natural gas and landfill gas, so compliance with these sections is expected. The flare is also subject to the Section 310 filterable particulate emissions limit of 0.15 grains per dry standard cubic foot of exhaust volume. EPA's AP-42 emission factor for landfill gas combustion in a flare (0.017 lbs PM10/MMBtu) is equivalent to 0.012 grains/dscf at 0% oxygen. Therefore, the proposed flare is expected to comply with Section 310.

Regulation 8, Rule 34, "Organic Compounds – Solid Waste Disposal Sites"
The facility is expected to comply with Regulation 8, Rule 34, Section 301. This section requires the flare to meet a non-methane organic compound (NMOC) destruction efficiency of at least 98% by weight or meeting an outlet NMOC concentration of less than 30 ppmv, dry as methane, corrected to 3% oxygen. The flare is expected to comply with these limits, which will be included in the permit conditions and enforced through a minimum temperature limit.

Regulation 9, Rule 1, "Inorganic Gaseous Pollutants – Sulfur Dioxide"
The new flare will be subject to Regulation 9, Rule 1, Section 9-1-301 and Section 9-1-302. Section 9-1-301 limits ground level concentration limits to 0.5 ppm continuously for 3 minutes, 0.25 ppm averaged over 60 minutes, and 0.05 ppm averaged over 24 hours. Section 9-1-302 limits sulfur dioxide emissions to no more than 300 ppmv, dry, in the exhaust. Compliance with the 300 ppmv SO2 exhaust limit in Section 9-1-302 is expected to ensure compliance with the limit on ground level concentrations.

The facility has requested a TRS limit of 560 ppmv to remain below the major source threshold of 100 tpy SO2, discussed previously. At zero excess oxygen and 50% methane, the theoretical flue gas factor is 4.7847 scf flue gas at 0% oxygen per scf of landfill gas burned:

(560E-6 scf S/ scf LFG)(1 scf LFG/ 6.7847 scf flue gas) = 117 ppmv SO2 in flue gas @ O% oxygen

Therefore, compliance with the proposed TRS limit of 560 ppmv will ensure the exhaust SO2 concentrations from the existing and proposed flare will comply with Section 9-1-302. Note that the 2012 analysis of the landfill gas at this site measured a total reduced sulfur content of 73.2 ppmv, so compliance with a 560 ppmv limit is expected. The facility will monitor compliance with this limit through the current permit condition, requiring measurement of hydrogen sulfide emissions. Since the hydrogen sulfide content typically constitutes 95% or more of the TRS in landfill gas, a hydrogen sulfide limit of 504 ppmv (90% of the TRS limit) has been set as a conservative demonstration of compliance with the TRS limit.

Regulation 9, Rule 2, "Inorganic Gaseous Pollutants – Hydrogen Sulfide"
The ground level concentration limit on hydrogen sulfide in Section 9-2-301 is 0.06 ppm averaged over 3 minutes or 0.03 ppm averaged over 60 minutes. The landfill is subject to this standard and operation of the proposed flare will reduce emissions of hydrogen sulfide in the collected landfill gas. Note that additional permit conditions requirements to address compliance with this standard were added in the recently renewed Title V permit for this site. No additional requirements are being proposed under this application.

40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS):
Subpart A, Standards of Performance for New Stationary Sources – General Provisions
Subpart Cc, Standards of Performance for New Stationary Sources – Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills
40 CFR Part 60, Subpart Cc, Emission Guidelines (EG) for Municipal Solid Waste (MSW) Landfills applies to MSW landfills that were constructed prior to May 30, 1991, have not gone through reconstruction or modification since that date, and have accepted waste since November 8, 1987. For the purposes of Subpart Cc, modification is defined in Subpart A as

"any physical change in, or change in the method of operation of, an existing facility with increases the amount of any air pollutant (to which a standard applies) emitted into the atmosphere by that facility or which results in the emission of any air pollutant (to which a standard applies) into the atmosphere not previously emitted."

For the purposes of Subpart WWW, modification is defined as

"an increase in the permitted volume design capacity of the landfill by either horizontal or vertical expansion based on its permitted design capacity as of May 30, 1991. Modification does not occur until the owner or operator commences construction on the horizontal or vertical expansion."

This facility began accepting waste in July 1986. No design capacity modification has been approved by the District since the original permit was issued to this site in 1986, therefore the facility is currently subject to the EG requirements. The District's Regulation 8, Rule 34 has been approved in the state plan for implementation of the EG requirements. Therefore, the facility is currently subject to the EG, which is enforced through compliance with District Regulation 8, Rule 34. See the discussion of Rule 8-34 requirements above.

Subpart A, Standards of Performance for New Stationary Sources – General Provisions
Subpart WWW, Standards of Performance for New Stationary Sources –Municipal Solid Waste Landfills

Subpart WWW applies to municipal solid waste landfills that commenced construction, reconstruction, or modification or began accepting waste on or after May 30, 1991 and that have a design capacity of 2.5 million megagrams or more. For the purposes of Subpart WWW, modification is defined as

"an increase in the permitted volume design capacity of the landfill by either horizontal or vertical expansion based on its permitted design capacity as of May 30, 1991. Modification does not occur until the owner or operator commences construction on the horizontal or vertical expansion."

Since, the landfill has not submitted any documentation or notification of reconstructed or modification on or after 1991, Subpart WWW does not apply at this time. The proposed Phase II expansion will trigger the requirements of Subpart WWW, however approval and implementation of the proposed expansion has not yet occurred.

The installation of a second landfill gas flare will not change the permitted design capacity of the landfill, therefore this site does not become subject to Subpart WWW due to installation of a new flare.

40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories/Maximum Achievable Control Technology (MACT) Standards:
Subpart A, National Emission Standards for Hazardous Air Pollutants – General Provisions
Subpart AAAA, National Emission Standards for Hazardous Air Pollutants – Municipal Solid Waste Landfills

40 CFR Part 63, Subpart AAAA applies to existing and new municipal solid waste landfills that have accepted waste since November 8, 1987 or have additional capacity to accept waste and that meets any of the following:

- The landfill is a major source as defined in 40 CFR Part 63.2 of Subpart A (has the potential to emit, considering controls, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants);
- The landfill is co-located with a major source as defined in 40 CFR Part 63.2 of Subpart A; or
- The landfill is area source with a design capacity of 2.5 million megagrams and 2.5 million cubic meters or more and which has estimated uncontrolled non-methane organic compound emissions of 50 megagrams or more, as calculated according to Part 60, Subpart WWW.

The current design capacity of this landfill is 21.8 million cubic yards, previously limited to 13.1 million tons of waste, which was revised to 16.35 million tons of waste under Application 24634, based on PHL's revised compaction density figures. This is equivalent to a design capacity of 16.7 million cubic

meters and 14.8 million megagrams, which meets the applicability threshold for design capacity. However, the projected maximum NMOC generation rate of the landfill for this maximum capacity is 90.3 Mg per year. Based on these maximum projected emissions, the landfill is currently subject to this regulation.

40 CFR Part 70, State Operating Permit Programs (Title V):
This facility is a designated facility, as it is currently subject to the requirements of 40 CFR Part 70. As a designated facility, this facility is subject to the requirements of 40 CFR Part 70. The requirements of this program have been codified in District Regulation 2, Rule 6. See discussion of Rule 2-6 above.

California Health and Safety Code Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4, Regulations to Achieve Greenhouse Gas Emission Reductions, Subarticle 6, Methane Emissions from Municipal Solid Waste Landfills, Sections 95460-95476
This state regulation was adopted to reduce methane emissions from municipal solid waste landfills and applies to all MSW landfills that received waste after January 1, 1977. The Potrero Hills Landfill is active and currently accepting waste and is therefore subject to this regulation.

Section 95464 specifies requirements for the gas collection and control system. Section 95464(b)(1)(A) requires the collected gas to be routed to a gas control device and continuous operation of the collection and control system. Section 95464(b)(1)(B) requires the control system be operated such that there are no landfill gas leaks that exceed 500 ppmv, measured as methane, at any component containing landfill gas under positive pressure. Section 95469(b)(3) requires quarterly leak monitoring and repair within 10 days. This limit is more stringent than the leak limit in District Regulation 8, Rule 34.

Section 95469(b)(2)(A) requires operation of an enclosed flare that achieves a methane destruction efficiency of at least 99% by weight and specifies monitoring and operational requirements for shutdown, restart, and startup scenarios. Section 95469(b)(4) requires source testing within 180 days of startup and annually thereafter, which can be extended to once every 3 years after three consecutive compliant source tests, and Section 95465(b)(1) specifies the temperature and gas flowrate monitoring and recording requirements for enclosed flares.

Section 95470(a) specifies the recordkeeping requirements and Section 95470(b)(3) and (4) specify the annual reporting requirements. Test methods and procedures are contained in Section 95471.

Pursuant to the current permitting policy, the regulatory requirements in regulations will not be reiterated in permit conditions. However, PHLF is expected to comply with all applicable requirements of this rule.

Permit Condition #1948:
Only the parts of the existing landfill permit condition that will be revised due to addition of the proposed flare are shown below. All revisions are shown in strikeout/underline format.

Potrero Hills Landfill, P#2039
Permit Application #24634
Permit Conditions for

S-1 Potrero Hills MSW Landfill – Waste Decomposition Process; Equipped with Gas Collection System; abated by A-2 Landfill Gas Flare, 45 MMBtu/hr maximum and A-4, Landfill Gas Flare, 72 MMBtu/hr maximum;
S-202 Potrero Hills MSW Landfill – Waste and Cover Material Dumping;
S-203 Potrero Hills MSW Landfill – Excavating, Bulldozing, and Compacting Activities

5. All collected landfill gas shall be vented to one or both of the properly operating Landfill Gas Flares (A-2 and A-4). Raw landfill gas shall not be vented to the atmosphere, except for unavoidable landfill gas emissions that occur during collection system installation, maintenance, or repair that is performed in compliance with Regulation 8, Rule 34, Sections 113, 116, 117, or 118 and for inadvertent component or surface leaks that do not exceed the limits specified in 8-34-301.2 or 8-34-303.

(basis: Regulation 8-34-301)

8. The combined heat input to the A-2 Landfill Gas Flare and the A-4 Landfill Gas Flare shall not exceed 2,049.3 million BTU per day and shall not exceed 748,000 million BTU per year. In addition, the heat input to each flare shall not exceed either of the following quantities:
   a. For A-2: 1,080 million BTU per day and ~~shall not exceed~~ 394,200 million BTU per year.
   b. For A-4: 1,728 million BTU per day and 630,720 million BTU per year
   In order to demonstrate compliance with this part, the owner/operator shall calculate and record, on a monthly basis, the maximum daily, ~~and~~ total monthly, and rolling 12-month heat input to ~~the~~ each flare and both flares combined based on: (a) the landfill gas flow rate recorded pursuant to part 13.h., (b) the average methane concentration in the landfill gas measured in most recent source test, and (c) a high heating value for methane of 1013 BTU per cubic foot at 60 degrees F.

(basis: Cumulative Increase, Regulation 2-1-301)

9. The combustion zone temperature of the ~~A-2~~ Landfill Gas Flares shall be maintained at the following~~a~~ minimum ~~of~~temperatures, during all times that landfill gas is being combusted:
   a. For A-2: 1,504 degrees F, averaged over any 3-hour period~~, during all times that landfill gas is being combusted in the flare~~.
   b. For A-4: 1,400 degrees F, averaged over any 3-hour period
   If a source test demonstrates compliance with all applicable requirements at a different temperature, the APCO may revise the minimum combustion zone temperature limit in accordance with the procedures identified in Regulation2-6-414 or 2-6-415, based on the following criteria: (1) the minimum combustion zone temperature measured during the most recent complying source test minus 50 degreesF, (2) the minimum combustion zone temperature shall not be less than 1,400 degrees F.

(Basis: Regulation 8-34-301.3)

10. Total reduced sulfur compounds in the collected landfill gas shall be monitored as a surrogate for monitoring sulfur dioxide in control system's exhaust. The concentration of total reduced sulfur compounds in the collected landfill gas shall not exceed ~~1300~~ 560 ppmv (dry). In order to demonstrate compliance with this part, the owner/operator shall measure the hydrogen sulfide content in collected landfill gas on a quarterly basis using a draeger tube. Compliance with the total sulfur limit is assumed if the hydrogen sulfide content is found to be equal to or less than ~~1000~~ 504 ppmv. The landfill gas sample shall be taken from the main landfill gas header. The owner/operator shall follow the manufacturer's recommended procedures for using the draeger tube and interpreting the results. The owner/operator shall conduct the first draeger tube test no later than 3 months after the issue date of the MFR Permit and quarterly thereafter. (basis: Regulation 9-1-302, voluntary limit on SO2 PTE to avoid public notice, Regulation 2-2-405)

11. In order to demonstrate compliance with Regulation 8, Rule 34, Sections 301.3 and 412 and these conditions, the owner/operator shall ensure that a District approved source test is conducted annually

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on both of the Landfill Gas Flares (A-2 and A-4). The annual source test shall determine the following:

a. landfill gas flow rate to ~~the~~ each flare (dry basis);
b. concentrations (dry basis) of carbon dioxide (CO2), nitrogen (N2), oxygen (O2), methane (CH4), and total non-methane organic compounds (NMOC) in the landfill gas;
c. stack gas flow rate from ~~the~~ each flare (dry basis);
d. concentrations (dry basis) of CH4, NMOC, CO, SO_2, and O_2 in the ~~flare~~ stack gas for each flare and NOx in the stack gas for A-4;
e. the NMOC and methane destruction ~~efficiency~~ efficiencies achieved by ~~the~~ each flare; and
f. the average combustion temperature ~~in~~ for each ~~the~~ flare during the test period.

Annual source tests shall be conducted no earlier than 9 months and no later than 12 months after the previous source test on each flare. The annual flare source test is not required for a flare that has not been operated since the last District-approved source test. The Source Test Section of the District shall be contacted to obtain approval of the source test procedures at least 14 days in advance of each source test. The Source Test Section shall be notified of the scheduled test date at least 7 days in advance of each source test. The source test report shall be submitted to the Compliance and Enforcement Division and to the Source Test Section within 60 days of the test date.
(basis: Regulations 2-1-301, 8-34-301.3, 8-34-412, and 9-1-302)

13. In order to demonstrate compliance with the above conditions, the owner/operator shall maintain the following records in a District approved logbook.

.....

h. Record the operating times and the landfill gas flow rate to the A-2 Landfill Gas Flare and to the A-4 Landfill Gas Flare on a daily basis. Summarize these records on a monthly basis. Calculate and record the individual heat inputs to A-2 and to A-4 and the combined heat input for both flares, pursuant to ~~p~~Part 8.
i. Maintain continuous records of the combustion zone temperature for the A-2 and A-4 Landfill Gas Flares during all hours of operation.
j. Maintain records of all test dates and test results performed to ~~maintain~~ demonstrate compliance with Parts 10, 11, and 12 above ~~or~~ and any applicable rule or regulation.
k. Maintain records of landfill gas condensate injection throughput and the duration of the injection on a daily basis.

All records shall be maintained on site or shall be made readily available to District staff upon request for a period of at least 5 years from the date of entry. These record keeping requirements do not replace the record keeping requirements contained in any applicable rules or regulations.
(basis: Cumulative Increase, 2-1-301, 2-6-501, 6-1-301, 6-1-305, 8-2-301, 8-34-301, 8-34-304, 8-34-501, and 9-1-302)

17. The owner/operator shall ensure that the emissions of Nitrogen Oxides (NOx) from the Flare A-4 do not exceed 0.06 pounds per million BTU (calculated as NO_2). (basis: RACT)

18. The owner/operator shall ensure that the emissions of Carbon Monoxide (CO) from the Flare A-4 do not exceed 0.2 pounds per million BTU. (basis: RACT)

19. The owner/operator shall ensure that the combined emissions of Carbon Monoxide (CO) from the Flares, A-2 and A-4, do not exceed 164,500 pounds (82.25 tons) in any 12-month period. The owner/operator shall demonstrate compliance with this limit by calculating CO emissions each month

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for the previous 12-month period, based on the fuel usage to the flares and the CO emission rate from the most recent source test data from Parts 11 and 20 of this condition. (basis: voluntary limit to avoid public notice, Regulation 2-2-405)

20. To demonstrate compliance with Regulation 8, Rule 34, Sections 301.3 and 412, and the above requirements, the owner/operator shall ensure that a District approved source test is conducted on the Landfill Gas Flare, A-4, within 90 days of startup, followed by annual source tests thereafter as detailed in Part 11. The facility shall obtain prior approval from the Source Test Manager for the location of sampling ports and source testing procedures. The startup and annual source tests shall measure the data specified in Parts 11, 17, 18, and 19 above. The Source Test Section of the District shall be contacted to obtain approval of the source test procedures at least 14 days in advance of each source test. The Source Test Section shall be notified of the scheduled test date at least 7 days in advance of each source test. The source test report shall be submitted to the Compliance and Enforcement Division and to the Source Test Section within 60 days of the test date. (basis: Regulation 8-34-301, RACT, TBACT)

Recommendations
I recommend issuing an Authority to Construct the following abatement device:

A-4, Landfill Gas Flare, 2400 scfm landfill gas capacity, 72 MMBtu/hr, maximum

Tamiko Endow
Air Quality Engineer

Date

Engineering Evaluation Report

Potrero Hills Landfill, P#2039
3675 Potrero Hills Lane, Suisun City
Application #26957

Background
Potrero Hills Landfill (PHL) is an active municipal solid waste landfill, which is located in Suisun City and currently owned by Waste Connections, Inc.

PHL has applied for a change of conditions to allow certain wells to be operated at temperatures higher than the limit defined in Regulation 8, Rule 34. PHL has provided data to show that the higher operating temperatures at these wells does not inhibit anaerobic decomposition within the landfill and is not indicative of any impending or existing subsurface fire.

S-1 Potrero Hills MSW Landfill – Waste Decomposition Process; equipped with Landfill Gas Collection System and Leachate Collection and Recovery System – Requested Higher Operating Temperature for 27 wells

Emission Calculations
Landfills are sources of air emissions, including particulate matter from the handling of waste, excavation and compaction activities, as well as vehicular traffic across paved and unpaved roads, and emissions from the combustion of fuel in delivery vehicles and onsite mobile construction equipment. The decomposition of waste in the landfill generates emissions of methane and volatile organic compounds, which are emitted in the form of fugitive leaks (uncollected landfill gas) at the landfill surface and as the small fraction which is collected but passes through the landfill gas flare, uncombusted.

All of these emissions are attributed to the landfill and are a function of the permitted capacity of the landfill. Under this application, the Applicant has not proposed any modification to the landfill waste capacity, which would affect these emissions. The elevated operating temperature proposed will not result in additional gas generation or any change in the landfill gas production rate. Since the proposed operating temperatures will not result in an emission increase at the landfill, this alternate operating temperature is therefore not a "modification" of the landfill source as defined in Regulation 1-217:

> *"Any physical change in existing plant or change in the method of operation which results or may result in either an increase in emission of any air pollutant subject to District control, or the emission of any such air pollutant not previously emitted. ...."*

Cumulative Increase
There is no change in emissions associated with the requested higher operating temperature limits, therefore there will be no change to the cumulative emission increases for this facility as a result of this application.

Compliance Determination
Regulation 1, "General Provisions and Definitions"
Regulation 2, Rule 1, "Permits – General Requirements" - Public Notice Requirements
Regulation 2, Rule 2, "Permits – New Source Review" - Best Available Control Technology (BACT) Requirements, Emission Offsets and Prevention of Significant Deterioration (PSD)
Regulation 2, Rule 5, "Permits – New Source Review of Toxic Air Contaminants" - Health Risk Assessment Requirements
Regulation 6, Rule 1, "Particulate Matter – General Requirements"
Regulation 9, Rule 2, "Inorganic Gaseous Pollutants – Hydrogen Sulfide"
As there is no increase in emissions associated with the proposed higher temperature limit, this alternate limit is not expected to affect the facility's compliance status with respect to the emission limits and operating requirements in Regulation 1 (public nuisance), Regulation 6, Rule 1 (particulate and visible emissions), and Regulation 9, Rule 2 (hydrogen sulfide). Since the public notification requirements of Regulation 2, Rule 1, Section 412, BACT, PSD, and emission offset requirements in Regulation 2, Rule 2, as well as the health risk assessment requirements in Regulation 2, Rule 5 are triggered based on emission increases, these requirements do not apply.

Regulation 2, Rule 1, California Environmental Quality Act (CEQA) Requirements
The proposed alternate temperature limit will require a change to the permit conditions for the permitted landfill source, S-1, but will not involve an increase emissions. Therefore, this request is exempt from CEQA review by the express terms of CEQA and District Regulation 2-1-312.1.

Regulation 2, Rule 6, "Major Facility Review"
40 CFR Part 70, State Operating Permit Programs (Title V)
The Title V federal permitting requirements of 40 CFR Part 70 have been codified and are enforced through District Regulation 2, Rule 6. This facility is a designated facility and is therefore subject to Title V and Regulation 2, Rule 6. As a designated facility, this facility was required to obtain a Title V Federal Operating Permit.

The facility was issued the initial Title V permit on August 15, 2003 and the permit was renewed on March 12, 2013. The proposed alternate temperature limit is considered a minor revision, which will be updated to the Major Facility Review/Title V permit under Application #26958.

Regulation 3, Fees
The facility has paid the application fees billed under Invoice 3NE60.

Regulation 8, Rule 34, "Organic Compounds – Solid Waste Disposal Sites"
40 CFR Part 60, Subpart Cc, Standards of Performance for New Stationary Sources (NSPS) – Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills
40 CFR Part 60, Subpart Cc, Emission Guidelines (EG) for Municipal Solid Waste (MSW) Landfills applies to MSW landfills that have not undergone a design capacity modification since May 30, 1991, but that have accepted waste since November 8, 1987. The District's Regulation 8, Rule 34 has been approved in the state plan for implementation of the EG requirements. This facility is currently subject to the EG, which is enforced through compliance with District Regulation 8, Rule 34.

Regulation 8, Rule 34 contains operational requirements that apply to landfill gas collection systems, as well as requirements that apply to landfill operations and landfill gas emission control systems. The gas collection system wellhead requirements in Section 8-34-305, include a requirement for operating under vacuum, at a temperature less than 55 degreesC (131 degreesF), and either nitrogen concentration less

than 20% by volume or oxygen less than 5% by volume, unless the landfill operator has received permit conditions containing alternative operating levels.

The temperature limit is intended to assure that there is no subsurface oxidation occurring and to ensure that the operating temperatures remain in a range which does not kill methanogens and thereby impact anaerobic decomposition. PHL submitted temperature, CO, and methane data for 27 wells to support their request for a higher temperature limit of 145 degreesF. For 21 of the 27 wells, the data shows a distinct pattern of elevated temperatures. Except for 2 of these wells, the CO concentrations were less than 100 ppmv, which indicates that oxidation is not occurring. For Wells EW-11-01 and EW-11-02, high spikes in CO concentrations were measured in July and August of 2014, however the CO concentrations have since declined to normal levels even though the temperatures have remained elevated.

The methane concentrations for all of the wells, except one, were in a normal range between 40 and 60%, showing the higher temperatures are not inhibiting anaerobic decomposition. The one well LW-11-03 with lower methane concentration has not been showing elevated temperatures for the past 4 months, so this well will be excluded from the proposed higher operating temperature limit. Wells EW-06-04S, EW-07-21S, EW-11-04R, and EW-13-01 will also be excluded as they are not exhibiting high operating temperatures. Well EW-11-04R is the re-drilled replacement well for Well EW-11-04, and both were included in the requested 27 wells, so excluding the replaced well and 5 others, approval of the requested operating temperature limit of 145 degreesF is recommended for the remaining 21 wells.

40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS):
Subpart A, Standards of Performance for New Stationary Sources – General Provisions
Subpart Cc, Standards of Performance for New Stationary Sources – Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills
Subpart WWW, Standards of Performance for New Stationary Sources –Municipal Solid Waste Landfills

40 CFR Part 60, Subpart Cc, Emission Guidelines (EG) for Municipal Solid Waste (MSW) Landfills applies to MSW landfills that were constructed prior to May 30, 1991, have not gone through reconstruction or modification since that date, and have accepted waste since November 8, 1987. For the purposes of Subpart Cc, modification is defined in Subpart A as:

> *"any physical change in, or change in the method of operation of, an existing facility with increases the amount of any air pollutant (to which a standard applies) emitted into the atmosphere by that facility or which results in the emission of any air pollutant (to which a standard applies) into the atmosphere not previously emitted."*

Subpart WWW applies to municipal solid waste landfills that commenced construction, reconstruction, or modification or began accepting waste on or after May 30, 1991 and that have a design capacity of 2.5 million megagrams or more. For the purposes of Subpart WWW, modification is defined as:

> *"an increase in the permitted volume design capacity of the landfill by either horizontal or vertical expansion based on its permitted design capacity as of May 30, 1991. Modification does not occur until the owner or operator commences construction on the horizontal or vertical expansion."*

This facility began accepting waste in July 1986. No design capacity modification was approved by the District since the original permit was issued to this site in 1986, and since the landfill has not been reconstructed or modified on or after 1991, Subpart WWW does not apply at this time. Note there is a proposed expansion of this landfill that, if permitted, will trigger the requirements of Subpart WWW, however approval and implementation of the proposed expansion has not yet occurred.

Therefore, the facility is currently subject to the EG requirements. The District's Regulation 8, Rule 34 has been approved in the state plan for implementation of the EG requirements (Rule 8-34 requirements discussed above). The proposed alternate temperature limit proposed under this application will not affect the permitted design capacity of the landfill, therefore this operation will not subject the facility to Subpart WWW requirements.

40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories/Maximum Achievable Control Technology (MACT) Standards:
Subpart A, National Emission Standards for Hazardous Air Pollutants – General Provisions
Subpart AAAA, National Emission Standards for Hazardous Air Pollutants – Municipal Solid Waste Landfills
40 CFR Part 63, Subpart AAAA applies to existing and new municipal solid waste landfills that have accepted waste since November 8, 1987 or have additional capacity to accept waste and that meets any of the following:

- The landfill is a major source as defined in 40 CFR Part 63.2 of Subpart A (has the potential to emit, considering controls, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants);
- The landfill is co-located with a major source as defined in 40 CFR Part 63.2 of Subpart A; or
- The landfill is area source with a design capacity of 2.5 million megagrams and 2.5 million cubic meters or more and which has estimated uncontrolled non-methane organic compound emissions of 50 megagrams or more, as calculated according to Part 60, Subpart WWW.

The current design capacity of this landfill is 21.8 million cubic yards, previously limited to 13.1 million tons of waste, which is in the process of being revised to 16.35 million tons of waste under Application #24634, based on PHL's revised compaction density figures. This is equivalent to a design capacity of 16.7 million cubic meters and 14.8 million megagrams, which meets the applicability threshold for design capacity. Based on this, the projected maximum NMOC generation rate of the landfill at maximum capacity is exceeds 50 Mg per year, therefore, the landfill is currently subject to this regulation.

This rule requires compliance with the NSPS, Subpart WWW or Subpart Cc and compliance with Section 63.1960 through 63.1985 and the specified general provisions. Section 63.1960 requires compliance demonstrations through performance testing, monitoring, or other credible evidence as required by the NSPS or implementing District regulation, as well as development of a startup, shutdown, and malfunction (SSM) plan in accordance with Section 63.6(e)(3). Section 63.1980(a) requires submittal of a compliance report every 6 months, rather than just annually.

The following sections of the general provisions also apply to the landfills subject to this subpart: Sections 63.1(a), (b), and (e); 63.2; 63.4; 63.5(b); 63.6(e) operation, maintenance, and SSM plan requirements and (f) compliance with nonopacity standards; 63.10(b)(2)(i)-(b)(2)(v) SSM recordkeeping requirements and (d)(5) SSM reports; 63.12(a); 63.15.

The alternate temperature limit wells will not affect the facility's requirement to develop and implement as SSM plan under this rule.

40 CFR Part 70, State Operating Permit Programs (Title V):
This facility is a designated facility, as it is currently subject to the requirements of 40 CFR Part 70. As a designated facility, this facility is subject to the requirements of 40 CFR Part 70. The requirements of this program have been codified in District Regulation 2, Rule 6, discussed above.

California Health and Safety Code Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4, Regulations to Achieve Greenhouse Gas Emission Reductions, Subarticle 6, Methane Emissions from Municipal Solid Waste Landfills, Sections 95460-95476
This state regulation was adopted to reduce methane emissions from municipal solid waste landfills and applies to all MSW landfills that received waste after January 1, 1977. The Potrero Hills Landfill is active and currently accepting waste and is therefore subject to this regulation.

Section 95454 specifies requirements for the gas collection and control system. Section 95464(b)(1)(B) requires the control system be operated such that there are no landfill gas leaks that exceed 500 ppmv, measured as methane, at any component containing landfill gas under positive pressure. Section 95469(b)(3) requires quarterly leak monitoring to demonstrate compliance with this limit and repair within 10 days. Section 95470(a) specifies the recordkeeping requirements and Sections 95470(b)(3) and (4) specify the annual reporting requirements. Test methods and procedures are contained in Section 95471.

The alternate temperature limit as proposed under this application will not affect or change the facility's obligations under this rule.

Permit Condition #1948
A new part 21 will be added to the existing permit condition to allow the higher operating temperature for the specified wells, as shown below.

Permit Conditions for
S-1 Potrero Hills MSW Landfill – Waste Decomposition Process; Equipped with Gas Collection System and Leachate Collection and Recovery System; abated by A-2 Landfill Gas Flare, 45 MMBtu/hr maximum and A-4, Landfill Gas Flare, 72 MMBtu/hr maximum;
S-202 Potrero Hills MSW Landfill – Waste and Cover Material Dumping;
S-203 Potrero Hills MSW Landfill – Excavating, Bulldozing, and Compacting Activities

21. The gas collection system operating requirements listed below shall replace the well head requirements identified in Regulation 8-34-305.2 through 8-34-305.4 for the specified wells. All landfill gas collection wells remain subject to the Regulation 8-34-305.1 requirement to maintain vacuum at each well head.
    a. The temperature limit in Regulation 8-34-305.2 shall not apply to the following wells, provided that the landfill gas temperature at each well does not exceed 145 degrees F (63 degrees C) and either the nitrogen level is less than 10% by volume or the oxygen level is less than 5% by volume:

EW-06-04R	EW-09-04	EW-14-07
EW-06-05R	EW-11-01	EW-14-25
EW-06-09	EW-11-02	EW-14-28
EW-07-04R	EW-11-03	EW-14-29
EW-07-21R	EW-11-05	EW-1001
EW-09-01	EW-11-06	LW-11-01
EW-09-03	EW-13-02	LW-11-02

b. The owner/operator shall demonstrate compliance with the alternative wellhead landfill gas temperature and gas composition specified in Part 21(a) above by monitoring the temperature and nitrogen concentration or oxygen concentration at each wellhead on a monthly basis, in accordance with Regulation 8-37-505.

c. All records to demonstrate compliance with Part 21(a) and all applicable sections of Regulation 8, Rule 34 shall be recorded in a District-approved log and made available to District staff upon request.

d. If the temperatures measured at any of the wells listed in Part 21(a) exceed 131 degrees F, the owner/operator shall perform monthly CO monitoring using Draeger tubes, or a District/EPA-approved monitoring device.

   i. If the measured field CO readings are less than 200 ppmv, the well may continue to operate up to temperature less than 145 degrees F;

   ii. If the measured field CO readings are equal to or greater than 200 ppmv and less than or equal to 500 ppmv, the well shall be monitored on a weekly basis to verify that there is no subsurface oxidation occurring. Once the CO levels decrease to below 200 ppmv, the monthly monitoring schedule shall resume;

   iii. If the measured field CO readings are greater than 500 ppmv, the well shall be temporarily closed and documented and a sample shall be obtained within one week of the exceedance and analyzed for CO using EPA Method D-1946. If the results confirm the readings are in excess of 500 ppmv, the well shall remain closed and offline and the owner/operator shall notify the District within 24 hours of the exceedance and shall take all measures necessary to investigate the possibility of subsurface fires. If a fire is suspected, the owner/operator shall employ all means as appropriate to extinguish the fire, repair the well, and bring the well back into service.

(Basis: Regulation 8-34-305, 8-34-505)

Recommendations

I recommend issuing a Change of Conditions to the following source:

S-1 Potrero Hills MSW Landfill – Waste Decomposition Process; Equipped with Gas Collection System and Leachate Collection and Recovery System,
– Higher Operating Temperature for 21 wells
Abated by A-2 Landfill Gas Flare, 45 MMBtu/hr, maximum, and A-4 Landfill Gas Flare, 72 MMBtu/hr, maximum

Tamiko Endow
Air Quality Engineer

Date

APPENDIX B

GLOSSARY

ACT
Federal Clean Air Act

APCO
Air Pollution Control Officer

ARB
Air Resources Board

ATCM
Airborne Toxic Control Measure

BAAQMD
Bay Area Air Quality Management District

BACT
Best Available Control Technology

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

CAA
The federal Clean Air Act

CAAQS
California Ambient Air Quality Standards

CARB
California Air Resources Board (same as ARB)

CCR
The California Code of Regulations

CEM
A "continuous emission monitor" is a monitoring device that provides a continuous direct measurement of some pollutant (e.g. NOx concentration) in an exhaust stream.

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.

CI
Compression Ignition

CO
Carbon Monoxide

CO_2
Carbon Dioxide

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

District
The Bay Area Air Quality Management District

E6, E9, E12
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, 4.53E6 equals (4.53) x (106) = (4.53) x (10x10x10x10x10x10) = 4,530,000. Scientific notation is used to express large or small numbers without writing out long strings of zeros.

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 (HAP), 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.

FR
Federal Register

Grains
1/7000 of a pound

GRS
Gas Recovery Systems, Inc.

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.

H2S
Hydrogen Sulfide

H&SC
Health and Safety Code

Hg
Mercury

LFG
Landfill gas

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

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
Minimum

MOP
The District's Manual of Procedures.

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)

NO2
Nitrogen Dioxide

NOx
Oxides of nitrogen.

NSPS
Standards of Performance for New Stationary Sources are federal standards for emissions from new stationary sources that are 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 is 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
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, 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
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 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.

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

TAC
Toxic Air Contaminant

TBACT
Best Available Control Technology for Toxics

THC
Total Hydrocarbons include all non-methane hydrocarbons plus methane and are the same as TOC.

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 include all non-methane organic compounds plus methane and are the same as THC.

TRMP
Toxic Risk Management Policy. The District's TRMP was replaced by Regulation 2, Rule 5 in 2005.

TRS
Total Reduced Sulfur, which 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

Symbols:

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

Units of Measure:

atm	=	atmospheres
bhp	=	brake-horsepower
btu or BTU	=	British Thermal Unit
^{o}C	=	degrees Centigrade
cfm	=	cubic feet per minute
dscf	=	dry standard cubic feet
^{o}F	=	degrees Fahrenheit
ft3	=	cubic feet
g	=	grams
gal	=	gallon
gpm	=	gallons per minute
gr	=	grains
hp	=	horsepower
hr	=	hour
in	=	inches
kW	=	kilowatt
lb	=	pound
max	=	maximum
m^2	=	square meter
m^3	=	cubic meter
min	=	minute
mm	=	millimeter
MM	=	million
MMBtu	=	million Btu
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
scf	=	standard cubic feet
scfm	=	standard cubic feet per minute
sdcf	=	standard dry cubic feet
sdcfm	=	standard dry cubic feet per minute
yd3	=	cubic yards
yr	=	year