

**Bay Area Air Quality Management District**

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**Permit Evaluation  
and  
Statement of Basis  
for  
RENEWAL of**

**MAJOR FACILITY REVIEW PERMIT**

for  
**City of Palo Alto Landfill  
Facility #A2721**

**Facility Address:**  
2380 Embarcadero Road  
Palo Alto, CA 94303

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Application: 18263

## TABLE OF CONTENTS

A. BACKGROUND.....	3
B. FACILITY DESCRIPTION .....	4
C. PERMIT CONTENT.....	5
I.    STANDARD CONDITIONS .....	6
II.   EQUIPMENT .....	6
III.  GENERALLY APPLICABLE REQUIREMENTS .....	9
IV.  SOURCE-SPECIFIC APPLICABLE REQUIREMENTS .....	10
V.   SCHEDULE OF COMPLIANCE .....	14
VI.  PERMIT CONDITIONS .....	14
VII. APPLICABLE LIMITS AND COMPLIANCE MONITORING REQUIREMENTS .....	17
VIII. TEST METHODS .....	23
IX.  PERMIT SHIELD .....	24
X.   REVISION HISTORY .....	24
XI.  GLOSSARY .....	24
XII. APPLICABLE STATE IMPLEMENTATION PLAN.....	25
D. ALTERNATE OPERATING SCENARIOS.....	25
E. COMPLIANCE STATUS .....	25
F. DIFFERENCES BETWEEN APPLICATION AND PROPOSED PERMIT.....	26
APPENDIX A BAAQMD COMPLIANCE REPORT .....	27
APPENDIX B GLOSSARY .....	31

**Title V Statement of Basis  
City of Palo Alto Landfill, Plant 2721  
Application # 18263**

**A. BACKGROUND**

This facility is subject to the Operating Permit requirements of Title V of the federal Clean Air Act, Part 70 of Title 40 of the Code of Federal Regulations (CFR), and BAAQMD Regulation 2, Rule 6, Major Facility Review because it is a designated facility as defined by 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 that is subject to this part and that has a design capacity of greater than or equal to 2.5 million megagrams and 2.5 million cubic meters to obtain an operating permit pursuant to Part 70. As discussed in more detail below in Section C.IV. of this report, this facility is subject to these emission guidelines and meets the designated facility criteria listed in 40 CFR § 60.32c(c).

Major Facility Operating Permits (Title V permits) must meet specifications contained in 40 CFR Part 70 as contained in BAAQMD Regulation 2, Rule 6, 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 A2721.

This facility received its initial Title V permit on December 4, 2003. A minor permit revision was issued on April 9, 2004 under A/N 2230 and on October 13, 2004 under A/N 9783. Additionally, administrative amendments were issued on August 2, 2006 for A/N 14875 and on August 28, 2007 for A/N 15698. This application (A/N 18263) is for a Title V permit renewal. Although the current permit expired on November 30, 2008, it continues in force until the District takes final action on the permit renewal.

Pursuant to Regulation 2, Rule 6, section 416, the District has reviewed the terms and conditions of this Major Facility Review permit and determined that they are still valid and correct. This review included an analysis of all applicability determinations for all sources, including those that have been modified or permitted since the issuance of the initial Major Facility Review

Permit. The review also included an assessment of the sufficiency of all monitoring for determination of compliance with applicable requirements. The statements of basis for permit revisions that have occurred since the initial Major Facility Review permit was issued are hereby incorporated by reference and are available upon request. The proposed permit shows all changes to the permit in strikeout/underline format. These changes are discussed in this Statement of Basis.

## **B. FACILITY DESCRIPTION**

The City of Palo Alto owns and operates the Palo Alto Landfill Facility located at Byxbee Park adjacent to San Francisco Bay marshland and the Palo Alto Flood Basin. The site includes the following permitted equipment: S-1 Palo Alto Landfill with Gas Collection System abated by A-3 Landfill Gas Flare, S-5 Wood Grinder and S-7 Trommel Screen abated by A-5 Water Sprays, S-6 Portable Diesel Engine (powering S-5), and S-9 Portable Diesel Engine abated with a DPF (powering S-7). In addition, this site includes a composting operation, which will be incorporated into the Title V permit in a separate revision application.

The Palo Alto Landfill is now an inactive Class III Solid Waste Disposal Site. The site began accepting waste for open burning operations in the 1930s. Beginning in 1954, open burning ceased and landfilling began. Much of the older landfill areas were filled in marsh areas or the bay to extend the bay front land. After 1974, refuse was placed on top of existing refuse and raised the landfill height to 30 to 60 feet above grade. The refuse footprint occupies about 126 acres of the 136-acre disposal site. The total refuse depth varies down to about 75 feet. The maximum design capacity of the Palo Alto Landfill is about 7,759,000 yd<sup>3</sup> (total of all materials in the landfill) and 5,830,000 tons of solid waste. The landfill contained 4,720,000 tons of solid waste as of December 31, 2010 and stopped receiving municipal solid waste in July 2011. The final cumulative amount of solid waste in the landfill is estimated to be 4.74 million tons. All of this waste is assumed to be decomposable materials. The facility is still accepting green waste, which will be processed, composted, mixed with clean soil, and used as final cover and landscaping material at the landfill.

The landfill is equipped with an active gas collection system. The landfill gas can be vented to an enclosed flare (A-3, 30 MM BTU/hour capacity) or to sludge incinerators (S-1 and S-2) that are operated by the Palo Alto Regional Water Quality Control Plant #A0617. During 2010, the City of Palo Alto collected an average of 254 cfm of landfill gas. About 91 cfm was burned in the sludge incinerators, and the remaining 163 cfm was burned in the flare.

Since the Title V permit for this facility was first issued, the permit has been modified to include permit condition revisions, to reflect the replacement of sources, and to correct of typographical errors. Since the last administrative amendment was issued in August 2007, source S-8 Diesel Engine Driver for S-7 was removed in August 2009 and replaced with S-9 Portable Diesel Engine. In addition, it has been determined that S-6 is also a portable diesel engine. The District has determined that these portable diesel engines (sources S-6 and S-9) are non-road engines that

are not subject to Title V permitting, because BAAQMD Regulation 2-6-114 exempts non-road engines from major facility review.

The permit changes described above and the normal aging of the landfill have resulted in emission changes for the site, which are summarized below.

Table 1. Emission Changes for Site # A2721

	2003 Actual Emissions	2010 Actual Emissions	Emission Changes
	tons/year	tons/year	tons/year
PM <sub>10</sub>	2.7	1.0	-1.7
POC	16.7	16.8	0.1
NO <sub>x</sub>	6.5	2.2	-4.3
SO <sub>2</sub>	0.6	0.4	-0.2
CO	13.8	8.4	-5.4

The amount of waste received annually at the landfill has dropped significantly since the initial Title V permit was issued in 2003. This reduction in waste received has resulted in particulate emission reductions. The amount of landfill gas collected from the landfill has also declined considerably from 1004 scfm in 2003 to 254 scfm in 2010. In 2003, about 75% of the collected landfill gas was diverted off-site and burned as fuel in IC engines at WPI Packaging and Maintenance, Inc. (Site # A9794). This off-site operation was shut down in 2005. In 2008, the landfill began diverting a much smaller amount of landfill gas off-site to sludge incinerators at the Palo Alto Regional Water Quality Control Plant (Plant # 617). Overall, on-site landfill gas combustion emissions have decreased for this site. For Source S-5 Wood Grinder and S-6 Portable Diesel Engine that drives S-5, emissions have decreased, because wood waste received at this facility has diminished from 8000 tons/yr to 5910 tons/yr of wood waste and diesel fuel usage at S-6 declined from 15,400 gallons/year to 3,400 gallons/year. For S-7 the Trommel Screen, throughput increased from 8000 tons/yr to 12865 tons/yr. This resulted in PM emissions increasing for this source. For the engine powering S-7, diesel fuel usage increased from 1,500 gallons/year to 2,500 gallons/year. Initially, S-8 was the diesel engine that powered S-7. However, S-8 has been removed from operation and replaced with S-9. S-9 is a much cleaner engine than S-8. Even though fuel usage has increased at S-9 compared to 2003 usage at S-8, emissions have decreased.

### 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 Section I “Standard Conditions”, Section III “Generally Applicable Requirements”, and Section XI “Glossary” are not considered part of the Title V permit renewal process, but may be made at the discretion of the District during the term of this permit.

Changes to Permit, Title Page:

- The Responsible Official name was changed.
- The Facility Contact information was corrected.
- The BAAQMD Contact information was corrected.

**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 Permit, Section I:

- The dates of adoption and approval of rules in Standard Condition 1.A have been updated. In addition Regulation 2, Rule 5 and the SIP version of Regulation 2, Rule 6 have been added.
- The bases of Standard Condition I.B.1, I.B.11, I.E.2, and I.F were corrected.
- The following language was added to Standard Condition I.B.1: "If the permit renewal has not been issued by [the permit expiration date], but a complete application for renewal has been submitted in accordance with the above deadlines, the existing permit will continue in force until the District takes final action on the renewal application." This is standard language implements the "application shield" pursuant to BAAQMD Regulation 2-6-407.
- The following language was added as Standard Condition I.B.12: "The permit holder is responsible for compliance, and certification of compliance, with all conditions of the permit, regardless whether it acts through employees, agents, contractors, or subcontractors. (Regulation 2-6-307)." The purpose is to reiterate that the Permit Holder is responsible for ensuring that all activities at the facility comply with all applicable requirements.
- Editorial corrections were made to Standard Conditions I.F and I.G.

**II. Equipment**

This section of the permit lists all permitted or significant sources. Each source is identified by an S and a number (e.g., S24). Permitted sources are those sources that require a BAAQMD operating permit pursuant to BAAQMD Rule 2-1-302. 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). This facility has no unpermitted significant sources.

All abatement (control) devices that control permitted or significant sources are listed in Table II-B. Each abatement device whose primary function is to reduce emissions is identified by an A and a number (e.g., A-24). If a source is also an abatement device, such as when an engine controls VOC emissions, it will be listed in the abatement device table but will have an "S" number. An abatement device may also be a source (such as a thermal oxidizer that burns fuel) of secondary emissions. If the primary function of a device is to control emissions, it is considered an abatement (or "A") device. If the primary function of a device is a non-control function, the device is considered to be a source (or "S").

The District is adding an exempt equipment list to this section to clarify the status of various sources and operations. Table II-C will identify any equipment or operations that are located at this facility but that are exempt from Title V permitting requirements. Typically, this table will include equipment or operations that are exempt from the District requirement to have a permit to operate pursuant to BAAQMD Regulation 2, Rule 1, Sections 103, 105, or 113-128 and that are not significant sources. However, it may also include equipment or operations that are required to have a District permit to operate but that are exempt from BAAQMD Regulation 2, Rule 6, Major Facility Review pursuant to Regulation 2, Rule 6, Sections 110-114. The applicable exemption will be identified in Table II-C. Although equipment listed in Table II-C is not required to be identified in the Title V permit, this exempt equipment must still comply with any applicable District, state, or federal regulations.

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.

Following is a summary of the differences in the equipment list between the time that the Title V permit was last revised (August 2007) and the permit proposal date. Source S-6 is a portable diesel engine that was previously listed in Table II-A. S-6 has been removed from Table II-A and inserted in Table II-C as it is exempt from Title V permitting per Regulation 2-6-114. Source S-8 in Table II-A has been deleted as the source was removed from service. Source S-9 Portable Diesel Engine has been added to Table II-C. An abatement device for this engine, A-9 Diesel PM Filter, has also been added to Table II-C. The reasons for each of these equipment changes are summarized above in Section B and explained in detail below.

Changes to Permit, Section II:

- One source, S-8, was shut down and removed from the site in August 2009. Therefore, S-8 has been deleted from Table II-A.
- The District is adding Section II.C, Exempt Equipment List, to clarify the status of non-road engines and other types of sources or operations that are exempt from Title V permitting requirements. Sources S-6 and S-9 are both portable diesel engines and are non-road engines that are exempt from major facility review pursuant to BAAQMD Regulation 2-6-114 Exemption, Non-Road Engines, which states: “Engines as defined by 40 CFR Part 89 are exempt from this regulation.” From 40 CFR Part 89.2, a nonroad engine is defined below:

*Nonroad engine* means:

- (1) Except as discussed in paragraph (2) of this definition, a nonroad engine is any internal combustion engine:
  - (i) In or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers); or
  - (ii) In or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or
  - (iii) That, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform.
- (2) An internal combustion engine is not a nonroad engine if:
  - (i) the engine is used to propel a motor vehicle or a vehicle used solely for competition, or is subject to standards promulgated under section 202 of the Act; or
  - (ii) the engine is regulated by a federal New Source Performance Standard promulgated under section 111 of the Act; or
  - (iii) the engine otherwise included in paragraph (1)(iii) of this definition remains or will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source. A location is any single site at a building, structure, facility, or installation. Any engine (or engines) that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e., at least two years) and that operates at that single location approximately three months (or more) each year. This paragraph does not apply to an engine after the engine is removed from the location.

Both sources S-6 and S-9 are Portable Diesel Engines. These engines are portable and move around from location to location within this facility. Source S-9 is abated by A-9 and this engine drives the trommel screen. Source S-6 drives the wood grinder known as S-5. In accordance with paragraph (1)(iii) above, such portable engines are nonroad engines unless paragraph (2) applies. While both S-6 and S-9 remains within the property boundaries of this facility for more than 12 consecutive months, they do not remain at any single site at a building, structure, or installation for more than 12 consecutive months. Since both S-6 and S-9 operate at multiple locations within this



facility, both S-6 and S-9 are portable, they meet the definition above of nonroad engine, and they qualify for the Regulation 2-6-114 exemption.

### **III. Generally Applicable Requirements**

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

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

#### Changes to Permit, Section III:

- The District is adding language to Section III to clarify that this section contains requirements that may apply to temporary sources. This provision allows contractors that have "portable" equipment permits that require them to comply with all applicable requirements to work at the facility on a temporary basis, even if the permit does not specifically list the temporary source. Examples are temporary sand-blasting, wood chipping, or soil-vapor extraction equipment.
- The District is adding EPA’s website address for the SIP standards to Section III.
- The dates of adoption or approval of the rules and their “federal enforceability” status in Table III have also been updated.
- For Table III, the District is amending dates of adoption or approval of the rules, correcting the "federal enforceability" status for these rules, and adding or deleting rules and standards to conform to current practice. The rules that are being amended, added, or removed are listed below:
  - Regulation 1, General Provisions and Definitions
  - BAAQMD Regulation 2, Rule 1, General Requirements
  - BAAQMD 2-1-429, Federal Emissions Statement
  - SIP Regulation 2, Rule 1, General Requirements
  - BAAQMD Regulation 2, Rule 5, New Source Review of Toxic Air Contaminants
  - BAAQMD Regulation 5, Open Burning
  - BAAQMD Regulation 6, Particulate Matter and Visible Emissions has been designated as SIP Regulation 6, since the rule has been renamed and renumbered as Regulation 6, Rule 1, Particulate Matter, General Provisions
  - SIP Regulation 6, Particulate Matter and Visible Emissions
  - Regulation 8, Rule 2, Miscellaneous Operations
  - SIP Regulation 8, Rule 2, Organic Compounds - Miscellaneous Operations
  - BAAQMD Regulation 8, Rule 3, Organic Compounds- Architectural Coatings

- SIP Regulation 8, Rule 3, Organic Compounds- Architectural Coatings
- SIP Regulation 8, Rule 4, Organic Compounds – General Solvent and Surface Coating
- BAAQMD Regulation 8, Rule 15, Organic Compounds – Emulsified and Liquid Asphalts
- SIP Regulation 8, Rule 16, Organic Compounds – Solvent Cleaning Operations
- BAAQMD and SIP Regulation 8, Rule 40 Aeration of Contaminated Soil and Removal of Underground Storage Tanks
- BAAQMD and SIP Regulation 8, Rule 47, Air Stripping and Soil Vapor Extraction Operations
- BAAQMD and SIP Regulation 9, Rule 1, Inorganic Gaseous Pollutants – Sulfur Dioxide
- BAAQMD Regulation 9, Rule 2, Inorganic Gaseous Pollutants - Hydrogen Sulfide
- California Health and Safety Code Section 41750 et seq., Portable Equipment
- California Health and Safety Code Title 17, Section 93105 Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations
- California Code of Regulations, Title 17, Section 93106, Asbestos Airborne Toxic Control Measure for Asbestos Containing Serpentine
- California Health and Safety Code, Title 17, Section 93116, Airborne Toxic Control Measure for Diesel Particulate Matter from Portable Engines Rated at 50 Horsepower and Greater
- EPA Regulation 40 CFR Part 61, Subpart A, National Emission Standards for Hazardous Air Pollutants – General Provisions
- EPA Regulation 40 CFR Part 61, Subpart M, National Emission Standards for Hazardous Air Pollutants – National Emission Standard for Asbestos
- EPA Regulation 40 CFR Part 82, Protection of Stratospheric Ozone

#### **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)
- California requirements (such as ATCMs)
- 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:

##### Applicability of 40 CFR Part 64, Compliance Assurance Monitoring

Sources at Title V facilities may be subject to the Compliance Assurance Monitoring (CAM) requirements in 40 CFR, Part 64. The District has reviewed applicability of the Compliance Assurance Monitoring (CAM) requirements in 40 CFR, Part 64, for this facility. Three criteria specified in 40 CFR Part 64.2(a)(1-3) must be met for CAM to apply:

- The source must be subject to a federally enforceable emission limit for a regulated air pollutant, other than an exempt limitation.
- The source must use a control device to achieve compliance with this emission limitation.
- The pre-controlled emissions of the specific pollutant being controlled must be greater than the major facility emissions threshold for that pollutant.

S-1 City of Palo Alto Landfill, Equipped with Gas Collection System; abated by A-3 Landfill Gas Flare:

At this facility, the landfill waste decomposition process and its related emission control device (S-1 and A-3) are exempt from the first CAM applicability criteria, 40 CFR Part 64.2(a)(1), pursuant to 40 CFR Part 64.2(b)(1)(i), because the landfill and landfill gas control systems are subject to the NSPS and NESHAPS requirements (see discussion below), and these NSPS and NESHAP requirements were adopted pursuant to Sections 111 and 112 of the Clean Air Act after November 15, 1990. Since the applicable federal requirements contain adequate monitoring provisions, additional compliance monitoring is not necessary. Thus, S-1 does not meet the first CAM applicability criteria from 40 CFR Part 64.2(a)(1). Since the landfill and its related control devices do not satisfy all three CAM applicability criteria, CAM does not apply to S-1 and A-3.

S-5 Wood Grinder and S-7 Trommel Screen Abated by A-5 Water Sprays:

The S-5 Wood Grinder and S-7 Trommel Screen emit particulate matter that is controlled by the A-5 Water Sprays. Therefore, CAM is potentially applicable to these sources for PM<sub>10</sub> emissions. The uncontrolled PM<sub>10</sub> emission factors and uncontrolled PM<sub>10</sub> emissions from S-5 and S-7 are presented below.

	Post-Control Emission Factors	Water Spray Control Efficiency	Uncontrolled Emission Factors	Maximum Throughput Rate	Uncontrolled PM <sub>10</sub> Emissions
	lbs PM <sub>10</sub> /ton		lbs PM <sub>10</sub> /ton	tons/year	tons/year
S-5	1.20E-2	50%	2.4E-2	50,000	0.600
S-7	2.35E-3	50%	4.7E-3	50,000	0.118

Since uncontrolled PM<sub>10</sub> emissions from S-5 and S-7 are not expected to exceed the major facility threshold of 100 tons/year PM<sub>10</sub>, the third CAM applicability criteria is not met, and CAM does not apply to PM<sub>10</sub> emissions from S-5 or S-7.

EG, NSPS, and NESHAP Applicability for the City of Palo Alto Landfill (S-1):

The landfill at this site began accepting waste in 1954, and recently ceased accepting waste (July 28, 2011). The design capacities for S-1 are: 7,759,000 yd<sup>3</sup> (5.932 million m<sup>3</sup>) and 5,830,000 tons (5.289 million Mg). The facility has not undergone any design capacity modifications after May 30, 1991. The landfill currently contains 4.74 million tons (4.30 million Mg) of solid waste. The solid waste in this landfill is assumed to be 100% decomposable.

The landfill is subject to BAAQMD Regulation 8, Rule 34, because the landfill has accepted waste during the last 30 years and contains more than 1 million tons of decomposable materials. Note that BAAQMD Regulation 8, Rule 34 and SIP Regulation 8, Rule 34 are identical for all sections except for Section 122. BAAQMD 8-34-122.4 references compliance with the District's Toxic New Source Review requirements (which were first adopted in June 2005) as a condition of permanent collection system shutdown, while SIP 8-34-122.4 references the District's earlier Toxic Risk Management Policy. Section 122 does not apply to S-1. Therefore, the District has only included BAAQMD Regulation 8, Rule 34 in Table IV-A and not the identical and redundant SIP Regulation 8, Rule 34 requirements.

Since the landfill has accepted waste after November 8, 1987, it is potentially subject to either the Emission Guidelines (EG) for MSW Landfills (40 CFR Part 60, Subpart Cc) or the NSPS for MSW Landfills (40 CFR Part 60, Subpart WWW). To be subject to either the EG or NSPS, the landfill must have accepted waste after 11/8/87 and must have design capacities greater than both 2.5 million m<sup>3</sup> and greater than 2.5 million Mg. As indicated above, the City of Palo Alto Landfill meets all three of these criteria. For landfills that meet these waste acceptance and design capacity criteria, the landfill is subject to the Subpart WWW NSPS if it had a design capacity modification after 5/30/91, or the landfill is subject to the Subpart Cc EG if it did not have any design capacity modifications after this threshold date. Since the City of Palo Alto Landfill has had no design capacity modifications since 5/20/91, this landfill is subject to the Subpart Cc EG for MSW Landfills.

In the Bay Area, the District implements these federal EG through compliance with Regulation 8, Rule 34. All applicable requirements necessary to meet the EG requirements are contained within the District's Regulation 8, Rule 34 as amended on 10/6/1999, which has been approved into the state plan for these emission guidelines. Since the landfill has an uncontrolled NMOC

generation rate from the landfill of more than 50 Mg/year of non-methane organic compounds, this landfill is subject to the landfill gas collection and control requirements, monthly cover integrity and wellhead monitoring requirements, quarterly component and surface leak monitoring requirements, and annual source testing requirements. All applicable requirements are identified in Table IV-A.

District permit applications not included in this proposed permit

The District’s review of the following permit application was not completed in time to include the results in this Title V permit renewal. The Title V permit will be revised at a later date to incorporate this application following the procedures in Regulation 2, Rule 6, Major Facility Review.

Application #	Project Description
22543	Landfill Gas Flare (Replacement) for A-3

Changes to permit, Section IV:

- Section IV has been modified to say that SIP standards are now found on EPA's website and are not included as part of the permit.
- EPA’s web address for the District’s SIP-approved rules was added to this section.
- The dates of adoption or approval of the rules and their “federal enforceability” status have been updated.
- Table IV-C for S-6 was deleted, because this source is a portable engine and is exempt from Title V permitting per 2-6-114 (non-road engine).
- Table IV-D for S-7 was renumbered as Table IV-C.
- Table IV-E for S-8 was deleted, because this source has been removed from the site.
- SIP Regulation 1 sections have been added to Table IV-A where the version of the section in the BAAQMD Regulation is not federally enforceable.
- In Table IV-A the permit condition has been corrected due to the District’s adoption of BAAQMD Regulation 2, Rule 5 in 2005, which replaced the District’s Toxic Risk Management Policy.
- Regulation 6 citations in Tables IV and VII and in the bases of permit conditions have been updated to the new numbering and name (now Regulation 6, Rule 1.) A SIP citation of Regulation 6 has been added to Tables IV A-C, since the current District rule has been renumbered. Note that the standards are the same in both versions.
- In Table IV-A, the District clarified the applicability of Regulation 8, Rule 2 and added an expiration date for this rule due to the discontinuation of waste acceptance at S-1. This change is reflected in Condition #1028, Part 2. The District also added BAAQMD Regulations 8-34-506.1-3, which apply to closed landfills.
- In Table IV-A, the District corrected the descriptions of BAAQMD Regulations 8-34-305.1-4, 8-34-501.3, 8-34-507, 9-1-301, and 9-1-302.
- The District added various missing sections of 40 CFR, Part 60, Subparts A and Cc; 40 CFR Part 62, Subpart F; and 40 CFR, Part 63, Subparts A and AAAA, to Table IV-A.

## **V. Schedule of Compliance**

A schedule of compliance is required in all Title V permits pursuant to BAAQMD Regulation 2-6-409.10 which provides that a major facility review permit shall contain the following information and provisions:

“409.10 A schedule of compliance containing the following elements:

- 10.1 A statement that the facility shall continue to comply with all applicable requirements with which it is currently in compliance;
- 10.2 A statement that the facility shall meet all applicable requirements on a timely basis as requirements become effective during the permit term; and
- 10.3 If the facility is out of compliance with an applicable requirement at the time of issuance, revision, or reopening, the schedule of compliance shall contain a plan by which the facility will achieve compliance. The plan shall contain deadlines for each item in the plan. The schedule of compliance shall also contain a requirement for submission of progress reports by the facility at least every six months. The progress reports shall contain the dates by which each item in the plan was achieved and an explanation of why any dates in the schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.”

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

The BAAQMD Compliance and Enforcement Division has conducted a review of compliance over the past year and has determined the facility to be in compliance. Subsequent to this review, the District identified a composting operation at this site that requires a permit to operate. The District has notified the site of this permit requirement, and the facility is preparing a permit application for this source. The Compliance and Enforcement Division has noted no evidence of on-going non-compliance and no recurring pattern of violations that would warrant consideration of a compliance schedule. The compliance report is contained in Appendix A of this permit evaluation and statement of basis.

### Changes to Permit, Section V:

- The District is not proposing any changes to this section.

## **VI. Permit Conditions**

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

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

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

The existing permit conditions are derived from previously issued District Authorities to Construct (A/C) or Permits to Operate (P/O). Permit conditions may also be imposed or revised as part of the annual review of the facility by the District pursuant to California Health and Safety Code (H&SC) § 42301(e), through a variance pursuant to H&SC § 42350 et seq., an order of abatement pursuant to H&SC § 42450 et seq., or as an administrative revision initiated by District staff. After issuance of the Title V permit, permit conditions will be revised using the procedures in Regulation 2, Rule 6, Major Facility Review.

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

Conditions have also been deleted due to the following:

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

The regulatory basis 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.

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

Since the last revision of the Title V permit, this site has discontinued the operation of S-8 subject to Condition # 20479. The District is removing these permit conditions from the Title V permit since the device has been shut down. Source S-6 is a portable diesel engine and is not subject to Title V permitting per 2-6-114 (non-road engine). Therefore, Condition # 20477 for S-6 has been deleted. Just recently, this landfill ceased accepting municipal solid waste. Green waste is still accepted at this site. It is processed at S-5 and S-7 and composted. Compost may be mixed with clean soil and used as final cover material at the landfill but no raw or shredded

green waste will be used as cover at the landfill. Permit conditions for the landfill (Condition # 1028) will be modified to reflect this change in operation at S-1. The compost operations are being permitted in a separate action and will be added to this permit at a later date.

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

Changes to Permit, Section VI:

- Condition # 1028, Parts 1a, 2, and 3: In Part 1a, the District added an expiration date for the 400 tons/day waste acceptance limit for this site and added a new limit of 0 tons/day as of August 1, 2011, because this site has ceased accepting municipal solid waste. The District clarified that the Part 2 and Part 3 requirements only applied to this landfill while it was accepting waste materials. Although Part 2 and Part 3 are now obsolete, these parts were left in the permit because they applied to recent operations that are still subject to reporting requirements. Parts 2 and 3 will be removed from the permit at a later date.
- Condition # 1028, Part 1b: The District clarified that the cumulative tonnage limit in this subpart was intended to apply to decomposable materials, which include both decomposable wastes and decomposable cover materials.
- Condition # 1028, Parts 4 and 17: The District updated the bases listed for these parts. Regulation 6 has been renumbered as Regulation 6, Rule 1.
- Condition #1028, Part 7: The District has modified Part 7 to reflect the District's current permitting procedures for landfill gas collection systems. Since changes to the gas collection do not result in increases of the permitted emission rates for the landfill, these types of changes are considered to be alterations that require a Change of Permit Conditions and not modifications that require an Authority to Construct. The District has also added the number of required vertical wells (92) for this landfill gas collection system that was inadvertently left out of Part 7a during the last Title V permit revision.
- Condition #1028, Parts 9, 13, 15, 16 and 17: District TRMP has been replaced by Regulation 2-5-302. This change was reflected in the bases of Parts 9, 13, 15, 16, and 17.
- Condition #1028, Part 14: The landfill gas sulfur content limit in this part (1300 ppmv of TRS) was established based on an assumed landfill gas methane content of 45% CH<sub>4</sub> to assure compliance with the Regulation 9-1-302 limit of 300 ppmv of SO<sub>2</sub> from any emission point. However, source testing found that collected landfill gas from this site contained 38% methane in 2007, and the landfill gas methane content is expected to continue to decline now that the landfill has stopped accepting waste. The District needs to recalculate the landfill gas sulfur content limit for the flare to ensure that the 300 ppmv SO<sub>2</sub> outlet concentration limit will not be exceeded under any future conditions. Landfill gas flares typically require a minimum of 25% CH<sub>4</sub> in the inlet landfill gas in order to maintain flame. At 25% CH<sub>4</sub> and 75% CO<sub>2</sub> or other inert gases, landfill gas will produce 2.8923 scf of flue gas (at 0% O<sub>2</sub>) per scf of landfill gas burned. Under this condition (25% CH<sub>4</sub> in LFG), 300 ppmv of SO<sub>2</sub> in the flare exhaust is equal to 868 ppmv of H<sub>2</sub>S in the inlet LFG:

$$(300 \text{ ft}^3 \text{ SO}_2 / 1 \text{E}6 \text{ ft}^3 \text{ flue gas}) * (2.8923 \text{ ft}^3 \text{ flue gas} / 1 \text{ ft}^3 \text{ LFG}) * (1 \text{ ft}^3 \text{ H}_2\text{S} / 1 \text{ ft}^3 \text{ SO}_2) \\ = 8.68 \text{E-}4 \text{ ft}^3 \text{ H}_2\text{S} / 1 \text{ ft}^3 \text{ LFG} = 868 \text{ ppmv of H}_2\text{S in LFG}$$

A limit of 860 ppmv of TRS, expressed as H<sub>2</sub>S in the inlet landfill gas will ensure that the outlet concentration will not ever exceed the Regulation 9-1-302 limit of 300 ppmv of



SO<sub>2</sub> under any possible future operating conditions. Consequently, the District is proposing to change the limit in Part 14 to 860 ppmv of TRS. The actual landfill gas sulfur content measured in 2007 was 36 ppmv of TRS (4.2% of the limit). Therefore, the site should have no trouble complying with this lower TRS limit. Since the landfill has ceased accepting waste, the landfill gas sulfur content will decline in the future and will also be less variable. Given the high compliance margin (24:1) and the landfill's inactive status, quarterly sulfur monitoring is no longer necessary. Annual testing will be sufficient to demonstrate compliance with this limit. Therefore, the District is reducing the monitoring frequency in Part 14 from quarterly to annually for this sulfur limit. Finally, the District is removing the initial test requirement from Part 14, which has been completed.

- Condition #1028, Part 15: In Parts 15b and 15d, the District removed the obsolete testing requirement for THC. In Part 15e, the District added methane destruction efficiency, because a state requirement limits the methane destruction efficiency from this flare. An unnecessary requirement to test the flare within no earlier than 9 months after the previous test was removed.
- Condition #1028, Part 16: The 2010 amendments to Regulation 2, Rule 5 removed the health effects values for several chlorofluorocarbons from Table 2-5-1. Since these compounds are no longer subject to Regulation 2, Rule 5, the District has removed them from the gas characterization testing requirement.
- Condition #1028, Part 18: Since the initial reporting period requirements have been completed, the District has removed them from Part 18.
- Condition #20476 Parts 4 and 5: The District updated the bases listed for these parts. Regulation 6 has been renumbered as Regulation 6, Rule 1.
- Condition #20477, Parts 1 -5: The District deleted this condition because source S-6 is not subject to Title V permitting per 2-6-114 (portable/non-road engine).
- Condition #20478, Parts 4 and 5: The District updated the bases listed for these parts. Regulation 6 has been renumbered as Regulation 6, Rule 1.
- Condition #20479, Part 1-7: The District deleted this condition because S-8 was removed from the facility.

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.

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

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

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

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

**SO<sub>2</sub> Emission Limit with No Associated Monitoring**

<b># &amp; Description</b>	<b>Emission Limit Citation</b>	<b>Federally Enforceable Emission Limit</b>	<b>Monitoring</b>
A-3 Landfill Gas Flare and	BAAQMD 9-1-301	Property Line Ground Level SO <sub>2</sub> Limits: ≤ 0.5 ppm for 3 minutes and ≤ 0.25 ppm for 60 minutes and ≤ 0.05 ppm for 24 hours	None

**SO<sub>2</sub> Discussion:**

Burning of fuel that contains sulfur compounds will result in emissions of sulfur dioxide (SO<sub>2</sub>) as a product of that combustion. The landfill gas burned at the A-3 Landfill Gas Flare contains small levels of sulfur compounds which will contribute to ground level concentrations of SO<sub>2</sub>. Diesel fuel also contains very small amounts of sulfur compounds, and the combustion of diesel fuel at S-6 will contribute to ground level SO<sub>2</sub> as well.

From Condition # 1028, Part 14, the revised landfill gas sulfur content limit will be 860 ppmv of total reduced sulfur (TRS) compounds, expressed as H<sub>2</sub>S. This limit was derived from the

Regulation 9-1-302 outlet concentration limit of 300 ppmv of SO<sub>2</sub> in any exhaust point and an assumption that landfill gas contains 25% methane:

$$(860 \text{ ft}^3 \text{ H}_2\text{S}/1 \text{ MM ft}^3 \text{ LFG})/(2.9 \text{ MM ft}^3 \text{ flue gas}/\text{MM ft}^3 \text{ LFG})*(1 \text{ ft}^3 \text{ SO}_2/1 \text{ ft}^3 \text{ H}_2\text{S}) \\ = 297 \text{ ft}^3 \text{ SO}_2/1 \text{ MM ft}^3 \text{ flue gas} = 297 \text{ ppmv SO}_2$$

Higher inlet landfill gas methane concentrations will result in a higher flue gas generation rates and lower outlet SO<sub>2</sub> concentrations (263 ppmv of SO<sub>2</sub> for LFG containing 30% CH<sub>4</sub>, 214 ppmv of SO<sub>2</sub> for LFG containing 40% CH<sub>4</sub>, etc.). Therefore, the 25% CH<sub>4</sub> case results in the highest possible SO<sub>2</sub> emission rate.

**SO<sub>2</sub> Potential to Emit Calculations for the A-3 Landfill Gas Flare:**

$$(30\text{E}6 \text{ BTU}/\text{hour})/(1013 \text{ BTU}/\text{ft}^3 \text{ CH}_4)/(0.25 \text{ ft}^3 \text{ CH}_4/\text{ft}^3 \text{ LFG})*(860 \text{ ft}^3 \text{ H}_2\text{S}/1\text{E}6 \text{ ft}^3 \text{ LFG}) \\ / (379.7 \text{ ft}^3 \text{ H}_2\text{S}/1 \text{ lbmol H}_2\text{S})*(1 \text{ lbmol SO}_2/1 \text{ lbmol H}_2\text{S})*(64.06 \text{ lbs SO}_2/1 \text{ lbmol SO}_2) \\ *(8760 \text{ hours}/\text{year})/(2000 \text{ lbs}/\text{ton}) \\ = 75.282 \text{ tons}/\text{year of SO}_2$$

**Actual SO<sub>2</sub> Emission Calculations for the A-3 Landfill Gas Flare:**

$$(133,502,000 \text{ ft}^3 \text{ LFG}/\text{year})*(36 \text{ ft}^3 \text{ H}_2\text{S}/1\text{E}6 \text{ ft}^3 \text{ LFG})/(379.7 \text{ ft}^3 \text{ H}_2\text{S}/1 \text{ lbmol H}_2\text{S}) \\ *(1 \text{ lbmol SO}_2/1 \text{ lbmol H}_2\text{S})*(64.06 \text{ lbs SO}_2/1 \text{ lbmol SO}_2)/(2000 \text{ lbs}/\text{ton}) \\ = 0.405 \text{ tons}/\text{year of SO}_2$$

BAAQMD Regulation 9-1-301

Area monitoring to demonstrate compliance with the ground level SO<sub>2</sub> concentration requirements of Regulation 9-1-301 is required at the discretion of the APCO (per BAAQMD Regulation 9-1-501). Since ground level SO<sub>2</sub> monitoring is very expensive, such monitoring is not required if the expected levels of SO<sub>2</sub> emissions are low or if the margin of compliance is with the Regulation 9-1-301 ground level SO<sub>2</sub> limits is expected to be high. Modeling analyses performed for other landfill sites has shown that compliance with the Regulation 9-1-302 limit of 300 ppmv of SO<sub>2</sub> in the flare stack exhaust results in ground level SO<sub>2</sub> concentrations that are less than the BAAQMD Regulation 9-1-301 limits. Therefore, landfill sites that are complying with the Regulation 9-1-302 limit are also expected to comply with the Regulation 9-1-301 limits.

Although the potential to emit for A-3 is fairly high when this PTE is calculated based on the Regulation 9-1-302 limit, the actual SO<sub>2</sub> emissions from A-3 are very low (only 0.4 tons/year of SO<sub>2</sub>). Since the margin of compliance with the Regulation 9-1-302 limit is very high, the margin of compliance with the Regulation 9-1-301 ground level SO<sub>2</sub> limits are also expected to be very high. . Since A-3 is not emitting large amounts of SO<sub>2</sub> (less than 0.5 tons/year of SO<sub>2</sub> total) and the margin of compliance with the Regulation 9-1-301 limits is expected to be very high, the District has not required ground level monitoring for SO<sub>2</sub> at this site.

Annual landfill gas testing will be conducted to ensure compliance with the landfill gas sulfur content limit. Since the landfill is now inactive and landfill gas sulfur contents typically decline after waste acceptance stops, annual testing is sufficient to ensure compliance with both the Regulation 9-1-302 and 9-1-301 limits.

**PM Emission Limits with No Associated Monitoring**

<b>S# &amp; Description</b>	<b>Emission Limit Citation</b>	<b>Federally Enforceable Emission Limit</b>	<b>Monitoring</b>
A-3 Landfill Gas Flare	BAAQMD 6-1-301 and SIP 6-301	≤ Ringelmann 1.0 for 3 minutes in any hour	None
A-3 Landfill Gas Flare	BAAQMD 6-1-310 and SIP 6-310	≤ 0.15 gr/dscf	None
S-5 Wood Grinder and S-7 Trommel Screen	BAAQMD 6-1-311 and SIP 6-311	For P<57,320 pounds/hour: E = 0.026(P) <sup>0.67</sup> For P>57,320 pounds/hour: E = 40 pounds/hour where: E = Maximum Allowable Emission Rate (lbs/hr); and P = Process Weight Rate (lbs/hr)	None

**PM Discussion:**

BAAQMD Regulation 6, Rule 1 “Particulate Matter – General Requirements” and SIP Regulation 6, “Particulate Matter and Visible Emissions”

Active landfill operations generate particulate matter due to vehicle traffic on haul roads, on-site mobile equipment travel, waste and cover material handling activities, and wind erosion at the active face and at stockpiles. Now that this landfill has ceased accepting waste, most of the landfill’s particulate emissions have ceased as well. However, some particulate emissions will continue to be generated on the haul roads due to vehicles delivering green waste to the material processing area, vehicles picking up product from the composting operation, and on-site mobile equipment travel. The material handling operations associated with the final covering operations will also generate some dust. Since these fugitive particulate emissions do not have a defined stack, the outlet grain loading limit in Section 310 does not apply. Particulate matter emissions from these operations are limited to Ringelmann 1.0.

The site employs a dust mitigation plan to ensure compliance with this Ringelmann 1.0 limit. The landfill operator must use sufficient watering and road cleaning events to prevent the formation of visible emissions, and the site must maintain records of these watering and road cleaning events to verify compliance with the dust mitigation plan. Having a dust mitigation plan, employing the required dust control measures, and maintaining records of the dust control measures that were employed are standard methods that landfills use to demonstrate compliance with the Ringelmann 1.0 limitation. No changes are proposed to these existing monitoring procedures.

Similarly, the S-5 Wood Grinder and S-7 Trommel Screen are subject to the Ringelmann 1.0 limitation. Operators are currently required by permit conditions to visually observe these devices during operation and to use water sprays to control particulate emissions, as much as

necessary to prevent visible emissions. Visual observation of these sources during operation is a standard method of ensuring compliance with the Ringelmann 1.0 limitation for tub grinders and screens. The District is not proposing any changes to these existing monitoring procedures.

The following devices have a particulate limit for which no monitoring is proposed: A-3 Landfill Gas Flare, S-5 Wood Grinder, and S-7 Trommel Screen. The maximum potential emissions from these devices are shown below. For A-3, S-5, and S-7, the PM<sub>10</sub> emission factors listed below are based on AP-42 emission factors or AP-42 emission factor calculation procedures. The throughput rate for A-3 is the maximum capacity of the device at continuous operation. For S-5 and S-7, permit conditions limit throughput to 50,000 tons/year, or 1000 hours/year of operation at the 50 tons/hour maximum capacity.

**PM10 Potential to Emit Calculations for the A-3 Landfill Gas Flare:**

$$\begin{aligned} & (30\text{E}6 \text{ BTU/hour}) / (1013 \text{ BTU/ft}^3 \text{ CH}_4 \text{ at } 60 \text{ F}) * [(460+68) \text{ ft}^3 \text{ CH}_4 \text{ at } 68 \text{ F} / (460+60) \text{ ft}^3 \text{ CH}_4 \text{ at } 60 \text{ F}] \\ & * (17 \text{ pounds PM}_{10} / 1\text{E}6 \text{ ft}^3 \text{ CH}_4 \text{ at } 68 \text{ F}) * (8760 \text{ hours/year}) / (2000 \text{ pounds/ton}) \\ & = 2.239 \text{ tons/year of PM}_{10} \end{aligned}$$

**PM10 Potential to Emit Calculations for the S-5 Wood Grinder:**

$$\begin{aligned} & (50,000 \text{ tons/year}) * (2.4\text{E-}2 \text{ pounds PM}_{10}/\text{ton}) * (1.00-0.50) / (2000 \text{ pounds/ton}) \\ & = 0.300 \text{ tons/year of PM}_{10} \end{aligned}$$

**PM10 Potential to Emit Calculations for the S-7 Trommel Screen:**

$$\begin{aligned} & (50,000 \text{ tons/year}) * (4.7\text{E-}3 \text{ pounds PM}_{10}/\text{ton}) * (1.00-0.50) / (2000 \text{ pounds/ton}) \\ & = 0.059 \text{ tons/year of PM}_{10} \end{aligned}$$

BAAQMD 6-1-301 and SIP 6-301 for Flare:

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-3 burns only landfill gas, no monitoring is required to assure compliance with this limit.

BAAQMD 6-1-310 and SIP 6-310 for Flare: BAAQMD Regulation 6-1-310 and SIP 6-310 limit filterable particulate (FP) emissions in the stack from any source to 0.15 grains per dry standard cubic foot (gr/dscf) of exhaust volume.

Based on the AP-42 emission factor for landfill gas flares and a flue gas generation rate of 5.163 ft<sup>3</sup> flue gas/ft<sup>3</sup> LFG for LFG at 55% CH<sub>4</sub>, A-3 will emit 0.013 gr/dscf of exhaust at 0% oxygen. A lower inlet methane concentration in the landfill gas will result in more dilution and a lower grain loading in the exhaust.

The grain loading limit (0.15 gr/dscf) is far above any expected PM emissions for these devices: a 12:1 compliance ratio for the flare. Since maximum potential PM emissions from the flare are low and an excess of the emission standard is not likely, it would not be appropriate to add periodic monitoring for this grain loading standard considering the high cost of PM emissions testing. Furthermore, the District expects that the Ringelmann standard would be exceeded

before the grain loading standard is exceeded. Since visible emissions are not expected from these sources, PM monitoring for this grain loading standard has not been required.

**BAAQMD Regulation 6-1-311 and SIP 6-311 for S-5 Wood Grinder and S-7 Trommel Screen:**

This regulation limits mass emissions on a sliding scale based on the process weight rate. Since it would be virtually impossible to meaningfully monitor compliance with these limits due to variable operation rates and the fugitive nature of the particulate emissions, emission calculations will be used to demonstrate on-going compliance with this regulation using assumptions about material throughput and emission rates.

For the S-5 Wood Grinder, BAAQMD has accepted an unabated particulate emission factor of 0.024 pounds/ton (from AP-42 “log debarking”) for wood chippers and tub grinders. The S-5 Wood Grinder has a maximum wood waste capacity of 50 tons/hour, resulting in a maximum unabated particulate emission rate of 1.2 pounds/hour. Water Sprays (A-5) are used to control particulate emissions and are expected to achieve at least 50% control, resulting in a maximum emission rate of 0.6 pounds/hour. At a process weight rate of 50 tons per hour, Regulation 6-1-311 limits emissions to 40 pounds/hour (maximum allowable emission rate for any operation processing more than 57,320 pounds/hour of material). The maximum allowable emission rate is 33 times higher than the maximum expected unabated emission rate and 67 times more than the abated emission rate. The same holds true for any process weight rate at which S-5 may be operating. Since non-compliance with this emissions limit is so unlikely, no monitoring is recommended for this Section 311 standard.

The S-7 Trommel Screen rotates yard waste and chipped wood in a drum shaped screen to remove dirt and small debris. Using the continuous drop material handling equation from AP-42 Chapter 13.2.4 “Aggregate Handling And Storage Piles”, the uncontrolled emission rate is calculated to be 0.0047 lb/ton. At the maximum processing rate of 50 tons/hr, maximum uncontrolled emissions are 0.235 pounds/hour. After control by water sprays, the maximum emission rate is 0.1175 pounds/hour. The Section 311 limit is 40 pounds/hour at the maximum operating rate of 50 tons/hour. The compliance margins are 170:1 for unabated emissions and 340:1 for abated emissions from S-7. As with S-5, no monitoring is recommended for this Section 311 standard, because the likelihood of non-compliance with this limit is so low.

#### Changes to Permit, Section VII:

- A note was added at the beginning of the section to clarify that this section is a summary of the limits and monitoring, and that in the case of a conflict between Sections I-VI and Section VII, the preceding sections take precedence.
- The District is deleting Table VII-C, because source S-6 is a portable non-road engine and is exempt from Title V permitting per 2-6-114.
- The District is deleting Table VII-E for S-8, because the source has been shut down.
- The District is renumbering Table VII-D for S-7 as Table VII-C.
- Symbols ( $\leq$  or  $\geq$ , as applicable) have been added to all Section VII tables to clarify limits.
- In Tables VII-A-C, citation of the SIP version of Regulation 6 has been added, since the District Regulation 6 has been renumbered to Regulation 6, Rule 1. Note that both rules contain the same standards

- In Table VII-A, the limits were rearranged to more closely reflect the order of the citations in Table IV-A.
- In Table VII-A, the District clarified which limit apply to the flare only and not to S-1.
- In Table VII-A, the District clarified that the Regulation 8-2-301 limit only applied to operations that occurred prior to discontinuation of waste acceptance at the landfill.
- In Table VII-A, the Section 507 temperature monitoring requirement for flares was included with the other monitoring citations for the Regulation 8-34-301.3 limit.
- In Table VII-A, the District reduced the landfill gas sulfur content limit to 860 ppmv of TRS in LFG and reduced the monitoring frequency to an annual basis (consistent with the changes for Condition # 1028, Part 14).
- In Table VII-A, the District clarified that the daily waste acceptance limit applied to active landfill operations, which were discontinued at the end of July 2010. The new waste acceptance limit is therefore 0 tons/day.
- In Table VII-A, the District made the description of the Condition # 1028, Part 1 limits consistent with the permit condition changes discussed in Section VI.
- In Tables VII-B and VII-C, the District clarified the Regulation 6-1-311 limits. The limit of 40 pounds/hour for FP applies whenever the process rate is 28.66 tons/hour or higher. If the process rate is lower, the emission limit equation applies.

### **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:

- The introductory text to Section VIII was corrected.
- The Regulation 6, Rule 1 reference has been updated and reference to the SIP version of Regulation 6 has been added. The applicable federal test methods were added: Method 9 for 6-1-301 and 6-1-303 and Method 5 for 6-1-310 and 6-1-311.
- Test methods for the BAAQMD and SIP Regulation 8-2-301 limit were clarified.
- Editorial revisions were made to the descriptions of applicable citations for Regulation 8, Rule 34 and to the test methods for these limits.
- Regulations 8-34-301.4, 8-40-116.2, and 8-40-301 were removed because there are no sources that are subject to these emission limits.
- An obsolete sulfur dioxide test methods was removed.
- The missing test method for BAAQMD Regulation 9-1-304 was added.
- For S-1, Condition #1028 Part 2, the District clarified the alternative source test methods.
- For S-1 Condition # 1028 Part 11, 12, 15 and 16, the District included alternative federal test methods for the NO<sub>x</sub>, CO, SO<sub>2</sub>, and sulfur compound limits.
- For S-1 Condition #1028 Part 14, the District removed test method that allowed Draeger Tube since quarterly testing will not be required. Annual testing by laboratory analysis will be required instead.
- For S-5 and S-7, the District included federal test methods for visible emissions.

- The District removed the test methods for Condition #20477, because S-6 is not subject to Title V permitting.
- The District removed the test methods for Condition #20479, because S-8 has been removed from the site.

## **IX. Permit Shield**

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

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

This facility has one permit shield for Regulation 8-2-601. However, this permit shield only applied to the handling and re-use of VOC-laden soil at S-1. Now that this landfill no longer accepting waste materials for disposal (as of July 28, 2011) and will not use VOC-laden soil in any of the final cover materials at this landfill, this permit shield is no longer necessary. It will be retained for a short period of time to cover any past operations that may have required this permit shield, but the District expects to delete this permit shield after the next full semi-annual reporting period.

### Changes to the Permit, Section IX:

- The District added an expiration date of 8/1/11 to this permit shield because waste acceptance ceased on 7/28/11 and no future activities will use VOC-laden soil.
- The District revised the text of this permit shield for consistency with other similar Title V permits.

### Revision History

This section of the permit summarizes each revision to the permit.

### Changes to Permit, Section X:

- The District added the permit revisions associated with this MFR Renewal Permit (Application # 18263) to Section X.

## **X. Glossary**

This section of the permit defines and explains acronyms, abbreviations, and other terms that are used in this permit.



Changes to Permit, Section XI:

- The District is updating the Section XI Glossary by clarifying explanations and adding numerous new terms.

**XI. Applicable State Implementation Plan**

Changes to Permit, Section XII:

- The District is deleting this section. The address for EPA's website is now found in Sections III and IV.

**D. ALTERNATE OPERATING SCENARIOS**

No alternate operating scenario has been requested for this facility.

**E. COMPLIANCE STATUS**

A January 12, 2012 office memorandum from the Director of Compliance and Enforcement, to the Director of Permit Services, presents a review of the compliance record of the City of Palo Alto Landfill (Site #: A2721). The Compliance and Enforcement Division staff has reviewed the records for City of Palo Alto Landfill for the period of December 27, 2006 through December 26, 2011. This review was initiated as part of the District evaluation of an application by the City of Palo Alto Landfill for a Title V permit. During the period subject to review, activities known to the District include:

- No Notices of Violation were issued during this period.
- The District received 1 air pollution complaint alleging a sweet/sour odor on December 10, 2009. The complaint was confirmed. No action was taken because no public nuisance or other violation documented.
- The District received 1 notification of a Reportable Compliance Activity (RCA) during this period. The RCA occurred on July 23, 2008 for 1 day. The operator submitted a breakdown request due to a compost fire that spread to a landfill gas well head. No violation was documented.
- The facility is not operating under an Enforcement Agreement, a Variance, or an Order of Abatement.

The responsible official for the City of Palo Alto certified that all equipment was operating in compliance on February 22, 2012. The District's Compliance and Enforcement Division has determined that City of Palo Alto Landfill was in continuous compliance. The City of Palo Alto Landfill has demonstrated no evidence of ongoing noncompliance and no recurring pattern of violations that would warrant consideration of a Title V permit compliance schedule for this facility.

Subsequent to this review, the District identified a composting operation at this site that requires a permit to operate. The District has notified the facility of this permit requirement, and the facility is preparing a permit application submittal to obtain the required permit for the composting operation at this site. The facility began composting prior to 1988. The facility lost its exemption status in June 1995 per District Regulation 2-1-115.2.3 Exemption, Particulate Sources at Quarries, Mineral Processing and Biomass Facilities, because the compost throughput exceeds 500 tons/yr. Therefore, the compost application submittal is expected to be a loss of exemption application.

No other non-compliance issues have been identified to date.

## **F. DIFFERENCES BETWEEN APPLICATION AND PROPOSED PERMIT**

The Title V permit application was originally submitted on May 30, 2008. The Title V permit was last revised on August 28, 2007. This version is the basis for constructing the proposed Title V permit. The changes requested by the applicant include the following:

- Replacement of source S-8 with S-9. Source S-9 was installed to replace S-8 under A/N 20695. The District has removed the old trommel screen engine, S-8, from the permit. However, the new engine powering the trommel screen, S-9, is a portable / non-road engine that is exempt from Title V per 2-6-114. Source S-6 is also a portable/non-road engine and is also exempt from Title V per 2-6-114 so it has also been deleted from this permit. Therefore, the District has not included sources S-6 and S-9 in this proposed Title V permit. These portable engines are identified as an exempt source in Table II-C, which also explains why this source is exempt from major facility review. Even though sources S-6 and S-9 will not be included in Sections IV through VIII of this Title V renewal permit, the permit holder for both sources S-6 and S-9 must still comply with all applicable District and State requirements for sources S-6 and S-9 pursuant to the District's permit to operate for sources S-6 and S-9.

In addition to the changes discussed above, the District has proposed numerous updates to the standard permit language, regulatory descriptions, and regulatory amendment dates throughout the permit to reflect regulatory changes, to clarify limits and other applicable requirements, to explain permit terminology, to remove obsolete requirements, and to correct permit errors. Each of these changes is explained in detail in Section C of this document.

APPENDIX A  
BAAQMD COMPLIANCE REPORT

**COMPLIANCE & ENFORCEMENT DIVISION**

**Inter-Office Memorandum**

January 12, 2012

TO: JIM KARAS – ACTING DIRECTOR OF ENGINEERING

FROM: BRIAN BATEMAN – DIRECTOR OF ENFORCEMENT

SUBJECT: REVIEW OF COMPLIANCE RECORD OF:

**CITY OF PALO ALTO LANDFILL; SITE #A2721**

**Background**

This review was initiated as part of the District evaluation of an application by CITY OF PALO ALTO LANDFILL for a Title V Permit Renewal. It is standard practice of the Compliance and Enforcement Division to undertake a compliance record review in advance of a renewal of a Title V Permit. The purpose of this review is to assure that any non-compliance problems identified during the prior five-year permit term have been adequately addressed, or, if non-compliance persists, that a schedule of compliance is properly incorporated into the Title V permit compliance schedule. In addition, the review checks for patterns of recurring violation that may be addressed by additional permit terms. Finally, the review is intended to recommend, if necessary, any additional permit conditions and limitations to improve compliance.

CITY OF PALO ALTO LANDFILL is a closed landfill with a gas collection system. The landfill gas is used in off-site engines for energy recovery or burned in an on-site flare.

**Compliance Review**

Compliance records were reviewed for the time period from December 27, 2006 through December 26, 2011. The results of this review are summarized as follows.

**1. Violation History**

Staff reviewed CITY OF PALO ALTO LANDFILL Annual Compliance Certifications and found no ongoing non-compliance and no recurring pattern of violations.

Staff also reviewed the District compliance records for the review period. During this period CITY OF PALO ALTO LANDFILL activities known to the District include:

District-issued no Notices of Violation.

REVIEW OF COMPLIANCE RECORD OF:  
**City of Palo Alto Landfill – SITE # A2721**  
January 6, 2012  
Page 2 of 3

## 2. Complaint History

The District received one air pollution complaint alleging CITY OF PALO ALTO LANDFILL as the source. The complaint alleged a sweet/sour odor on 12/10/2009. The complaint was confirmed. No action was taken due to no public nuisance or other violation documented.

## 3. Reportable Compliance Activity

Reportable Compliance Activity (RCA), also known as "Episode" reporting, is the reporting of compliance activities involving a facility as outlined in District Regulations and State Law. Reporting covers breakdown requests, indicated monitor excesses, pressure relief device releases, inoperative monitor reports and flare monitoring.

Within the review period, the District received one notification for RCA's. No NOV's were issued as a result of this RCA.

Episode	Date Occur	# of Days	Comments	Disposition
05H08	7/23/2008	1	Breakdown request due to compost fire spreading to landfill gas well head	No Violation Documented

## 4. Enforcement Agreements, Variances, or Abatement Orders

There were no enforcement agreements, variances, or abatement orders for CITY OF PALO ALTO LANDFILL over review period.

## Conclusion

Following its review of all available facility and District compliance records from 12/27/2006 through 12/26/2011, the District's Compliance and Enforcement Division has determined that CITY OF PALO ALTO LANDFILL was in continuous compliance. The CITY OF PALO ALTO LANDFILL has demonstrated no evidence of ongoing noncompliance and no recurring pattern of violations that would warrant consideration of a Title V permit compliance schedule for this facility.

REVIEW OF COMPLIANCE RECORD OF:  
**City of Palo Alto Landfill – SITE # A2721**  
January 6, 2012  
Page 3 of 3

Based on this review and analysis of all the violations for the review period, the District has concluded that no schedule of compliance or change in permit terms is necessary beyond what is already contained in the facility's current Title V permit.

## APPENDIX B

### GLOSSARY

**ACT**

Federal Clean Air Act

**AP-42**

An EPA Document "Compilation of Air Pollution Emission Factors" that is used to estimate emissions from numerous source types. It is available electronically from EPA's web site at: <http://www.epa.gov/ttn/chief/ap42/index.html>

**APCO**

Air Pollution Control Officer

**ARB**

Air Resources Board

**ASTM**

American Society for Testing and Materials

**ATCM**

Airborne Toxic Control Measure

**BAAQMD**

Bay Area Air Quality Management District

**BACT**

Best Available Control Technology

**BARCT**

Best Available Retrofit Control Technology

**Basis**

The underlying authority which allows the District to impose requirements.

**C1**

An organic chemical compound with one carbon atom, for example: methane

**C3**

An organic chemical compound with three carbon atoms, for example: propane



**C5**

An organic chemical compound with five carbon atoms, for example: pentane

**C6**

An organic chemical compound with six carbon atoms, for example: hexane

**C<sub>6</sub>H<sub>6</sub>**

Benzene

**CAA**

The federal Clean Air Act

**CAAQS**

California Ambient Air Quality Standards

**CAM**

Compliance Assurance Monitoring per 40 CFR Part 64

**CAPCOA**

California Air Pollution Control Officers Association

**CEM**

A “continuous emission monitor” is a monitoring device that provides a continuous direct measurement of some pollutant (e.g. NO<sub>x</sub> 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.

**CCR**

The California Code of Regulations

**CEC**

California Energy Commission

**CH<sub>4</sub> or CH<sub>4</sub>**

Methane

**CI**

Compression Ignition

**CIWMB**

California Integrated Waste Management Board

**CO**

Carbon Monoxide

**CO<sub>2</sub> or CO<sub>2e</sub>**

Carbon DioxideCO<sub>2e</sub>

Carbon Dioxide Equivalent. A carbon dioxide equivalent emission rate is the emission rate of a greenhouse gas compound that has been adjusted by multiplying the mass emission rate by the global warming potential of the greenhouse gas compound. These adjusted emission rates for individual compounds are typically summed together, and the total is also referred to as the carbon dioxide equivalent (CO<sub>2e</sub>) emission rate.

**CT**

Combustion Zone Temperature

**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). Cumulative increase is 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  $(4.53) \times (10^6) = (4.53) \times (10 \times 10 \times 10 \times 10 \times 10 \times 10) = 4,530,000$ . Scientific notation is used to express large or small numbers without writing out long strings of zeros.

**EG**

Emission Guidelines

**EO**

Executive Order

**EPA**

The federal Environmental Protection Agency.

**Excluded**

Not subject to any District regulations.

**Federally Enforceable, FE**

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

**FP**

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

**GDF**

Gasoline Dispensing Facility

**GHG**

Greenhouse Gas

**GLM**

Ground Level Monitor

**Grains**

1/7000 of a pound

**GRS**

Gas Recovery Systems, Inc.

**GWP**

Global Warming Potential. A comparison of the ability of each greenhouse gas to trap heat in the atmosphere relative to that of carbon dioxide over a specific time period.

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

Hydrogen Sulfide

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

Sulfuric Acid

**H&SC**

Health and Safety Code

**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.

**Hg**  
Mercury

**HHV**  
Higher Heating Value. The quantity of heat evolved as determined by a calorimeter where the combustion products are cooled to 60 °F and all water vapor is condensed to liquid.

**LEA**  
Local Enforcement Agency

**LFG**  
Landfill gas

**LHV**  
Lower Heating Value. Similar to the higher heating value (see HHV) except that the water produced by the combustion is not condensed but retained as vapor at 60°F.

**Long ton**  
2200 pounds

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

**MAX or Max.**  
Maximum

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

**MIN or Min.**  
Minimum

**MOP**  
The District's Manual of Procedures.

**MSDS**  
Material Safety Data Sheet

**MSW**

Municipal solid waste

**MW**

Molecular weight

**N2 or N<sub>2</sub>**

Nitrogen

**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 (Same as NMOC)

**NMOC**

Non-methane Organic Compounds (Same as NMHC)

**NO<sub>2</sub>**

Nitrogen Dioxide

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

Oxides of nitrogen.

**NSPS**

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

**NSR**

New Source Review. A federal program for pre-construction review and permitting of new and modified sources of pollutants for which criteria have been established in accordance with Section 108 of the Federal Clean Air Act. Mandated by Title I of the Federal Clean Air Act and implemented by 40 CFR Parts 51 and 52 and District Regulation 2, Rule 2. (Note: There are additional NSR requirements mandated by the California Clean Air Act.)

**O<sub>2</sub> or O<sub>2</sub>**

Oxygen

**Offset Requirement**

A New Source Review requirement to provide federally enforceable emission offsets for the emissions from a new or modified source. Applies to emissions of POC, NO<sub>x</sub>, PM<sub>10</sub>, and SO<sub>2</sub>.

**PERP**

Portable Equipment Registration Program

**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

**PM<sub>10</sub> or PM<sub>10</sub>**

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.

**PTE**

Potential to Emit as defined by BAAQMD Regulation 2-6-218

**PV or P/V Valve or PRV**

Pressure / Vacuum Relief Valve

**RICE**

Reciprocating Internal Combustion Engine

**RMP**

Risk Management Plan

**RWQCB**

Regional Water Quality Control Board

**S**

Sulfur

**SCR**

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

**Short ton**

2000 pounds

**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.

**SO<sub>2</sub> or SO<sub>2</sub>**

Sulfur dioxide

**SO<sub>3</sub> or SO<sub>3</sub>**

Sulfur trioxide

**SSM**

Startup, Shutdown, or Malfunction

**SSM Plan**

A plan, which states the procedures that will be followed during a startup, shutdown, or malfunction, that is prepared in accordance with the general NESHAP provisions (40 CFR Part 63, Subpart A) and maintained on site at the facility.

**TAC**

Toxic Air Contaminant

**TBACT**

Best Available Control Technology for Toxics

**THC**

Total Hydrocarbons (NMHC + Methane)

**therm**

100,000 British Thermal Units

**Title V**

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

**TOC**

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

**TPH**

Total Petroleum Hydrocarbons

**TRMP**

Toxic Risk Management Plan

**TRS**

Total Reduced Sulfur, 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 SO<sub>2</sub> that will be present in the combusted fuel gas, since sulfur compounds are converted to SO<sub>2</sub> by the combustion process.

**TVP**

True Vapor Pressure

**VOC**

Volatile Organic Compounds

**VMT**

Vehicle Miles Traveled

**Symbols:**

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

**Units of Measure:**

atm	=	atmospheres
bbl	=	barrel of liquid (42 gallons)
bhp	=	brake-horsepower
btu	=	British Thermal Unit
BTU	=	British Thermal Unit
°C	=	degrees Centigrade
cu. ft.	=	cubic foot
cfm	=	cubic feet per minute
dscf	=	dry standard cubic foot



dscfm	=	dry standard cubic foot per minute
°F	=	degrees Fahrenheit
ft <sup>3</sup>	=	cubic feet
g	=	gram
gal	=	gallon
gpm	=	gallons per minute
gr	=	grain
hp	=	horsepower
hr	=	hour
in	=	inch
KW	=	kilowatt
lb	=	pound
lbmol	=	pound-mole
max	=	maximum
m <sup>2</sup>	=	square meter
m <sup>3</sup>	=	cubic meter
min	=	minute
mm	=	million
MM	=	million
MMbtu	=	million btu
MMcf	=	million cubic feet
Mg	=	mega grams
M scf	=	one thousand standard cubic feet
MW	=	megawatts
ppb	=	parts per billion
ppbv	=	parts per billion, by volume
ppm	=	parts per million
ppmv	=	parts per million, by volume
ppmw	=	parts per million, by weight
psia	=	pounds per square inch, absolute
psig	=	pounds per square inch, gauge
scfm	=	standard cubic feet per minute
sdcf	=	standard dry cubic feet
sdcfm	=	standard dry cubic feet per minute
yd	=	yard
yd <sup>3</sup>	=	cubic yards
tpy	=	tons per year
yr	=	year

APPENDIX C  
Emission Inventory for Years 2003 and 2010

PLANT # 2721 EMISSIONS: CURRENT CALCULATION (2010 DATA)

S#	SOURCE NAME	SOURCE CODE	DATE	PM	EMISSIONS IN LBS/DAY			CO
					ORG	NOx	S02	
MATERIAL THROUGHPUT								
-----								
1	Palo Alto Landfill, equipped with Gas Collection System							
Landfill gas	G7145511							
133502.0 thou cubic/yr	12/31/10		.0	.0	.1	.0	.0	
Landfill	G7145580							
4.72E+06 tons-in-pl/yr	12/31/10		.0	90.8	.0	.0	.0	
5	Wood Grinder							
Wood - other/not spe	G8012305							
5910.0 tons/yr	12/31/10		.2	.0	.0	.0	.0	
6	Diesel Engine: Driver for S-5 Wood Grinder							
Diesel fuel	C24BG098							
3.4 thou gal/yr	12/31/10		.2	.6	2.7	.0	1.1	
7	Trommel Screen							
Wood - other/not spe	G8008305							
12865.0 tons/yr	12/31/10		2.1	.0	.0	.0	.0	
9	Diesel Engine for S-7 Trommel Screen							
Diesel fuel	C22AG098							
2.5 thou gal/yr	12/31/10		.0	.0	.9	.0	.4	
12	Landfill Dumping							
Solid waste - other/	G8110466							
4714.0 tons/yr	12/31/10		1.5	.0	.0	.0	.0	
13	Landfill Bulldozing							
Solid waste - other/	G8100466							
4714.0 tons/yr	12/31/10		.7	.0	.0	.0	.0	
-3	Landfill Gas Flare							
Landfill gas	C8540511							
* 85673 thou cu ft/yr	12/31/10		.7	.6	8.5	1.9	44.6	
=====								
PLANT TOTAL:	lbs/day		5.4	92.0	12.2	2.0	46.0	
	tons/year		1.0	16.8	2.2	.4	8.4	

\* The inventory above is a corrected inventory. For the current database emissions inventory for this site, flare emissions were determined using 2002 landfill gas throughput data. The flare emissions shown above are based on an updated actual landfill gas throughput rate of 85,673 Mscf for Year 2010 at A-3.

PLANT # 2721 EMISSIONS: INITIAL PERMIT YEAR CALCULATION (2003 DATA)

S#	SOURCE NAME	SOURCE CODE	DATE	PM	EMISSIONS IN LBS/DAY			CO
					ORG	NOx	S02	
MATERIAL THROUGHPUT								
-----								
1	Palo Alto Landfill, equipped with Gas Collection System							
Solid waste - other/	G7145466							
23242.0 tons/yr	12/31/03	10.8	.0	.0	.0	.0	.0	
Landfill gas	G7145511							
136445.0 thou cubic/yr	12/31/03	.0	.0	.0	.0	.0	.0	
Landfill	G7145580							
4.61E+06 tons-in-pl/yr	12/31/03	.0	88.7	.0	.0	.0	.0	
-----								
SOURCE TOTAL:	lbs/day	10.8	88.7	.0	.0	.0	.0	
5	Wood Grinder							
Wood - other/not spe	G8012305							
8000.0 tons/yr	02/26/02	.3	.0	.0	.0	.0	.0	
6	Diesel Engine: Driver for S-5 Wood Grinder							
Diesel fuel	C2450098							
15.4 thou gal/yr	12/31/03	1.4	1.6	19.8	.3	4.3		
7	Trommel Screen							
Wood - other/not spe	G8008305							
8000.0 tons/yr	02/26/02	1.3	.0	.0	.0	.0	.0	
8	Diesel Engine: Driver for S-7 Trommel Screen							
Diesel fuel	C2460098							
1.5 thou gal/yr	12/31/03	.1	.2	2.0	.0	.4		
-3	Landfill Gas Flare							
Landfill gas	C8540511							
* 136445 thou cu ft/yr	12/31/03	1.1	1.0	13.5	3.1	70.8		
=====								
PLANT TOTAL:	lbs/day	15.0	91.5	35.3	3.4	75.5		
	tons/year	2.7	16.7	6.5	.6	13.8		

\* The inventory above is a corrected inventory for Year 2003. The 2003 emissions inventory that is saved in the database for this site is missing the A-3 flare emissions. The flare emissions shown above are based on the actual landfill gas throughput rate of 136,445 Mscf for Year 2003 at A-3.