

Bay Area Air Quality Management District

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

**for
City of Mountain View (Shoreline)
Facility #A2740**

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Applications 25971 and 26618

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Title V Statement of Basis For Renewal and Minor Revision

City of Mountain View (Shoreline); Plant #A2740
Applications #25971 and #26618

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 mega grams and 2.5 million cubic meters to obtain an operating permit pursuant to Part 70. As discussed in more detail below in Section C.IV of this report, this facility is subject to these emission guidelines and meets the designated facility criteria listed in 40 CFR § 60.32c(c). Therefore, this facility is required to have an MFR permit pursuant to Regulation 2-6-304.

Major Facility Operating permits (Title V permits) must meet specifications contained in 40 CFR Part 70 as contained in BAAQMD Regulation 2, Rule 6. The permits must contain all applicable requirements (as defined in BAAQMD Regulation 2-6-202), monitoring requirements, recordkeeping requirements, and reporting requirements. The permit holders must submit reports of all monitoring at least every six months and compliance certifications at least every year.

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

Each facility in the Bay Area is assigned a facility 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 A2740.

This facility received its initial Title V permit on July 28, 2003. The permit was last revised on February 1, 2013 and last renewed on July 16, 2009. This application is for a permit renewal. Although the current permit expired on July 15, 2014, it continues in force until the District takes final action on the permit renewal. The standard sections of the permit have been upgraded to include new standard language used in all Title V permits. The proposed renewal permit clearly shows all proposed changes to the permit in strikeout/underline format.

The facility submitted Title V minor revision application #26618 to replace flares A-3, A-4, and A-5 with flares A-6, A-7, and A-8. This minor revision action will be incorporated into the Title V permit within this Title V renewal application.

B. FACILITY DESCRIPTION

The City of Mountain View's Shoreline complex (Facility # A2740) is located, east of Highway 101, on Shoreline Boulevard. Shoreline is a recreational and wildlife area constructed over approximately 600 acres of closed landfills. The individual landfills are referred to as the 544-Acre Landfill, which includes the golf course and sailing lake areas, the Crittenden Landfill, and the Vista Landfill. A small portion of the Vista Landfill was leased to Shoreline Amphitheatre (Facility # A2561). The City of Mountain View includes the following permitted operations: the closed Shoreline Landfills with Gas Collection Systems (S-1), three Landfill Gas Flares (A-6, A-7, and A-8), two Diesel Engines for Emergency Generators (S-11 and S-14), and two landfill gas fired Microturbines (S-16 and S-17).

Landfills generate landfill gas due to the waste decomposition process. The landfill gas contains methane, carbon dioxide, and small amounts of non-methane organic compounds (NMOC) and sulfur compounds. Many of the NMOCs are precursor organic compounds (POC) and/or toxic air contaminants (TACs). District and EPA regulations require that landfill gas from larger landfills be collected and controlled to reduce emissions of NMOCs to the atmosphere. In accordance with these requirements, the City of Mountain View's Closed Landfills (S-1) are equipped with landfill gas collection systems and landfill gas control systems. About half of the collected landfill gas is controlled by combustion in the on-site enclosed ground flares (A-6, A-7, and A-8). A small portion of the collected landfill gas (about 8%) is delivered to the on-site microturbines. The remainder of the collected landfill gas is delivered to Google Corporation (Plant # 15982) for combustion in off-site IC engines (S-29 and S-30).

Overall, emissions are declining for this facility, because the landfill gas generation rate is decreasing for this aging closed landfill. Current emissions based on throughput rates reported for 2015 are summarized below in Table 1.

Table 1. Actual 2015 Emissions for Site # A2740

Device Number and Description	Emissions (tons/year)				
	CO	PM ₁₀	NO _x	POC	SO ₂
S-1 Landfill	0.00	0.00	0.05	7.83	0.00
S-11 Diesel Engine	0.00	0.00	0.00	0.00	0.00
S-14 Diesel Engine	0.00	0.00	0.00	0.00	0.00
S-16 Microturbine	1.31	0.11	0.11	0.20	0.13
S-17 Microturbine	1.22	0.11	0.11	0.18	0.11
A-6 Landfill Gas Flare	0.75	0.02	0.22	0.02	0.02
A-7 Landfill Gas Flare	1.19	0.04	0.36	0.04	0.02
A-8 Landfill Gas Flare	2.63	0.07	0.78	0.07	0.22
Facility Wide Emissions	7.1	0.4	1.7	8.3	0.5

C. PERMIT CONTENT

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

I. Standard Conditions

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

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

Changes to Permit:

- The BAAQMD address was updated on the Title Page and in Section I.F.
- The Responsible Official, Facility Contact, and BAAQMD contact were updated on the Title Page.
- The dates of adoption, amendment, and approval of Regulation 2, Rules 1, 2, and 5 were updated in Section I.A.
- Permit issuance date, expiration date, and renewal application due dates were updated in Section I.B.1.
- Obsolete language was removed from Sections I.F and I.G.
- The EPA address was updated in Section 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.

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).

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

The equipment section is considered to be part of the facility description. It contains information that is necessary for applicability determinations, such as fuel types, contents or sizes of tanks, etc. This information is part of the factual basis of the permit.

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.

Changes to Permit:

- In Table II-A, the landfill gas collection system description was revised to indicate that 9 horizontal collectors are allowed to operate intermittently.
- In Table II-B, the three existing flares (A-3, A-4, and A-5) were replaced with the three new flares (A-6, A-7, and A-8) that were permitted pursuant to NSR Application # 26279.

III. Generally Applicable Requirements

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

Unpermitted sources are exempt from normal District permits pursuant to an exemption in BAAQMD Regulation 2, Rule 1. They may, however, be specifically described in a Title V permit if they are considered “significant sources” as defined in BAAQMD Rule 2-6-239. This facility has no unpermitted significant sources.

Changes to Permit:

- In Table III, the dates of adoption or approval of the following rules and their “federal enforceability” status was updated: Regulation 1, Regulation 2 Rule 1, Regulation 2 Rule 5, Regulation 5, Regulation 8 Rule 3, CCR Title 17 Sections 93115 and 93116, and 40 CFR Part 61 Subpart A.

- Table III was also updated by adding the following federally enforceable standard to conform to current practice: 40 CFR Part 61, Subpart M, National Emission Standards for Hazardous Air Pollutants – National Emission Standard for Asbestos.

IV. Source-Specific Applicable Requirements

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

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

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

Complex Applicability Determinations for Landfill:

The landfill at this site is subject to BAAQMD Regulation 8, Rule 34, because the Vista Landfill accepted waste within the last 30 years and the contiguous landfills contained in the permits for Site # A2740 and A2561 contain more than 1,000,000 tons of decomposable refuse. These contiguous landfills are also subject to the EG for MSW Landfills (40 CFR, Part 60, Subpart Cc) and the NESHAP for MSW Landfills (40 CFR, Part 63, Subpart AAAA), because (1) the landfills commenced construction before May 30, 1991, (2) the landfills have accepted waste after November 8, 1987, (3) the landfills have a design capacity of greater than 2.5 million cubic meters and greater than 2.5 million megagrams, and (4) the uncontrolled NMOC generation rate from the three landfills combined exceeds 50 Mg/year.

Complex Applicability Determinations for IC Engines:

The diesel-fired compression ignition engines (S-11 and S-14) that power emergency standby generators at this site are not subject to the NSPS for Compression Ignition Internal Combustion

Engines (40 CFR Part 60, Subpart IIII) pursuant to 40 CFR Part 60.4200(a)(2), because these engines commenced construction before July 11, 2005.

However, these engines are subject to the National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Stationary Reciprocating Internal Combustion Engines (RICE): 40 CFR Part 63, Subparts A and ZZZZ. Subpart ZZZZ regulates hazardous air pollutants emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. The facility is not a major source of HAP emissions and is therefore an area source of HAP emissions. For area sources of HAP emissions, a stationary RICE is defined as “existing” if construction or reconstruction commenced before June 12, 2006 and is defined as “new” if construction was commenced after this date. The two stationary reciprocating internal combustion engines operating at this site (S-11 and S-14) are existing engines since they were installed prior to June 12, 2006.

These engines are subject to the requirements in this rule that apply to existing stationary compression-ignition RICE located at an area source of HAP emissions, including general operation and maintenance requirements, specific maintenance deadlines for oil and filter, belt and hose, and air cleaner inspections and changes, as well as hourly limitations which are monitored through required operation of a non-resettable hour meter. Note that this federal rule allows unlimited operation of these engines during emergencies, as does District’s Regulation 9, Rule 8. However, Subpart ZZZZ also allows use of these engines for more hours than District Regulation 9, Rule 8 and for reasons that are not allowed by District regulation. The engines must comply with the most stringent standards, but both standards apply and are included in the proposed permit. The applicable sections of 40 CFR Part 60, Subpart A, summarized in Table 8 of this regulation have also been included for these sources.

Complex Applicability Determinations for Turbines:

The two microturbines (S-16 and S-17) are exempt from NSPS, Subparts GG and KKKK, because each microturbine has a heat input at peak load of less than 10 million Btu per hour. The NESHAPs Subpart YYYYY applies to turbines located at a major source of HAPs. Since the City of Mountain View’s shoreline landfill facility is not a major source of HAP emissions, 40 CFR Part 63 Subpart YYYYY does not apply to S-16 or S-17.

Complex Applicability Determinations for CAM:

Sources at Title V facilities may be subject to the Compliance Assurance Monitoring (CAM) requirements in 40 CFR, Part 64. A source must meet all of the three criteria specified in 40 CFR Part 64.2(a)(1-3) in order for CAM to apply. First, the source must be subject to an emission limit for a regulated air pollutant other than an exempt limitation. Second, the source must use a control device to achieve compliance with this emission limitation. Third, the pre-controlled emissions of the specific pollutant being controlled must be greater than the major facility emissions threshold for that pollutant.

At this facility, the landfill and its related emission control devices (S-1, A-6, A-7, and A-8) 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 EG and NESHAP requirements identified above, and these EG and NESHAP requirements were adopted

pursuant to Sections 111 and 112 of the Clean Air Act after November 15, 1990. Since the applicable EG and NESHAP requirements contain adequate monitoring provisions, additional compliance assurance monitoring is not necessary. In addition, the pre-control emissions of precursor organic compounds from the landfill are less than the major facility emissions threshold of 100 tons of POC per year. Thus, S-1 does not meet the third CAM applicability criteria from 40 CFR Part 64.2(a)(3). Since the landfill and its related control devices do not satisfy all three CAM applicability criteria, CAM does not apply to S-1, A-6, A-7, or A-8.

The two diesel engines (S-11 and S-14) at this facility have federally enforceable emission limits for particulate matter (PM₁₀) and sulfur dioxide (SO₂). However, S-11 and S-14 do not use a control device to achieve compliance with these limits, and the uncontrolled PM₁₀ and SO₂ emissions from these engines are less than the major facility emissions threshold (100 tons/year) for these pollutants. Since S-11 and S-14 do not meet either the second or the third CAM applicability criteria – 40 CFR Part 64.2(a)(2 or 3), S-11 and S-14 are not subject to CAM.

The two microturbines, S-16 and S-17, at this facility have federally enforceable emission limits for particulate matter (PM₁₀), nitrogen oxides (NO_x), sulfur dioxide (SO₂), and carbon monoxide (CO). However, S-16 and S-17 do not use a control device to achieve compliance with these limits, and the uncontrolled PM₁₀, NO_x, SO₂, and CO emissions from these microturbines are less than the major facility emissions threshold (100 tons/year) for these pollutants. Since S-16 and S-17 do not meet either the second or the third CAM applicability criteria – 40 CFR Part 64.2(a)(2 or 3), these microturbines are not subject to CAM.

Changes to Permit:

- In Table IV-A, the new flare abatement device numbers replaced the old flare device numbers or the flare abatement device numbers were deleted.
- In Table IV-A, the dates of adoption or approval of several rules were updated.
- In Table IV-A, the bases of several parts to Condition # 16065 were revised as discussed in Section VI.
- In Table IV-B, obsolete requirements from Regulation 9, Rule 8 were deleted.
- In Table IV-B, the applicable parts of 40 CFR Part 63 Subparts A and ZZZZ were added.
- In Table IV-B, the amendment date for CCR Title 17, Section 93115 was updated.
- In Table IV-B, the basis of Condition # 24175 Part 2 was revised.
- In Table IV-C, 40 CFR Part 60, Subpart GG was removed because this subpart does not apply, as explained above.
- In Table IV-C, the bases to several parts of Condition # 24989 were updated.

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.”

The responsible official for The City of Mountain View (Shoreline) submitted a signed Certification Statement form dated January 10, 2014 and an updated Certification Statement form pertaining to the new flares dated September 24, 2014. On these forms, the responsible official certified that the following statements are true:

Based on information and belief formed after reasonable inquiry, the source(s) identified in the Applicable Requirements and Compliance Summary form that is(are) in compliance will continue to comply with the applicable requirement(s);

Based on information and belief formed after reasonable inquiry, the source(s) identified in the Applicable Requirements and Compliance Summary form will comply with future-effective applicable requirement(s), on a timely basis;

Based on information and belief formed after reasonable inquiry, information on application forms, all accompanying reports, and other required certifications is true, accurate, and complete;

All fees required by Regulation 3, including Schedule P have been paid.

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.

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.

Under previous Title V permit applications, parameter monitoring requirement(s) were added for each abatement device. Additional monitoring was added, where appropriate, to ensure compliance with the applicable requirements.

Changes to Permit:

- Condition # 16065: The new flare abatement device numbers (A-6, A-7, and A-8) replaced the device numbers for the flares that have been shut down in the equipment description and in Parts 2, 7, 9, 10, and 13.
- Condition # 16065, Part 2: An obsolete off-site control device was removed from this part.
- Condition # 16065, Part 3: The gas collection system description was updated to include new horizontal collectors. These collectors were installed outside of the waste area to prevent off-site gas migration, and they are allowed to operate intermittently. This operating provision is included here in Part 3.
- Condition # 16065, Part 4: The description of the gas collection system and the authorized alterations to this system were updated based on recent NSR applications for this facility. The basis for Part 4 was also updated.
- Condition # 16065, Part 5: Well IDs were corrected based on updated ID numbers provided by the applicant.
- Condition # 16065, Part 7: The minimum operating temperature for the new flares was revised pursuant to the initial compliance demonstration tests for these flares. The basis was also corrected.
- Condition # 16065, Part 9: The NO_x limits for the new flares were added and the limits for the old flares were removed.
- Condition # 16065, Part 10: The CO limits for the new flares were added and the limits for the old flares were removed.
- Condition # 16065, Part 12: The new sulfur dioxide emission limits and equivalent landfill gas sulfur content limits for the new flares were added and the limits for the old flares were removed.

- Condition # 16065, Part 13: An obsolete testing requirement for THC was removed and testing requirements for methane were added. The basis was updated.
- Condition # 16065, Part 14: The basis was updated.
- Condition # 24175, Part 2: An obsolete operating time limit was removed.

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

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) the 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) 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. When a rule or permit requirement has historically had no monitoring associated with it, no monitoring may still be appropriate in the Title V permit if, for instance, there is little likelihood of a violation. Compliance behavior and associated costs of compliance are determined in part by the frequency and nature of associated monitoring requirements. As a result, the District will generally revise the nature or frequency of monitoring only when it can support a conclusion that existing monitoring is inadequate.

PM Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
A-6, A-7, and A-8 Landfill Gas Flares	BAAQMD 6-1-301	Ringelmann 1.0	None
S-16 and S-17 Microturbines	BAAQMD 6-1-301	Ringelmann 1.0	None

PM Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-11 and S-14 Diesel Engine for Emergency Standby Generator	BAAQMD 6-1-303	Ringelmann 2.0	None
A-6, A-7, and A-8 Landfill Gas Flares	BAAQMD 6-1-310	0.15 gr/dscf	None
S-11 and S-14 Diesel Engine for Emergency Standby Generator	BAAQMD 6-1-310	0.15 gr/dscf	None
S-16 and S-17 Microturbines	BAAQMD 6-1-310	0.15 gr/dscf	None

PM Discussion:

All combustion devices at this facility will emit particulate matter and are subject to the Regulation 6-1-310 outlet grain loading limit of 0.15 grains/dscf. As discussed below, the District has not been conducting particulate emission testing at these combustion devices due to a high compliance margin compared to this limit, the low particulate emission rates from these devices, and the high cost of particulate emission testing.

The maximum expected particulate emissions for this facility are summarized below followed by detailed emission calculations.

Maximum Potential PM₁₀ Emissions from Site # A2740

Sources	Description	Fuel	PM ₁₀ Emissions Tons/Year
A-6, A-7, and A-8	Landfill Gas Flares	Landfill Gas	3.63
S-16 and S-17	Microturbines	Landfill Gas	0.20
S-11 and S-14	Diesel Engines (emergency)	CARB Diesel Oil	0.08
Total	All Combustion Sources		3.91

Potential to Emit Calculations for the A-6, A-7, and A-8 Landfill Gas Flares:

Maximum permitted PM emissions for A-6, A-7, and A-8 are based on the AP-42 emission factor for landfill gas fired flares (17 lbs PM₁₀/MM dscf of methane). Emission calculations are based on the assumption that the landfill gas at this facility contains at least 35% methane (HHV = 348 BTU/scf) and produces 10,486 dscf of flue gas (at 0% oxygen) per million BTU of landfill gas.

$$(17 \text{ lbs PM}_{10}/\text{MM dscf CH}_4) * (0.35 \text{ MM dscf CH}_4/\text{MM scf LFG}) * (1 \text{ MM scf LFG}/348 \text{ MM BTU}) = 0.0171 \text{ lbs PM}_{10}/\text{MM BTU}$$

$$(0.0171 \text{ lbs PM}_{10}/\text{MM BTU}) * (7000 \text{ grains/lb}) / (10486 \text{ ft}^3 \text{ flue gas}/\text{MM BTU}) = 0.012 \text{ gr/dscf}$$

- A-6 $(8.2 \text{ MM BTU/hr}) * (8760 \text{ hrs/yr}) * (0.0171 \text{ lbs PM}_{10}/\text{MM BTU}) / (2000 \text{ lbs/ton})$
= 0.614 tons/year of PM₁₀
- A-7 $(16.0 \text{ MM BTU/hr}) * (8760 \text{ hrs/yr}) * (0.0171 \text{ lbs PM}_{10}/\text{MM BTU}) / (2000 \text{ lbs/ton})$
= 1.198 tons/year of PM₁₀
- A-8 $(24.2 \text{ MM BTU/hr}) * (8760 \text{ hrs/yr}) * (0.0171 \text{ lbs PM}_{10}/\text{MM BTU}) / (2000 \text{ lbs/tons})$
= 1.813 tons/year of PM₁₀

Total Particulate Emissions from Flares: 3.63 tons/year of PM₁₀

Potential to Emit Calculations for the S-16 and S-17 Microturbines:

From Application # 23124, maximum permitted PM emissions for S-16 and S-17 were based on the EPA AP-42, Table 3.1.2b, for stationary Landfill Gas-Fired Turbines. The PM₁₀ emission factor is 2.3E-2 lb/MM BTU. Each microturbine has a maximum firing rate of 1.0 MM BTU/hour and is expected to have the same flue gas exhaust rate as the landfill gas flares.

$$(1.0 \text{ MM BTU/hour}) * (8760 \text{ hours/year}) * (2.3\text{E-}2 \text{ lbs PM}_{10}/\text{MM BTU}) / (2000 \text{ lbs/ton})$$

$$= 0.101 \text{ tons/year per microturbine}$$

$$(0.023 \text{ lbs PM}_{10}/\text{MM BTU}) * (7000 \text{ grains/lb}) / (10486 \text{ ft}^3 \text{ flue gas/MM BTU}) = 0.015 \text{ gr/dscf}$$

Total Particulate Emissions from Microturbines: 0.20 tons/year of PM₁₀

Potential to Emit Calculations for the S-11 and S-14 Diesel Engines:

Maximum potential PM emissions for S-11 are based on the CARB Certified Emission Factor of 0.4 grams/bhp-hour (8.82E-4 pounds/bhp-hour) for this Cummins IC engine firing diesel oil. The engine capacity is 207 bhp, the maximum exhaust flow rate is 519 scdf/min. Although this engine is limited to 30 hours per year of operation for reliability related testing, EPA has stated that a total operating time of 500 hours per year should be used to estimate a potential to emit for an emergency standby engine.

$$(207 \text{ bhp}) * (8.82\text{E-}4 \text{ lbs PM}_{10}/\text{bhp-hr}) * (500 \text{ hrs/yr}) / (2000 \text{ lbs PM}_{10}/\text{ton PM}_{10})$$

$$= 0.042 \text{ tons PM}_{10}/\text{year from S-11 Diesel Engine}$$

$$(207 \text{ bhp}) * (8.82\text{E-}4 \text{ lbs PM}_{10}/\text{bhp-hr}) * (7000 \text{ grains PM}_{10}/\text{lb PM}_{10}) / (60 \text{ min/hr}) / (519 \text{ scdf/min})$$

$$= 0.041 \text{ grains/dscf exhaust from S-11 Diesel Engine}$$

Maximum permitted PM emissions for S-14 are based on the CARB Certified Emission Factor of 0.15 grains/bhp-hour (3.31E-4 pounds/bhp-hour) for this IC engine firing diesel oil. The engine capacity is 469 bhp, the typical exhaust flow rate is 887 scdf/min. Although this engine is limited to 50 hours per year of operation for reliability related testing, EPA has stated that a total operating time of 500 hours per year should be used to estimate a potential to emit for an emergency standby engine.

$$(469 \text{ bhp}) * (3.31\text{E-}4 \text{ lbs PM}_{10}/\text{bhp-hr}) * (500 \text{ hrs/yr}) / (2000 \text{ lbs PM}_{10}/\text{ton PM}_{10})$$

$$= 0.039 \text{ tons PM}_{10}/\text{year from S-14 Diesel Engine}$$

$$(469 \text{ bhp}) * (3.31 \text{ E-}4 \text{ lbs PM}_{10}/\text{bhp-hr}) * (7000 \text{ grains PM}_{10}/\text{lb PM}_{10}) / (60 \text{ min/hr}) / (887 \text{ scdf/min})$$

$$= 0.020 \text{ grains/dscf exhaust from S-14 Diesel Engine}$$

Total Particulate Emissions from Emergency Engines: 0.08 tons/year of PM₁₀

BAAQMD 6-1-301 and SIP 6-301 for Landfill Gas Flares and Microturbines: Visible particulate emissions are normally not associated with combustion of gaseous fuels, such as natural gas, propane, or landfill gas. Since particulate emissions from these devices are low, and it is highly unlikely that violations of the Ringelmann 1.0 limit would occur at these devices, periodic monitoring for the Ringelmann limit is not justified.

BAAQMD 6-1-303.1 and SIP 6-303.1 for Diesel Engines: Visible emissions darker than Ringelmann 2.0 are normally not expected for the proper combustion of low-sulfur diesel oil. Since these small emergency standby diesel engines are not expected to exceed this limit and have negligible PM emissions are very low (< 0.01 tons/year), no additional monitoring is warranted for this standard.

BAAQMD Regulation 6-1-310 and SIP 6-310:

Regulation 6-1-310 limits filterable particulate (FP) emissions from any source to 0.15 grains per dry standard cubic foot (gr/dscf) of exhaust volume. As shown above, A-6, A-7, and A-8 will emit 0.012 gr/dscf of exhaust at 0% oxygen; S-16 and S-17 will emit 0.015 gr/dscf of exhaust at 0% oxygen; and S-11 and S-14 will emit 0.041 and 0.020 gr/dscf of exhaust, respectively. The compliance ratios (limit/expected grain loading rate) are 12:1 for the flares; 10:1 for the microturbines; 3.7:1 for S-11, and 7.5:1 for S-14.

For A-6, A-7, and A-8, the likelihood of compliance is high and PM₁₀ emissions are low (3.6 tons/year combined). Considering these factors and the high cost of PM₁₀ stack testing, it would not be appropriate to add periodic PM monitoring at the flares for the Regulation 6-1-310 standard. The fuel filter for A-6, A-7, and A-8 and the minimum temperature requirement will ensure that flare PM₁₀ emissions do not exceed the low PM₁₀ emission rate determined above. This decision is consistent with the “no additional monitoring” recommendation for flares burning landfill gas containing less than 200 ppmv of sulfur compounds from the CAPCOA/CARB/EPA Region IX Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP: Combustion Sources (see source category I.B.4).

For S-16 and S-17, the likelihood of compliance is high and the PM₁₀ emission are very low (0.2 tons/year combined). Considering these factors and the high cost of PM₁₀ stack testing, it would not be appropriate to add periodic PM monitoring at the microturbines for the Regulation 6-1-310 standard. This decision is consistent with the “no additional monitoring” recommendation for gas turbines burning landfill gas containing less than 200 ppmv of sulfur compounds from the CAPCOA/CARB/EPA Region IX Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP: Combustion Sources (see source category I.B.2).

For S-11 and S-14, the likelihood of compliance is not particularly high, but the PM₁₀ emissions from S-11 and S-14 are low (0.08 tons/year combined). Thus, the consequences of non-compliance are not significant. In addition, the engines are only allowed to operate for 30 and 50 hours/year respectively for reliability-related activities and emissions testing. Considering the insignificant consequences of non-compliance, the low annual operating time for these engines, and the very high cost of PM₁₀ testing for IC engines, it would not be appropriate to add periodic PM monitoring at the engines for the Regulation 6-1-310 standard. This decision is consistent with the “no additional monitoring” recommendation for non-utility emergency standby engines that are limited to 200 hours/year or less of operation for maintenance and testing from the CAPCOA/CARB/EPA Region IX Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP: Combustion Sources (see source category II.A.1).

SO₂ Sources

# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-11 and S-14 Diesel Engine for Emergency Standby Generator	BAAQMD 9-1-301	Property Line Ground Level SO ₂ Limits: ≤ 0.5 ppm for 3 minutes and ≤ 0.25 ppm for 60 min. and ≤ 0.05 ppm for 24 hours	None
S-16 and S-17 Microturbines	BAAQMD 9-1-301	Property Line Ground Level SO ₂ Limits: ≤ 0.5 ppm for 3 minutes and ≤ 0.25 ppm for 60 min. and ≤ 0.05 ppm for 24 hours	None
A-6, A-7, and A-8 Landfill Gas Flares	BAAQMD 9-1-301	Property Line Ground Level SO ₂ Limits: ≤ 0.5 ppm for 3 minutes and ≤ 0.25 ppm for 60 min. and ≤ 0.05 ppm for 24 hours	None

SO₂ Discussion:

All of the combustion devices located at this facility burn fuels that contain small amounts of sulfur compounds and emit sulfur dioxide (SO₂) as a product of combustion. Therefore, each of these devices will contribute to the ground level SO₂ concentration at the fence line of this site, and all these combustion devices are subject to the Regulation 9-1-301 ground level SO₂ limits. As explained in more detail below, the District is not proposing any ground level SO₂ monitoring for this facility, because the likelihood of non-compliance with these ground level SO₂ limits is very low, the maximum expected sulfur dioxide emissions from this site are only 4 tons/year, and ground level SO₂ monitoring is very expensive. This type of expensive monitoring is not justifiable in light of a high margin of compliance and a low site-wide emission rate.

The maximum expected sulfur dioxide emissions for this facility are summarized below followed by a summary of the landfill gas sulfur content data collected over the last three years. Detailed Emission calculations are presented after the tables.

Maximum Potential SO₂ Emissions from Site # A2740

Sources	Description	Fuel Sulfur Content	SO ₂ Emissions Tons/Year
A-6, A-7, and A-8	Landfill Gas Flares	150 ppmv of TRS in LFG	15.22
S-16 and S-17	Microturbines	150 ppmv of TRS in LFG	0.62
S-11 and S-14	Diesel Engines	15 ppmw S in CARB Diesel Oil	0.002
Total	All Combustion Sources		15.84

Potential to Emit Calculations for the Landfill Gas Flares and LFG Fired Microturbines:

For the Landfill Gas Flares, maximum potential sulfur dioxide (SO₂) emissions are based on the maximum allowable total reduced sulfur compound concentration (150 ppmv as H₂S) and the maximum permitted landfill gas flow rate to the flares. The landfill gas is assumed to contain 35% methane (HHV = 348 BTU/scf). It produces 10,486 dscf of flue gas (at 0% oxygen) per million BTU of landfill gas.

$$(150 \text{ ft}^3 \text{ S}/1 \text{ MM ft}^3 \text{ LFG}) * (1 \text{ MM ft}^3 \text{ LFG}/348 \text{ MM BTU}) * (1 \text{ lbmol S}/387.006 \text{ ft}^3 \text{ S}) * (1 \text{ lbmol SO}_2/1 \text{ lbmol S}) * (64.06 \text{ lbs SO}_2/\text{lbmol SO}_2) = 0.07135 \text{ lbs SO}_2/\text{MM BTU}$$

$$(150 \text{ ft}^3 \text{ S}/1 \text{ MM ft}^3 \text{ LFG}) * (1 \text{ MM ft}^3 \text{ LFG}/348 \text{ MM BTU}) * (1 \text{ ft}^3 \text{ SO}_2/1 \text{ ft}^3 \text{ S}) * (1 \text{ MM BTU}/10,486 \text{ ft}^3 \text{ flue gas at } 0\% \text{ O}_2) = 4.11 \text{ E-}5 \text{ ft}^3 \text{ SO}_2/\text{ft}^3 \text{ flue gas} = 41 \text{ ppmv SO}_2 \text{ at } 0\% \text{ O}_2$$

- A-6 (8.2 MM BTU/hr)*(8760 hrs/yr)*(0.07135 lbs SO₂/MM BTU)/(2000 lbs/ton) = 2.563 tons/year of SO₂
- A-7 (16.0 MM BTU/hr)*(8760 hrs/yr)*(0.07135 lbs SO₂/MM BTU)/(2000 lbs/ton) = 5.000 tons/year of SO₂
- A-8 (24.2 MM BTU/hr)*(8760 hrs/yr)*(0.07135 lbs SO₂/MM BTU)/(2000 lbs/tons) = 7.653 tons/year of SO₂
- S-16 (1.0 MM BTU/hr)*(8760 hrs/yr)*(0.07135 lbs SO₂/MM BTU)/(2000 lbs/tons) = 0.313 tons/year of SO₂
- S-17 (1.0 MM BTU/hr)*(8760 hrs/yr)*(0.07135 lbs SO₂/MM BTU)/(2000 lbs/tons) = 0.313 tons/year of SO₂

Potential to Emit Calculations for the S-11 and S-14 Diesel Engines:

Maximum potential SO₂ emissions from these diesel engines are based on the CARB maximum allowable fuel sulfur content limit of 15 ppm sulfur by weight. The diesel oil is assumed to have a density of 7.1 pound/gallon and a high heating value of 137,000 BTU/gallon. Per EPA, diesel oil produces 9190 dscf of flue gas per MM BTU. Per EPA requirements, total operating time for this emergency engine will be assumed to be 500 hours/year for this PTE analyses even though the permit conditions limit operating time for reliability related purposes to 30 hours/year.

Based on the engine manufacturer's data for S-11, the engine capacity is 207 bhp with a maximum fuel flow rate of 10.6 gallons/hour and a maximum exhaust gas flow rate of 1515 ft³/min (wet) at 1055 °F (519 sdcfm).

$$(10.6 \text{ gallons diesel/hour}) * (7.1 \text{ lbs diesel/gallon diesel}) * (15\text{E-}6 \text{ lbs S/lb diesel}) / \\ (32.06 \text{ lbs S/lbmol S}) * (1 \text{ lbmol SO}_2 / 1 \text{ lbmol S}) * (64.06 \text{ lbs SO}_2 / \text{lbmol SO}_2) \\ = 2.26\text{E-}3 \text{ lbs SO}_2 / \text{hour from S-11 Diesel Engine}$$

$$(2.26\text{E-}3 \text{ lbs SO}_2 / \text{hour}) * (500 \text{ hours/year}) / (2000 \text{ lbs SO}_2 / \text{ton SO}_2) \\ = 0.00056 \text{ tons SO}_2 / \text{year from S-11 Diesel Engine}$$

$$(2.26\text{E-}3 \text{ lbs SO}_2 / \text{hr}) / (60 \text{ min/hr}) / (64.06 \text{ lbs SO}_2 / \text{lbmol SO}_2) * (387.006 \text{ scdf SO}_2 / \text{lbmol SO}_2) / \\ (519 \text{ scdf exhaust/min}) * (1 \text{ E6 scdf/MM scdf}) \\ = 0.4 \text{ ppmv of SO}_2 \text{ in exhaust from S-11 Diesel Engine}$$

Based on the engine manufacturer's data for S-14, the engine capacity is 469 bhp with a maximum fuel flow rate of 19.8 gallons/hour and a typical exhaust gas flow rate of 2190 ft³/min (wet) at 822 °F (887 dscfm). Per EPA requirements, total operating time for this emergency engine will be assumed to be 500 hours/year for this PTE analyses even though Regulation 9, Rule 8 limits operating time for reliability related purposed to 50 hours/year.

$$(19.8 \text{ gallons diesel/hour}) * (7.1 \text{ lbs diesel/gallon diesel}) * (15\text{E-}6 \text{ lbs S/lb diesel}) / \\ (32.06 \text{ lbs S/lbmol S}) * (1 \text{ lbmol SO}_2 / 1 \text{ lbmol S}) * (64.06 \text{ lbs SO}_2 / \text{lbmol SO}_2) \\ = 4.21\text{E-}3 \text{ lbs SO}_2 / \text{hour from S-14 Diesel Engine}$$

$$(4.21\text{E-}3 \text{ lbs SO}_2 / \text{hour}) * (500 \text{ hours/year}) / (2000 \text{ lbs SO}_2 / \text{ton SO}_2) \\ = 0.00105 \text{ tons SO}_2 / \text{year from S-14 Diesel Engine}$$

$$(4.21\text{E-}3 \text{ lbs SO}_2 / \text{hr}) / (60 \text{ min/hr}) / (64.06 \text{ lbs SO}_2 / \text{lbmol SO}_2) * (387.006 \text{ scdf SO}_2 / \text{lbmol SO}_2) / \\ (887 \text{ scdf exhaust/min}) * (1 \text{ E6 scdf/MM scdf}) \\ = 0.5 \text{ ppmv of SO}_2 \text{ in exhaust from S-14 Diesel Engine}$$

BAAQMD Regulation 9-1-301: This facility is subject to federally enforceable limits that will ensure compliance with the Regulation 9-1-302 gas stream emission limit of 300 ppmv of SO₂ by ratios of at least 25:1 for each of the three flares (A-6, A-7, and A-8) and the two microturbines (S-16 and S-17) and 750:1 for the diesel engines (S-11 engine and S-14). Based on modeling analyses conducted at another landfill site, sources complying with the Regulation 9-1-302 and 9-1-304 limits are not expected to result in excesses of the ground level concentration limits listed in Regulation 9-1-301. In addition, the maximum potential SO₂ emissions from this site are not substantial (<16 tons/year of SO₂) and actual SO₂ emissions (0.5 tons/year) are far below this maximum potential rate. Ground level SO₂ monitoring is very expensive. Considering all these factors (high likelihood of compliance, low emissions, and high cost of monitoring), the District has determined that ground level SO₂ monitoring to demonstrate compliance with the Regulation 9-1-301 limits is unnecessary and not warranted for this facility.

BAAQMD Regulation 9-1-302: This regulation applies to the A-6, A-7 and A-8 Landfill Gas Flares and to the S-16 and S-17 Microturbines. It limits the sulfur dioxide concentration in the outlet gas stream to 300 ppmv of SO₂. The current 150 ppmv landfill gas sulfur limit results in a maximum outlet concentration of 41 ppmv of SO₂ at 0% O₂ or 12 ppmv at 15% O₂. The most recent source test at the flares found 11 ppmv of H₂S in the landfill gas (7% of the limit) and 9 ppmv of SO₂ at 15% O₂ in the exhaust (3% of the limit).

Changes to Permit:

- In Table VII-A, the new flare abatement device numbers (A-6, A-7, and A-8) replaced the device numbers for the flares that have been shut down (A-3, A-4, and A-5).
- In Table VII-A, the operating provisions for the horizontal gas migration control collectors was clarified.
- In Table VII-A, the temperature limit for the new flares replaced the existing limit.
- In Table VII-A, the landfill gas sulfur content limits replaced the existing limit.
- In Table VII-A, the NO_x emission limits for the new flares replaced the existing limits.
- In Table VII-A, the CO limit was clarified.
- In Table VII-B, obsolete limits were removed.
- In Table VII-B, the operating time limits and maintenance requirements from 40 CFR Part 63 Subpart ZZZZ were added.
- In Table VII-C, a missing VOC limit was added.
- In Table VII-C, the monitoring requirements for the NO_x, CO, and VOC certification standard limits were clarified. The CARB regulations require initial testing to certify compliance with these standards.

VIII. Test Methods

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

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

Changes to Permit:

- None

IX. Permit Shield:

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

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

This facility has no permit shields. This permit has no streamlining.

Changes to Permit:

- None

X. Revision History

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

Changes to Permit:

- The description of the Title V permit revisions associated with this MFR Renewal Permit (Application #25971) and with this MFR Minor Revision (Application #26618) were added to the end of Section X.

XI. Glossary

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

Changes to Permit:

- None

D. ALTERNATE OPERATING SCENARIOS

This facility has not requested any alternate operating scenarios. All approved operating scenarios are described in this permit.

E. COMPLIANCE STATUS

The responsible official submitted a signed Certification Statement form. On this form, the responsible official certified that the following four statements are true:

Based on information and belief formed after reasonable inquiry, the source(s) identified in the Applicable Requirements and Compliance Summary form that is(are) in compliance will continue to comply with the applicable requirement(s);

Based on information and belief formed after reasonable inquiry, the source(s) identified in the Applicable Requirements and Compliance Summary form will comply with future-effective applicable requirement(s), on a timely basis;

Based on information and belief formed after reasonable inquiry, information on application forms, all accompanying reports, and other required certifications is true, accurate, and complete;

All fees required by Regulation 3, including Schedule P have been paid.

F. DIFFERENCES BETWEEN THE APPLICATION AND THE PROPOSED PERMIT

The Title V permit application was originally submitted on January 14, 2014. The Title V permit for this site was last revised on February 1, 2013. This version of the permit is the basis for constructing the proposed Title V permit. In addition to the renewal application materials submitted under Application # 25971, the District also included minor revision application materials submitted under Application # 26618. This minor revision concerned the replacement of the three landfill gas flares with three new smaller flares and alterations to the gas collection system. The District Evaluation Report for the new source review application for these new flares (Application # 26279) is enclosed in Appendix A.

In Application # 25971, the City of Mountain View requested updates to well identification numbers and the inclusion of permit conditions related to the gas collection system description and authorized well alterations. The District included all requested changes except the following. The City of Mountain View requested that 9 horizontal gas migration control collectors be added to Part 4a. These collectors are described in Part 3 instead. Components listed in Part 4a are required to operate continuously, while these 9 collectors have been authorized to operate intermittently.

APPENDIX A

Engineering Evaluation Report Application 26279

Engineering Evaluation Report

Application #26279

City of Mountain View Landfill, P#2740
2600 Shoreline Boulevard
Mountain View, CA 94043

BACKGROUND

The City of Mountain View (CMV) submitted this application, prepared by GC Environmental, for the replacement of three Landfill Gas Flares located at their closed municipal solid waste Shoreline Landfill, at Mountain View Park.

The existing permitted Flares (A-3, A-4, and A-5) are nearing the end of their useful lives, and are oversized for the diminishing amount of landfill gas (LFG) that this site is producing. CMV is proposing to install three new flares that are suitably sized to accommodate the smaller quantity of landfill gas anticipated through the end of the landfill gas generation life.

The new proposed flares have the following capacities:

- A-6 LANDFILL GAS FLARE – 270 scfm capacity, 8.2 MM BTU/hr max,
- A-7 LANDFILL GAS FLARE – 530 scfm capacity, 16.0 MM BTU/hr max,
- A-8 LANDFILL GAS FLARE – 800 scfm capacity, 24.2 MM BTU/hr max,

The current peak and nominal collected LFG quantities are approximately 1000 and 800 scfm, respectively. Of this amount, approximately 360 to 400 scfm is currently being used in one of the two available off-site internal combustion engines to produce electricity for nearby Google facilities and approximately 30 to 40 scfm is being used in each of the two on-site microturbines to produce electricity for CMV uses within Shoreline at Mountain View Park. Google's engines are covered under a separate BAAQMD permit; the two microturbines are permitted as S-16 and S-17 within the Shoreline Landfill permit. The LFG balance, currently about 400 scfm, is combusted at the current flares. The three new flares will have a cumulative capacity of approximately 1600 scfm; this figure is enough to both accommodate all of the LFG in the event Google's engines and the microturbines are simultaneously offline and account for temporary increases in total LFG collection beyond the current average 800 scfm collection rate.

Overall with this project, CMV will be decreasing their landfill flaring capacity from 129 MM BTU/hour to 48.4 MM BTU/hour, or by about 80.6 MM BTU/hour (approximately 2700 scfm of landfill gas).

The existing flares to be replaced are as follows:

- A-3 LANDFILL GAS FLARE – SURLITE, 1000 scfm capacity, 33 MM BTU/hr max,
- A-4 LANDFILL GAS FLARE – JOHN ZINK, 1600 scfm capacity, 48 MM BTU/hr max,
- A-5 LANDFILL GAS FLARE – JOHN ZINK, 1600 scfm capacity, 48 MM BTU/hr max,

In addition to this proposed flare replacement, the City of Mountain View has also requested a permit condition modification for Condition # 16065, Part 4. CMV has requested to have the ability to install up to 5 new vertical landfill gas collection wells in any area of the landfill on an as needed basis. CMV does not currently have any specific landfill gas collection system alteration plans but would like to have keep these new 5 wells in reserve to cover any potential gas collection system alteration needs that may arise in the future.

FACILITY DESCRIPTION

The City of Mountain View complex is a recreational wildlife area constructed over approximately 600 acres of closed landfill sites with approximately 13.1 million tons of refuse in place. The landfill stopped accepting refuse in October 1993. The City of Mountain View landfill includes the following sites: 544-Acre Site, which includes the golf course and sailing lake areas, the Vista Site, and Crittenden Site. A portion of the Vista Site was leased to Shoreline Amphitheatre (Plant #2561); Shoreline Amphitheatre owns and operates a separate landfill gas collection and control system for this portion of the Vista Landfill, which contains about 375,000 tons of waste materials. The combined size of the three contiguous landfills is 18.2 million yd³ (13.9 million m³) and 13.1 million tons (11.9 million Mg). Excluding the small are of the Vista Landfill that is controlled by Shoreline Amphitheatre, the remaining amount of waste materials that is controlled by the City of Mountain View is 12,725,000 tons.

These main landfill areas, S-1 Shoreline Landfills at Plant 2740, are controlled by landfill gas collection systems operated by the City of Mountain View. The current landfill gas collection system includes 264 vertical wells and 7 horizontal collectors. As mentioned above, CMV is requesting to have the ability to added up to 5 wells in the future on an as needed basis.

Collected landfill gas may be vented to a variety of control devices: including on-site Landfill Gas Flares (A-3, A-4, or A-5), on-site Microturbines (S-16 and S-17), and off-site LFG-fired Engines at Google (S-29 or S-30 at Plant # 15982). The microturbines and off-site engines operate only as needed, but the flares operate continuously. The combined capacity of the A-3, A-4 and A-5 Flares is 129 MM BTU/hour or 4200 cfm of landfill gas.

Landfill Gas Control System Capacity Requirements:

The federal Emission Guidelines for Municipal Solid Waste Landfills (40 CFR Part 60, Subpart Cc) requires that landfills subject to this requirement have sufficient landfill gas control system capacity to control all of the landfill gas that is expected to be generated by the landfill during the life of the collection system (typically about 10-15 years). For this site, the existing permitted landfill (S-1 City of Mountain View Shoreline Landfill), the peak landfill gas generation rate was estimated to have occurred in the year 1987. The City of Mountain View Landfill stopped accepting refuse in October, 1993, with diminishing acceptance from 1980 to 1993.

The District used EPA's LandGEM program to estimate the peak, current, and future landfill gas generation rates for this landfill. The District used the default methane generation rate for arid areas ($k = 0.02 \text{ year}^{-1}$ for areas with <25 inches/year of precipitation). The District used the default potential methane generation capacity ($L_0 = 100 \text{ m}^3/\text{Mg}$). The District assumed that the landfill gas methane content is 50%. Based on these inputs and historical waste acceptance data provided by CMV, the LandGEM model found that peak landfill generation occurred in 1987. The landfill gas generation rate results from LandGEM for the Peak Year (1987), the Current Year (2014), and 15 years in the future (2029) are summarized below.

Table 1. Summary of LandGEM Results for City of Mountain View Shoreline Landfills

S-1 Shoreline Landfills at Plant # 2740 ($k = 0.02 \text{ year}^{-1}$, $L_0 = 100 \text{ m}^3/\text{Mg}$, and $\text{CH}_4 = 50\%$)	PEAK YEAR 1987	CURRENT YEAR 2014	FUTURE YEAR 2029
Annual LFG Generation Rate, ft^3/year	1.342 E+09	8.025 E+08	5.945 E+08
Annual Average LFG Generation Rate, cfm	2,553	1,527	1,131
Annual Average Methane Generation Rate, cfm	1,277	763	566
Annual Average Methane Generation, tons/year	13,944	8,338	6,177
Annual Average Heat Capacity, MM BTU/hour	76.27	45.61	33.79

The proposed new flares need to have sufficient capacity to handle all of the landfill gas that could be generated by the landfill based on the LandGEM projected gas generation rates above. The combined capacity for the three proposed flares is 48.4 MM BTU/hour, which exceeds the equivalent heat input rate for the maximum projected gas generation rate for 2014 (45.6 MM BTU/hour).

The proposed new flares also need to have sufficient turn down capacity to handle the multiple gas control options for this site at the lower gas collection rates predicted for future years. Each of the proposed flares has a 10:1 turn down ratio with minimum landfill gas flow rates of 27 cfm, 53 cfm, and 80 cfm, respectively. In 15 years, the gas generation rate is projected to be 1131 cfm of landfill gas. The current gas collection rate is about 50% of the current projected gas generation rate. Assuming this gas capture efficiency remains constant, the landfill gas collection rate could drop to 565 cfm by 2029. If one off-site engine and the two on-site microturbines are all running at full capacity, about 480 cfm of this collected landfill gas would be diverted to energy generation leaving about 85 cfm of landfill gas that would require control by the proposed flares. As shown by the minimum landfill gas flow rates listed above, any one of the three proposed flares could handle this low flow rate contingency.

The District concludes that the proposed flares can handle both the maximum projected gas generation rates from the Shoreline Landfills and the minimum projected gas diversion rate for the next 15 years.

EMISSIONS

The District has determined the maximum permitted emissions for both the current A-3, A-4, and A-5 Landfill Gas Flares and the proposed new A-6, A-7, and A-8 Landfill Gas Flares (see Tables 2 and 3 below). Detailed emission calculations are presented in the attached spreadsheets. The basis or derivation of the emission factors for these flares are discussed below.

Criteria Pollutants:

The nitrogen oxide (NO_x) and carbon monoxide (CO) emission rates are based on the bid specifications for each flare. The maximum hourly sulfur dioxide (SO_2) emission rate for each existing flare is based on the current landfill gas sulfur content limit for any single test (1300 ppmv of total reduced sulfur (TRS), expressed as H_2S). The SO_2 emission rates for the new flares are all based on the revised maximum permitted landfill gas sulfur content of 150 ppmv of TRS. Particulate (PM_{10}) emission rates are based on AP-42 emission factors (Chapter 2.4). Total non-methane organic compound (NMOC) emission rates are based on the District's regulatory limit for landfill gas flares (Regulation 8-34-301.3: 30 ppmv of NMOC in the exhaust

at 3% O₂, expressed as methane). Maximum precursor organic compounds (POC) emissions are calculated by assuming that the NMOC emissions are 100% POC. Non-precursor organic compound (NPOC) emissions are calculated using the District's standard assumption that NMOC emissions are no more than 5% NPOC.

TACs and HAPs:

Toxic air contaminant (TAC) emissions are calculated based on site-specific landfill gas constituent data and standard District assumptions. Hazardous air pollutant (HAP) emissions are a subset of these TAC emissions as determined by the current EPA list of HAPs. Residual TAC emissions are calculated by assuming 98% destruction efficiency for each individual compound detected in the landfill gas at this site. Secondary TAC emissions include formaldehyde and acid gases (hydrogen chloride, hydrogen fluoride, and hydrogen bromide) that form due to combustion of halogenated compounds present in the landfill gas. Formaldehyde emissions are calculated using the District's standard factor for enclosed landfill gas flares (0.18 lbs/million scf of landfill gas burned), which is based on a landfill gas fired turbine emission factor from the California Air Toxic Emission Factor (CATEF) database. Site-specific landfill gas data is used to determine the maximum expected concentrations of chlorine, fluorine, and bromine ions (21,100 ppbv, 8,400 ppbv, and 200 ppbv, respectively) in the landfill gas. These ions are converted to hydrogen chloride, hydrogen fluoride, and hydrogen bromide during combustion (100% conversion is assumed). The largest single HAP is hydrogen chloride with an estimated emission rate of 4.0E-3 pounds/MM BTU. TAC emissions from the proposed new flares (A-6, A-7, and A-8) are summarized in Table 4; detailed spreadsheets are attached.

GHG:

The District calculated greenhouse gas (GHG) emissions from the flares using standard District emission factors for enclosed landfill gas flares. Carbon dioxide (CO₂) emissions are biogenic GHG, because these emissions are derived from the decomposition of plant matter. Methane (CH₄) and nitrous oxide (N₂O) emissions are non-biogenic GHG. The GHG emission factors are based on the following assumptions:

- the landfill gas contains 50% CO₂, 50% CH₄, and 0.001% N₂O
- the combustion process converts 99% of the CH₄ to CO₂
- the combustion process destroys 76.8% of the N₂O
- the global warming potentials (GWP) are: 1 for CO₂, 21 for CH₄, and 310 for N₂O
- total GHG emissions are expressed as CO₂ equivalent emissions using these GWPs

Gas Collection Well Alterations:

The proposed addition of 5 new vertical wells to the landfill gas collection system will not impact the maximum permitted emission limits for the landfill. These wells may be needed in the future to ensure that this site meets the surface leak limits of Regulation 8, Rule 34 or the CARB Landfill Methane Control Rule; however, these type of alterations to the gas collection system do not increase the maximum permitted emission level for the landfill. Also, actual emissions from this landfill are expected to decline in the future because this landfill is closed.

Table 2. Maximum Permitted Emissions for the Existing A-3, A-4, and A-5 Landfill Gas Flares

		MM BTU/hour	MM BTU/day	MM BTU/year
Capacity		129	3096	1,130,040
	Emission Factors	Maximum Permitted Emissions		
	lbs/MM BTU	lbs/hour	lbs/day	tons/year
NO _x	0.13, 0.06, 0.06	10.05	241.2	44.019
CO	0.2000	25.80	619.2	113.004
SO ₂ (max hourly)	0.4330	55.86	1340.6	244.654
PM ₁₀	0.0333	4.30	103.2	18.834
POC	0.0140	1.80	43.3	7.899
NPOC	0.0007	0.09	2.2	0.395
Total HAPs	0.0084	1.09	26.1	4.772
Single HAP (HCl)	0.0054	0.69	16.7	3.042
Total GHG	236.62			133,692
Non-Biogenic GHG	8.9233			5,042

Table 3. Maximum Permitted Emissions for the Proposed A-6, A-7, and A-8 LFG Flares

		MM BTU/hour	MM BTU/day	MM BTU/year
Capacity		48.4	1162	423984
	Emission Factors	Maximum Permitted Emissions		
	lbs/MM BTU	lbs/hour	lbs/day	tons/year
NO _x	0.0600	2.904	69.70	12.720
CO	0.2000	9.680	232.32	42.398
SO ₂ (revised max)	0.0500	2.418	58.04	10.592
PM ₁₀	0.0171	0.828	19.87	3.626
POC	0.0140	0.677	16.24	2.964
NPOC	0.0007	0.034	0.82	0.148
Total HAPs	0.0084			1.790
Single HAP (HCl)	0.0054			1.141
Total GHG	236.62			50,161
Non-Biogenic GHG	8.9233			1,892

Table 4. Maximum Permitted TAC Emissions for the
Proposed A-6, A-7, and A-8 Landfill Gas Flares

	Maximum			
	Expected LFG	Emission Factor	Maximum	Maximum
	Concentration	(After Combustion)	Emissions	Emissions
	PPBV	lbs/MM BTU	lbs/hour	lbs/year
Acrylonitrile*	300	1.655E-06	8.01E-05	7.02E-01
Benzene*	2000	1.625E-05	7.86E-04	6.89E+00
Carbon Disulfide*	800	6.335E-06	3.07E-04	2.69E+00
Carbon Tetrachloride*	100	1.600E-06	7.74E-05	6.78E-01
Chlorobenzene*	2000	2.341E-05	1.13E-03	9.93E+00
Chlorodifluoromethane	2000	1.798E-05	8.70E-04	7.63E+00
Chloroethane*	300	2.013E-06	9.74E-05	8.53E-01
Chloroform*	100	1.241E-06	6.01E-05	5.26E-01
1,1 Dichloroethane*	100	1.029E-06	4.98E-05	4.36E-01
1,1 Dichloroethene*	100	1.008E-06	4.88E-05	4.27E-01
1,2 Dichloroethane*	100	1.029E-06	4.98E-05	4.36E-01
1,4 Dichlorobenzene*	2000	3.057E-05	1.48E-03	1.30E+01
Dichlorodifluoromethane	2000	2.515E-05	1.22E-03	1.07E+01
Dichlorofluoromethane	300	3.211E-06	1.55E-04	1.36E+00
Ethyl benzene*	10000	1.104E-04	5.34E-03	4.68E+01
Ethylene Dibromide*	100	1.954E-06	9.46E-05	8.28E-01
Fluorotrichloromethane	100	1.429E-06	6.91E-05	6.06E-01
Hexane*	30000	2.688E-04	1.30E-02	1.14E+02
Hydrogen Sulfide	150000	5.316E-04	2.57E-02	2.25E+02
2-Propanol (IPA)	10000	6.249E-05	3.02E-03	2.65E+01
2-Butanone (MEK)	15000	1.125E-04	5.44E-03	4.77E+01
Methylene Chloride*	200	1.766E-06	8.55E-05	7.49E-01
Perchloroethylene*	500	8.623E-06	4.17E-04	3.66E+00
Toluene*	10000	9.582E-05	4.64E-03	4.06E+01
1,1,1 Trichloroethane*	100	1.387E-06	6.71E-05	5.88E-01
1,1,2,2, Tetrachloroethane*	100	1.746E-06	8.45E-05	7.40E-01
Trichloroethylene*	500	6.832E-06	3.31E-04	2.90E+00
Vinyl Chloride*	2000	1.300E-05	6.29E-04	5.51E+00
Xylenes*	30000	3.312E-04	1.60E-02	1.40E+02
Formaldehyde*		3.622E-04	1.75E-02	1.54E+02
Hydrogen Chloride*	21100	4.000E-03	1.94E-01	1.70E+03
Hydrogen Fluoride*	8400	8.738E-04	4.23E-02	3.70E+02
Hydrogen Bromide	200	8.414E-05	4.07E-03	3.57E+01

* The compound is an EPA hazardous air pollutant (HAP).

Table 5. PTE for Point Sources: Existing Engines and Microturbines and Proposed New Flares

	Standby Diesel Engines S-11 and S-14	Existing Microturbines S-16 and S-17	Proposed A-6, A-7, A-8 (Full Capacity)	Combined Combustion Emissions
	MM BTU/year	MM BTU/year	MM BTU/year	MM BTU/year
Permitted Limits	179	26,280	423,984	450,443
	tons/year	tons/year	tons/year	tons/year
NO _x	0.158	0.285	12.720	13.163
CO	0.069	3.416	42.398	45.883
SO ₂ (average)	0.000	0.312	10.592	10.904
PM ₁₀	0.005	0.302	3.626	3.933
POC	0.015	0.499	2.964	3.478

As shown in Tables 2 and 3 above, this project will decrease the flaring capacity to accommodate the declining gas generation rate for the landfill. CO emissions from A-6, A-7, and A-8 combined will now be less than 100 tons/year. This site (Plant # 2740) has two microturbines and two diesel fired emergency standby engines in addition to the flares. The total maximum permitted Potential to Emit (PTE) for all sources of combustion emissions at Plant # 2740 are shown in Table 5. This table demonstrates that facility-wide CO emissions will be less than 100 tons/year after shut-down of the 3 existing flares and installation of the 3 new flares. In addition, facility-wide NO_x emissions will be greater than 10 tons/year but less than 35 tons/year when this project is completed. Therefore, this facility could qualify for the small facility banking account for any future NO_x emission increases.

The cumulative emission increases for this application are calculated pursuant to Regulation 2-2-604 and 2-2-605: the maximum permitted emission levels for the proposed new flares (A-6, A-7, and A-8) minus the baseline actual emissions for the existing flares that will be shutdown (A-3, A-4, and A-5). The cumulative emissions for this application are summarized in Table 6. Baseline actual emissions for A-3, A-4, and A-5 were determined using 2011-2014 source test data and actual throughput data reported by the facility.

Table 6. Cumulative Emission Increases for Application # 26279

	Proposed Permitted Emissions from A-6, A-7, and A-8	Baseline Actual Emissions from A-3, A-4, and A-5	Cumulative Emission Increases
	tons/year	tons/year	tons/year
NO _x	12.720	20.706	- 7.987
CO	42.398	11.832	+ 30.566
SO ₂	10.592	1.563	+ 9.029
PM ₁₀	3.626	3.765	- 0.139
POC	2.964	0.768	+ 2.195

STATEMENT OF COMPLIANCE

Regulation 2, Rule 1 (CEQA and Public Notification Requirements):

This application involves the permitting of abatement devices with no modification of the landfill source. The new abatement devices are necessary to ensure that the Shoreline Landfills will continue to comply with District, state, and federal regulations. The new abatement devices are sized appropriately to provide sufficient back-up control capacity for the landfill and also to accommodate the lower gas generation rates that are predicted to occur in the future. This project will have no significant impact on biological resources, water quality, dust, smoke, odors, noise, or the need for municipal services. Since this application involves a permit for abatement devices only and there is no possibility that this device will have any significant adverse environmental impact, this application is categorically exempt from CEQA review pursuant to Regulation 2-1-312.2. On January 30, 2014, The City of Mountain View, as lead agency, filed a Notice of Exemption, pursuant to 14 CCR 15302 (Replacement or Reconstruction) with Santa Clara County Clerk.

Since landfills are not in one of the 28 PSD source-categories for which fugitive emissions must be included when making "major facility" applicability determinations, fugitive emissions may be excluded from any "major facility" applicability determinations for this site. Since this landfill is closed, it has no routine fugitive PM10 emissions due to filling, cover, bulldozing, or road travel, but the landfill does continue to have fugitive POC emissions due to waste decomposition. The site-wide non-fugitive potential to emit is shown in Table 5.

Site-wide POC emissions include the combustion device emissions shown in Table 5 plus the fugitive POC emissions from the landfill. From LandGEM, the 2014 landfill gas generation rate is projected to be: 1527 cfm of landfill gas at 50% methane. Based on the source testing history for this site, the maximum expected NMOC content for the landfill gas from this site is 2400 ppmv expressed as methane or 400 ppmv expressed as hexane.¹ Using this maximum expected NMOC input data, LandGEM indicates that the maximum projected NMOC generation rate for the year 2014 is 35.840 tons/year of NMOC, expressed as hexane. Fugitive POC emissions are estimated to be no more than 25% of the maximum projected NMOC generation rate, or 8.960 tons/year of POC. The total site-wide PTE is (8.960 tons/year of fugitive POC + 3.478 tons/year of point source POC) = 12.438 tons/year of POC. Based on this PTE, this site is subject to offsets for any POC increases, but it qualifies for the small facility banking account.

For the proposed facility, non-fugitive criteria pollutant emissions will not exceed 250 tons/year for any pollutant. Therefore, this site will not be subject to PSD. In addition, this site will not exceed the Title V major facility thresholds (100 tons/year of any regulated air pollutant, 10 tons/year of any single HAP, and 25 tons/year for all HAPs combined) and will not be subject to the Regulation 2-2-405 publication and public comment requirements.

Although regulated air pollutant emissions will be less than the major facility thresholds, this facility remains subject to Title V requirements because it is a designated facility. NSPS and EG requirements for MSW landfills state that any site with a landfill that is subject to the collection and control requirements of the federal NSPS or EG for MSW Landfills (40 CFR Part 60, Subpart WWW or Subpart Cc) is considered to be a designated facility and must have a Title V permit, unless the owner/operator meets the requirements of 40 CFR Part 60.752(b)(2)(v).

¹ For 2014, the average NMOC content was 154 ppmv of NMOC expressed as methane in landfill gas containing an average of 46.3% methane. The equivalent NMOC content for landfill gas containing 50% methane is 27.66 ppmv of NMOC as hexane, which is only 7% of the maximum expected value.

The project is over 1000 feet from the nearest school and is therefore not subject to the public school notification requirements of Regulation 2-1-412.

Regulation 2, Rule 2 (New Source Review: BACT/RACT)

Regulation 8, Rule 34 requires that the S-1 City of Mountain View Landfill be equipped to collect and control landfill gas in landfill gas flares or energy recovery devices in order to reduce POC emissions caused by waste decomposition in the landfill. The proposed A-6, A-7, and A-8 Landfill Gas Flares are necessary to meet these BARCT requirements of Regulation 8, Rule 34. Pursuant to Regulation 2-2-112, the secondary emission increases from the new A-6, A-7, and A-8 Flares (NO_x , CO, SO_2 , and PM_{10}) are exempt from the BACT requirements of Regulation 2-2-301, because they are used to comply with BARCT for POC emissions. Regulation 2-2-112 requires that NO_x , CO, SO_2 , and PM_{10} emissions from A-6, A-7, and A-8 comply with RACT instead of BACT. As discussed in more detail below, A-6, A-7, and A-8 will comply with RACT for each of these pollutants.

RACT for NO_x : The District's BACT/TBACT Workbook (Document # 80.1 12/16/91) indicates that the RACT limit for NO_x emissions from a landfill gas flare is 0.06 pounds NO_x /MM BTU. The District has permitted numerous other new landfill gas fired flares at this emission limit. The specifications require that the proposed A-6, A-7, and A-8 Flares will meet the NO_x emission level of 0.06 pounds NO_x /MM BTU and 0.2 pounds of CO/MM BTU. Therefore, A-6, A-7, and A-8 will comply with RACT. The Applicant will demonstrate compliance with this limit by conducting initial and annual source tests. Annual source testing is a standard method of demonstrating compliance with NO_x RACT limits.

RACT for CO: RACT for CO is the same as the BACT requirements for POC and includes the use of an enclosed ground flare with (1) a minimum retention time of 0.6 seconds, (2) a minimum combustion zone temperature of 1400 °F, and (3) automatic controls for combustion air, gas shut-off, and flare restart. The proposed new A-6, A-7, and A-8 Flares are enclosed ground flares that meet the three design criteria identified above. Therefore, A-6, A-7, and A-8 Flares satisfy the RACT requirements for CO emissions. To ensure adequate POC destruction, permit conditions will require that the new A-6, A-7, and A-8 Flares be maintained at a minimum combustion zone temperature of at least 1400 °F. The Applicant will demonstrate compliance with this temperature limit by continuously monitoring and recording the combustion zone temperature. The District typically issues a RACT CO limit of 0.20 pounds CO/MM BTU for new landfill gas flares. Permit conditions will require that A-6, A-7, and A-8 Flares meet this proposed limit. At this CO emission rate limit for A-6, A-7, and A-8, the site-wide PTE will be less than 100 tons/year of CO and this site will not be a major facility of CO and will not be subject to Regulation 2-2-405 public noticing requirements. The Applicant will demonstrate compliance with this proposed CO limit by conducting initial and annual source tests. Annual source testing is a standard method of demonstrating compliance with CO RACT limits.

RACT for PM_{10} : PM_{10} emissions from landfill gas flares are low with emission rates that are similar to natural gas combustion. The use of fuel pretreatment systems to remove large particles and excess water are considered RACT for PM_{10} emissions from landfill gas fired flares. Since A-6, A-7, and A-8 Flares will be equipped with such a fuel pretreatment system, it will comply with RACT for PM_{10} emissions. PM_{10} emissions monitoring is not justified for this new flare, because the emissions are low (3.63 tons/year) and the expected grain loading rate of 0.0124 gr/dscf (see discussion for Regulation 6, Rule 1 below for calculations) is less than 10% of the applicable limit (0.15 gr/dscf).

RACT for SO₂: Application #10874 contains a detailed discussion of the SO₂ RACT determination for landfill gas flares. The District determined that landfill gas sulfur treatment systems do not constitute a “reasonably” available control measure for landfill gas containing less than about 500 ppmv of total reduced sulfur compounds. Instead, RACT for SO₂ emissions from landfill gas combustion operations was determined to be compliance with reasonable landfill gas sulfur content limits for the site. A TRS limit of 150 ppmv (expressed as H₂S) is a reasonable sulfur content for this closed landfill and is consistent with regulatory landfill gas sulfur content limits for other Districts.² For the last 4 years, source testing indicates that the landfill gas total sulfur content has ranged from 9 ppmv to 14 ppmv, expressed as H₂S.

Regulation 2, Rule 2 (New Source Review: Offsets)

Regulation 2-2-302 currently requires offsets for NO_x and POC emission increases if facility-wide emissions of that pollutant are greater than 10 tons/year. If facility-wide emissions are greater than 35 tons/year of NO_x or POC, the facility must usually provide their own offsets. In this case, the site-wide PTE for POC and NO_x and each between 10 tons/year and 35 tons/year. Since site-wide POC and NO_x emissions are less than 35 tons/year, this facility qualifies to use the small facility banking account for any cumulative emission increases of POC or NO_x.

In addition, H&S Code §42301.2 supersedes this District offset requirement, if the emission increases are due to secondary emissions from abatement devices, and if the capacity of the source being abated is not increasing.

42301.2. A district shall not require emission offsets for any emission increase at a source that results from the installation, operation, or other implementation of any emission control device or technique used to comply with a district, state, or federal emission control requirement, including, but not limited to, requirements for the use of reasonably available control technology or best available retrofit control technology, unless there is a modification that results in an increase in capacity of the unit being controlled.

Since this application does not involve any increases to the landfill and the A-6, A-7, and A-8 Flares are necessary for compliance with BARCT requirements, H&S Code §42301.2 applies to the secondary pollutant emission increases from the flares in this application.

From Table 6, this flare replacement project will result in a net change (potential – actual emissions) of - 7.987 tons/year of NO_x emissions and + 2.195 tons/year of POC emissions. Since the project results in a net decrease in NO_x emissions, NO_x offsets are not required. Although the maximum permitted POC emissions from the new flares will exceed the actual POC emissions from the old flares, the landfill - which is the source of POC emissions - will not be modified. The total POC emissions from the landfill and flares combined are actually decreasing from a maximum potential of 22.88 tons/year of POC (in 1987) to a new maximum potential of 12.44 tons/year of POC (in 2014 after installation of the new flares). Therefore, this application will not require any POC offsets.

Regulation 2-2-303 requires offsets for SO₂ or PM₁₀ emission increases if (a) the site is a major facility for these pollutants (in other words, facility-wide emissions of SO₂ or PM₁₀ are greater than 100 tons/year) and (b) cumulative SO₂ or PM₁₀ emission increases are greater than 1.0

² South Coast AQMD Rule 431.1 limits the sulfur content in landfill gas to 150 ppmv on a daily average basis.

tons/year. Since this site is not a major facility of SO₂ or PM₁₀ emissions, SO₂ and PM₁₀ offsets are not required.

Regulation 2, Rule 5 (NSR of Toxic Air Contaminants):

Regulation 2, Rule 5 applies to projects, as defined in Regulation 2-5-216. As explained in the attached HRSA report for this application, the secondary TAC emissions from the proposed new flares (A-6, A-7, and A-8) are considered to be the project emission increases for this application.³

As noted in this evaluation report, the landfill will not generate enough landfill gas to sustain the operation of the existing A-3, A-4, and A-5 flares. The District evaluated the health impacts due to all secondary TAC emissions from A-6, A-7, and A-8, while operating continuously at the combined maximum possible operating rate of 48.4 MM BTU/hour.

The District conducted this HRSA using the ISCST3 air dispersion model. Rural dispersion coefficients, Moffett Field meteorological data, and real terrain data (Mountain View quadrangles) were used in the dispersion model to determine maximum 1-hour and maximum annual average ground level concentrations.

Detailed health risk calculation procedures are presented in the attached HRSA. Maximum health impacts due to the total TAC emissions from A-6, A-7, and A-8, while it is operating at full capacity, are presented in Table 7.

Table 7. Health Impacts Due to Secondary TAC Emissions from A-6, A-7, and A-8 Flares

	Cancer Risk Per Million	Chronic Hazard Index	Acute Hazard Index
Worker	0.0023	0.0008	0.0013
Resident	0.0077	0.0014	0.0008

Since the health risks from flares A-6, A-7, and A-8 are less than the TBACT trigger levels of 1 in a million cancer risk and 0.2 chronic HI, TBACT is not required for these abatement devices. Project health risks are less than the Regulation 2-5-302 limits of 10 in a million cancer risk, 1.0 chronic HI, and 1.0 acute HI. Therefore, this project will satisfy all Toxic NSR requirements. Since the health impacts from A-6, A-7, and A-8 are far below the Regulation 2-5-302 limits, the District is not proposing to include any specific TAC related emission limits in the permit conditions for A-6, A-7, and A-8.

Secondary emissions of formaldehyde, hydrogen chloride, and hydrogen fluoride are the major contributors to non-cancer health impacts (acute and chronic hazard indices).

Regulation 2, Rule 6 (Major Facility Review):

This facility is subject to MFR Permit requirements pursuant to Regulation 2-6-304, because it is a designated facility that is subject to the requirements of 40 CFR, Part 60, Subpart Cc Emission Guidelines for MSW Landfills. The maximum potential to emit for CO and SO₂ are

³ Small corrections were made to the flare emission factors after this HRSA was conducted. These corrections resulted in slightly lower secondary pollutant emissions for hydrogen chloride and hydrogen fluoride and slightly higher residual hydrogen sulfide limits. Since secondary TAC emissions were either the same or lower and residual TAC emissions are not included in this HRSA (because the landfill is not being modified), this HRSA did not need to be redone.

also currently greater than 100 tons/year. Therefore, this site is also subject to Title V due to regulated air pollutants.

The District issued the initial MFR Permit for this facility (Site # A2740) on July 28, 2003. This MFR Permit was revised on July 16, 2009, and is currently under review for renewal pursuant to Application #25971. The Applicant will submit an application for the MFR permit changes necessary to include these new flares prior to start-up and operation. These MFR permit revisions will be discussed in the next Statement of Basis for either the current renewal application or the next minor revision application.

Regulation 6, Rule 1 (General Requirements):

Particulate matter emissions from the A-6, A-7, and A-8 Landfill Gas Flares are subject to Regulation 6, Rule 1, Section 6-1-310 limits PM emissions to 0.15 grains/dscf of exhaust. At the expected PM₁₀ emission rate of 0.0171 lbs/MM BTU, the PM₁₀ grain loading in the exhaust will be 0.0124 grains/sdcf at 0% O₂. This expected PM₁₀ emission rate is far below the Regulation 6-1-310 grain-loading limit. Periodic source testing to demonstrate compliance with this particulate emissions rate would be expensive and is not justified in light of the relatively low particulate emissions levels from this flare (3.6 tons/year of PM₁₀) and the high compliance margin with this grain loading limit (12:1).

Regulation 8, Rule 34 (Solid Waste Disposal Sites):

Landfill gas flares are required to meet the requirements of Regulation 8, Rule 34. Regulation 8-34-301.3 requires the use of enclosed ground flares that have either a destruction efficiency of 98% by weight for NMOC or that emit no more than 30 ppmv of NMOC (as methane at 3% O₂, dry basis) from the flare. The specifications indicate that A-6, A-7, and A-8 will comply with these NMOC destruction efficiency and outlet concentration limits. Continuous temperature monitoring (pursuant to Regulation 8-34-507) will ensure that this flare complies with 8-34-301.3 on an on-going basis. The flare will also be equipped with a data recording system that will maintain all records required pursuant to Sections 501.2 and 501.3. The allowance of 5 additional vertical gas collection wells will enable this site to maintain compliance with surface and component leak limits in Regulation 8, Rule 34.

Regulation 9, Rule 1 (Sulfur Dioxide):

For gaseous combustion operations, Regulation 9-1-302 limits the sulfur dioxide (SO₂) concentration in an exhaust stream to 300 ppmv (dry basis). In accordance with Condition # 16065, Part 12, total reduced sulfur compounds (TRS) in the collected landfill gas will be limited to 150 ppmv of TRS (expressed as H₂S). For Flares A-6, A-7, and A-8 burning landfill gas containing 50% methane (heat content = 496.943 BTU/scf), the flue gas factor is: 9628 sdcf of flue gas (at 0% oxygen) generated per MM BTU of landfill gas burned. Flares A-6, A-7, and A-8 are expected to operate at a minimum outlet oxygen level of 10% by volume, dry basis. The maximum expected outlet SO₂ concentration for any single test is calculated below, assuming that 100% of the TRS is converted to SO₂.

$$\begin{aligned} & (150 \text{ ft}^3 \text{ S}/1 \text{ MM ft}^3 \text{ LFG}) * (1 \text{ ft}^3 \text{ SO}_2/1 \text{ ft}^3 \text{ S}) / (496.943 \text{ MM BTU}/1 \text{ MM ft}^3 \text{ LFG}) / \\ & (9628 \text{ ft}^3 \text{ flue gas at } 0\% \text{ O}_2/\text{MM BTU}) = 3.14\text{E-}5 \text{ ft}^3 \text{ SO}_2/\text{ft}^3 \text{ flue gas at } 0\% \text{ O}_2 \\ & = 31.4 \text{ ppmv of SO}_2 \text{ in flue gas at } 0\% \text{ O}_2 \end{aligned}$$

$$(31.4 \text{ ppmv SO}_2) * (20.9-10) / (20.9-0) = 16 \text{ ppmv of SO}_2 \text{ in A-6, A-7, and A-8 flue gas at } 10\% \text{ O}_2$$

During the last three years, source test measurements for the A-3, A-4, and A-5 flares ranged from 0.8 to 1.3 ppmv of SO₂ in the outlet. Therefore, A-6, A-7, and A-8 are expected to comply with the proposed limit of 150 ppmv of TRS. This limit will result in a high margin of compliance (>18:1) with the Regulation 9-1-302 limit. The current annual monitoring schedule is adequate to demonstrate compliance with this limit given the high margin of compliance observed to date.

Federal Requirements:

The City of Mountain View Landfill is currently subject to the Emission Guidelines (EG) for MSW Landfills (40 CFR Part 60, Subpart Cc), which in this District is implemented through compliance with Regulation 8, Rule 34. All existing applicable requirements are identified in the MFR Permit for Site # A2740. The replacement of the three existing flares with new flares sized to accommodate the current landfill gas generation rate will ensure that this site has the minimum required flaring capacity, but it will not change any of the applicable requirements for the landfill. The federal NSPS/EG requirements have no specific throughput limits for flares. The only applicable emission limit for this flare is a 98% NMOC destruction efficiency requirement or an outlet concentration of 20 ppmv of NMOC (expressed as hexane) at 3% O₂. This outlet concentration limit is equivalent to 120 ppmv of NMOC (expressed as methane) at 3% O₂ and is less stringent than the Regulation 8-34-301.3 limit (30 ppmv of NMOC at 3% O₂). Thus, compliance with Regulation 8, Rule 34 and with the Title V reporting requirements for this site will ensure compliance with these federal EG requirements.

Since the City of Mountain View Landfill is subject to the collection and control requirements of the Emission Guideline discussed above, it is also subject to the NESHAP for MSW Landfills (40 CFR Part 63, Subpart AAAAA). To assess applicable requirements under Subpart AAAAA, the District calculated HAP emissions for this site based on the maximum projected landfill gas generation rate and the maximum detected concentration for each HAP, determined from recent site-specific landfill gas analyses. Site-wide HAP emissions were found to be less than 10 tons/year for any single HAP and less than 25 tons/year for all HAPs combined. Therefore, this site is not a major source of HAP emissions. In this case, the only applicable requirements from this Subpart AAAAA NESHAP are the requirement to have and follow a start-up, shutdown, and malfunction plan and a requirement to submit semi-annual reports instead of the annual report required under Part 60, Subpart Cc above. This site has been complying with these Subpart AAAAA requirements.

State Requirements:

The CMV Shoreline Landfill is subject to CARB's Landfill Methane Capture Rule (CCR, Title 17, Sections 95460-95476), which requires landfills to collect and control landfill gas and establishes surface leak limits and methane control efficiency requirements for control devices. Section 95464(b)(2)(A)(1) requires that enclosed flares meet a methane destruction efficiency of 99% by weight. Sections 95464(b)(2)(A)(2-4) require automatic dampers, automatic shutdown and restart, a flame arrestor, temperature monitoring, ignition assistance (such as a propane pilot light), and maintenance of all operating parameters within source test allowances. The proposed flares are expected to meet all of these requirements.

PERMIT CONDITIONS

The current permit conditions for the S-1 City of Mountain View Landfill and Flares (A-3, A-4, and A-5) will be revised to include the proposed new Flares A-6, A-7, and A-8 and to allow for the shut-down of the A-3, A-4, and A-5 Flares. Emission limits, temperature monitoring and recording, and source testing requirements for A-6, A-7, and A-8 will be added to these

conditions. The District is proposing to approve the alteration proposal for the gas collection system to install up to 5 new vertical wells and is proposing other editorial corrections. The changes to each part are identified below in strike through and underline formatting.

Condition # 16065

FOR: S-1 LANDFILL AND GAS COLLECTION SYSTEM; A-3 LANDFILL GAS FLARE; A-4 LANDFILL GAS FLARE; AND A-5 LANDFILL GAS FLARE; AND, UPON START-UP, A-6 LANDFILL GAS FLARE, A-7 LANDFILL GAS FLARE, AND A-8 LANDFILL GAS FLARE.

1. The S-1 Landfill is closed. The Permit Holder shall apply for and receive a Change of Permit Conditions before accepting any solid waste for disposal at S-1. The total cumulative amount of all wastes placed in the landfill areas controlled by the Permit Holder shall not exceed 12,725,000 tons. The maximum design capacity of the landfill (total volume of all wastes and cover materials placed in the landfill area controlled by the Permit Holder, excluding final cover) shall not exceed 18,852,000 cubic yards. (Basis: Regulation 2-1-301)
2. All landfill gas collected by the Landfill Gas Collection Systems for S-1 shall be: abated by the Landfill Gas Flares (A-3, A-4, or A-5, or, upon start-up, A-6, A-7, or A-8); burned in the Microturbines (S-16 or S-17); or sold for off-site combustion in one or more of the following devices: Facility #15982 Google, Sources ~~S-20, S-29~~ and/or S-30, IC Engines. The Permit Holder may use any combination of the landfill gas control devices listed above, provided that sufficient landfill gas is collected and controlled to prevent violations of the Regulation 8-34-303 surface leak limit and provided that all of the following operating requirements are satisfied. During the flare replacement project, the Permit Holder shall ensure that at least one flare is available to operate at all times and that the combined capacity of the operational flares is sufficient to handle all of the current average gas collection rate of 800 scfm of landfill gas. (Basis: Regulation 8-34-301)
 - a. Operation of the microturbines (S-16 and S-17) is optional and is not required for landfill gas abatement. When the microturbines are burning landfill gas, other approved control devices (such as one flare or ~~three-two~~ engines) must be operated concurrently with the microturbines to achieve the necessary control system capacity for the landfill.
 - b. Raw or untreated landfill gas shall not be vented to the atmosphere, except for unavoidable landfill gas emissions that occur during collection system installation, maintenance, or repair (which is performed in compliance with Regulation 8, Rule 34, Sections 113, 117, and/or 118) and inadvertent component or surface leaks that do not exceed the limits specified in 8-34-301.2 or 8-34-303.
3. The landfill gas collection system described below in Part 4a shall be operated continuously, as defined in Regulation 8-34-219. Wells and adjustment valves shall not be disconnected, removed, or completely closed, without prior written authorization from the District, unless the Permit Holder Complies with all

applicable provisions of Regulation 8, Rule 34, Sections 113, 117, and 118. (Basis: Regulation 8-34-301.1)

The Permit Holder also maintains landfill gas Horizontal migration control wells that are installed above the cap. If landfill gas migration occurs, such that methane exceedances as defined in the California Code of Regulations Title 27 are detected, the Permit Holder may operate these horizontal gas migration surface collectors intermittently as necessary to mitigate any methane detected at the surface probe(s). The well identification numbers for the proposed 9 horizontal surface migration control wells are as follows: HC-01, HC-02, HC-03, HC-04, HC-05, HC-06, HC-07, HC-08, and HC-09.

4. The Permit Holder shall apply for and receive a Change of Conditions before altering the landfill gas collection system described in Part 4a below. Increasing or decreasing the number of wells or collectors are considered to be alterations that are subject to this requirement. Redrilling or replacement of an existing well does not require a Change of Conditions provided the replacement well is close to the location of the existing well. Adding or modifying risers, laterals, or header pipes are not subject to this Change of Condition requirement. (Basis: Regulations 8-34-301.1, 8-34-303, 8-34-304, and 8-34-305)

- a. The Permit Holder has been issued a Permit to Operate for the landfill gas collection system components listed below, which includes all notifications of gas collection system alterations submitted through September 12, 2012. Well and collector locations, depths, and lengths are as described in detail in Permit Applications #1009 and #24840.

<u>Area Description</u>	<u>Required Components</u>
544 Acre Site	140 vertical wells
544 Acre Site	6 horizontal collectors
544 Acre Site	9 horizontal surface migration collectors
Vista Site	88 vertical wells
Vista Site	1 horizontal collector
Crittenden Site	36 vertical wells

- b. The Permit Holder is authorized to make the landfill gas collection system component alterations listed below, and details of associated piping are as described in Permit Applications #24840 and #26279.

- Install New Vertical Gas Collection Wells: 5
- Install Replacement Vertical Wells: 10
- Install New Horizontal Surface Migration Collectors 9

The Permit Holder shall maintain records of the decommission date for each well that is shut-down and the initial operation date for each new well. Wells installed or shut-down pursuant to Subpart 4b shall be added to or removed from the baseline count in Subpart 4a during the annual permit review process. During the permit renewal period, the Permit Holder shall provide the District with the latest well count statistics in order to update this part of Condition 16065.

- i. The Permit Holder shall apply for and receive a Change of Conditions before altering the landfill gas collection components described in Subpart 4a. Installing, altering, or permanently decommissioning a vertical well, horizontal collector, or other gas collection component is subject to this requirement, unless this change constitutes a replacement as defined in Subpart 4b(ii) below.
 - ii. Replacement of landfill gas collection system components with identical or functionally equivalent components will not be deemed an alteration and will not be subject to Subpart 4b(i) under the following circumstances: If a well or collector will be shut down and replaced by a new well or collector close to the existing location of the old component and this decommission/installation will be accomplished in accordance with Regulations 8-34-117 and 8-34-118, then this activity shall be considered a component replacement that is not subject to an Authority to Construct requirement. For each individual well or collector replacement, this subpart authorizes a maximum vacuum disconnection time of five consecutive days for compliance with 8-34-117.5. The disconnected component and the new component shall not be counted toward the Subpart 4a limits; the numbers of replacement wells and replacement collectors are not limited. Alterations, repairs, or replacements of non-perforated piping sections (such as risers, laterals, or header pipes), piping connectors, or valves are not subject to the Authority to Construct requirement.
5. The gas collection system operating requirements listed below shall replace the well head requirements identified in Regulation 8-34-305.2 through 8-34-305.4 for the specified wells and collectors. All wells and collectors remain subject to the Regulation 8-34-305.1 requirement to maintain vacuum on each well head. In addition, Part 5c clarifies the applicable limits for vaults containing gas collection system components. The gas collection system operating requirements in Regulation 8-34-305 do not apply to the 9 horizontal surface migration collectors, which are operated intermittently, above the cap. (Basis: Regulations 8-34-301.2, 8-34-303, and 8-34-305)
- a. The Regulation 8-34-305.2 temperature limit shall not apply to the wells listed below. The landfill gas temperature in each of the wells listed below shall not exceed 140 degrees F.
 Vista Landfill: VE-6, VE-9, VF-3, VF-11, VG-3, VG-3A, VG-4, VH-4, VH-5, VH-10, VJ-3, VJ-4, VJ-04A (13 wells)
 544-Acre Landfill: NEA-08 (1 vertical well)
 - b. The Regulation 8-34-305.3 nitrogen concentration limit and the Regulation 8-34-305.4 oxygen concentration limit shall not apply to the wells listed below, provided that the oxygen concentration in the landfill gas at the main header does not exceed 5% O₂ by volume (dry basis) and

the methane concentration in the landfill gas at the main header is not less than 35% CH₄ by volume (dry basis). The permit holder shall monitor the landfill gas from the main header for oxygen and methane on a monthly basis to demonstrate compliance with this part.

Crittenden Landfill: CRA-1, CRA-2R, CRA-3, CRA-4, CRA-5R, CRA-6, CRA-7, CRA-8, CRA-9, CRA-10, CRA-13, CRB-1, CRB-2, CRB-3, CRB-4, CRB-5, CRB-6, CRB-7R, CRB-8, CRD-1, CRD-3, CRD-5, CRD-8, CRD-9, CRD-10, and CRD-11 (26 vertical wells)

Vista Landfill: VA-HZ, VA-1, VA-01A, VA-2, VA-3, VA-3A, VA-4, VB-1, VB-2R, VB-3A, VB-4, VB-5R, VB-5A, VB-6, VB-7, VB-8, VC-1, VC-2, VC-3, VC-5, VC-6, VC-7, VC-8, VE-1, VE-4R, VE-5, VE-6, VE-7, VE-8, VE-9, VE-10, VF-1, VF-2, VF-4, VF-5R, VF-7, VF-8R, VH-3, VJ-2R, VJ-3R, VJ-4A, VJ-4R, VJ-5R, VJ-6, VJ-7R, VJ-8, VJ-9R, VJ-10, VJ-11R, VK-3, VK-4, VK-5 (1 horizontal collector and 51 vertical wells)

544-Acre Landfill: WA-1, WA-02, WA-5, WA-6, WA-8, WA-9, WA-13, WA-14, WA-15, WA-16, WA-18, WA-19, WA-20, WA-21R, WA-22R, WA-23R, WA-24, WA-25, WA-26, WA-27, WA-28, WA-29, WB-1, WB-2, WB-3, WB-4, WB-5, WB-5A, WB-6, WB-6A, WB-7, WB-7A, WB-8, WB-9, WB-10, WB-11, WB-12R, WB12-AR, WB-13R, WB-14R, WB-15R, WB-16R, WB-17R, WD-3, WN-1, WN-2, WN-3R, WN-4, WN-4A, WN-5, WN-6, WN-7, WN-8, WN-9, WN-10, WN-11, WN-12, WN-13 (58 vertical wells)

A-16, B-2, B-3, B-20, B-24, B-28, Y-01, Y-02, Y-03, Y-04, Y-05, Y-06, LE-1, LE-2, LE-3, LE-4, FHZ-1, FHZ-2, FHZ-3, FHZ-4, FHZ-5, and MPHZ (6 horizontal collectors and 16 vertical wells)

NEA-01, NEA-02, NEA-03, NEA-04, NEA-05, NEA-06, NEA-07, NEA-08, NEA-09, NEA-11, NEA-13, NEA-15, NEA-16, NEB-01, NEB-02, NEB-03, NEB-04, NEB-05, NEB-06, NEB-07, NEB-08, NEB-10, NEB-11, NEB-12, NEB-13, NEB-14, NEC-01, NEC-02, NEC-03, NED-01, NEE-02, NEE-03, NEE-04, NEE-05, NEE-06. (35 vertical wells)

- c. This subpart applies to vaults containing gas collection system equipment, where the top of the vault is located at or near the surface of the landfill. The vault shall be monitored at both 1 cm from the vault (for comparison to the component leak limit of Regulation 8-34-301.2) and 2 inches above

- the vault (for comparison to the surface leak limit of Regulation 8-34-303).
- i. If during an inspection the District's monitored readings show compliance with both the component leak limit and the surface leak limit, the vault and components within shall be deemed to be in compliance with Regulations 8-34-301.2 and 8-34-303. No further testing is necessary.
 - ii. If the District's monitored readings show an excess of either the component leak limit or the surface leak limit, the operator shall comply with the Regulation 8-34-415 Repair Schedule for Landfill Surface Leak Excesses, until the source of the leak can be identified. The vault shall be opened and allowed to air out for at least 10 minutes. The collection system components within the vault shall be re-monitored at 1 cm from the components and the landfill surface surrounding the vault shall be re-monitored at 2 inches above the surface.
 - iii. If the re-monitoring (after airing the vault for 10 minutes) shows no component leaks and no surface leaks, the vault and components within shall be deemed to be in compliance with Regulations 8-34-301.2 and 8-34-303.
 - iv. If the re-monitoring shows a component leak, or the operator's further evaluation determines that the source of the emissions excess was a collection system component, then a violation of 8-34-301.2 shall be deemed to have occurred; and the operator shall take all necessary corrective action and shall comply with all applicable reporting requirements.
 - v. If the re-monitoring shows a surface leak but not a component leak, the operator shall continue to comply with all applicable provisions of the Regulation 8-34-415 Repair Schedule for Landfill Surface Leak Excesses.
6. Each flare shall be equipped with auto restart capability and both local and remote alarm systems. (Basis: 8-34-301.1)
7. The combustion zone temperature of each flare (A-3, A-4, and A-5, and upon start-up, A-6, A-7, and A-8) shall be maintained at a minimum of 1400 degrees F, averaged over any three-hour period. If a source test demonstrates compliance with all applicable requirements at a different temperature, the APCO ~~will~~may revise the minimum combustion zone temperature limit in accordance with the procedures identified in Regulations 2-6-414 or 2-6-415 and the following criteria. The minimum combustion zone temperature for a flare shall be equal to the average combustion zone temperature measured during the most recent complying source test minus 50 degrees F, provided that the minimum combustion zone temperature shall not be less than 1400 degrees F. (Basis: ~~Toxic Risk Management Policy and Regulations 2-5-302 and 8-34-301.3~~)

8. [deleted]
9. Nitrogen oxide (NO_x) emissions from the flares shall not exceed the concentration limits listed below, except as provided by source test results demonstrating a NO_x emission rate within the specified limit. (Basis: Cumulative Increase)
- a. For A-3: 33 ppmv of NO_x, corrected to 15% oxygen, dry basis. If the NO_x limit of 33 ppmv is exceeded, the flare will remain in compliance if source test results indicate a NO_x emission rate of 0.13 pounds per MMBTU or less;
 - b. For A-4: 15 ppmv of NO_x, corrected to 15% oxygen, dry basis. If the NO_x limit of 15 ppmv is exceeded, the flare will remain in compliance if source test results indicate a NO_x emission rate of 0.06 pounds per MMBTU or less;
 - c. For A-5: 15 ppmv of NO_x, corrected to 15% oxygen, dry basis. If the NO_x limit of 15 ppmv is exceeded, the flare will remain in compliance if source test results indicate a NO_x emission rate of 0.06 pounds per MMBTU or less;
 - d. Upon start-up, Flares A-6, A-7, and A-8 shall each emit no more than 15 ppmv of NO_x, expressed as NO₂ and corrected to 15% O₂, dry basis. If source test results indicate that the outlet NO_x concentration is greater than this limit, the flare will remain in compliance if the source test results indicate that the emission rate is no more than 0.06 pounds of NO_x (calculated as NO₂) per MM BTU.
10. Carbon monoxide (CO) emissions from the flares shall not exceed the concentration limits listed below, except as provided by source test results demonstrating a CO emission rate within the specified limit. (Basis: Cumulative Increase and RACT)
- a. For A-3: 83 ppmv of CO, corrected to 15% oxygen, dry basis. If the CO limit of 83 ppmv is exceeded, the flare will remain in compliance if source test results indicate a CO emission rate of 0.20 pounds per MMBTU or less.
 - b. For A-4: 83 ppmv of CO, corrected to 15% oxygen, dry basis. If the CO limit of 83 ppmv is exceeded, the flare will remain in compliance if source test results indicate a CO emission rate of 0.20 pounds per MMBTU or less.
 - c. For A-5: 83 ppmv of CO, corrected to 15% oxygen, dry basis. If the CO limit of 83 ppmv is exceeded, the flare will remain in compliance if source test results indicate a CO emission rate of 0.20 pounds per MMBTU or less.
 - d. Upon start-up, Flares A-6, A-7, and A-8 shall each emit no more than 83 ppmv of CO, corrected to 15% O₂, dry basis. If source test results indicate that the outlet CO concentration is greater than this limit, the flare will remain in compliance if the source test results indicate that the emission rate is no more than 0.20 pounds of CO per MM BTU.

- *11. [deleted]
12. Each flare shall emit no more than 9 ppmv of SO₂, corrected to 15% O₂, dry basis. If the total reduced sulfur compound concentration in the collected landfill gas is monitored as a surrogate for monitoring sulfur dioxide in the flare exhaust, the concentration of total reduced sulfur compounds in the collected landfill gas shall not exceed ~~1300-150~~ 150 ppmv (dry), expressed as H₂S, dry basis. (Basis: Cumulative Increase and Regulation 9-1-302)
13. In order to demonstrate compliance with Parts 7, 9, 10, and 12 above and Regulations 8-34-301.3, 8-34-412, and 9-1-302 and CCR, Title 17, Section 95464(b)(2)(A)(1), the Permit Holder shall ensure that a District approved source test is conducted annually on each flare (A-3, A-4, ~~and A-5, A-6, A-7, and A-8~~). The first source test for Flares A-6, A-7, and A-8 shall be conducted within 60 days of the initial start-up date for that flare. Each initial or annual source test shall determine the following:
- landfill gas flow rate to the flare (dry basis);
 - concentrations (dry basis) of carbon dioxide (CO₂), nitrogen (N₂), oxygen (O₂), ~~total hydrocarbons (THC),~~ methane (CH₄), and total non-methane organic compounds (NMOC) in the landfill gas;
 - stack gas flow rate from the flare (dry basis);
 - concentrations (dry basis) of NO_x, CO, ~~THC,~~ CH₄, NMOC, and O₂ in the flare stack gas;
 - the NMOC and methane destruction efficiency achieved by the flare; and
 - the average combustion zone temperature in the flare during the test period.
 - concentration (dry basis) of SO₂ in the flare stack gas, unless the Permit Holder is meeting the requirements of Part 12 and tests for all sulfur compounds listed in EPA's AP-42 Table 2.4-1 pursuant to Part 14.

Each annual source test shall be conducted no later than 12 months after the previous annual source test. The Source Test Section of the District shall be contacted to obtain approval of the source test procedures at least 14 days in advance of each source test. The Source Test Section shall be notified of the scheduled test date at least 7 days in advance of each source test. The source test report shall be submitted to the Compliance and Enforcement Division and the Source Test Section within 45 days of the test date.

(Basis: Cumulative Increase, ~~Toxic Risk Management Policy,~~ Regulations 2-5-302, 8-34-301.3, 8-34-412, and 9-1-302, and CCR, Title 17, Section 95464(b)(2)(A)(1))

14. The Permit Holder shall conduct a characterization of the landfill gas concurrent with the annual source test required by Part 13 above. The landfill gas sample shall be drawn from the main landfill gas header. In addition to the compounds listed in Part 13b, the landfill gas shall be analyzed for all the organic compounds listed in the most recent version of EPA's AP-42 Table 2.4-1. Sulfur compound

testing is not required, if the Permit Holder is satisfying Part 13g by conducting annual SO₂ testing at the flare exhaust. All concentrations shall be reported on a dry basis. The test report shall be submitted to the Compliance and Enforcement Division within 45 days of the test date. After conducting three annual landfill gas characterization tests, the Permit Holder may request to remove specific compounds from the list of compounds to be tested, if the compounds have not been detected, have no significant impact on the cancer risk determination for the site, and have no significant impact on the hazard index determination for the site. (Basis: AB-2588 Air Toxics Hot Spots Act, ~~Toxic Risk Management Policy~~, Regulations 2-5-302, 8-34-412 and 9-1-302.)

15. In order to demonstrate compliance with the above conditions, the Permit Holder shall maintain the following records. All records shall be maintained on site in an APCO approved logbook or shall be made readily available to District staff upon request for a period of at least 5 years from the date of entry. These recordkeeping requirements do not replace the record keeping requirements contained in any applicable rules or regulations. (Basis: Cumulative Increase and Regulations 2-1-301, 2-6-501, 8-34-301, 8-34-303, 8-34-305, 8-34-412, 8-34-414, 8-34-415, 8-34-501, 8-34-503, 8-34-505, 8-34-506, and 9-1-302.
 - a. Maintain an accurate map of the landfill that indicates the locations of all refuse boundaries and the locations of all wells and collectors (using unique identifiers) that are required to be operating continuously pursuant to Part 4a;
 - b. Record the initial startup date for any new wells or collectors;
 - c. Maintain records of all test dates and test results performed to maintain compliance with Parts 12-14 above, Regulations 8-34-301, 8-34-303, 8-34-305, 8-34-412, 8-34-414, and 8-34-415, or any other applicable rule or regulation.
16. The annual report required by BAAQMD Regulation 8-34-411 shall be submitted in two semi-annual increments. The reporting period for the first increment of the Regulation 8-34-411 annual report that is submitted subsequent to the issuance of the MFR Permit for this site shall be from December 1, 2002 through December 31, 2003. This first increment report shall be submitted by January 31, 2004. The reporting periods and report submittal due dates for all subsequent increments of the Regulation 8-34-411 report shall be synchronized with the reporting periods and report submittal due dates for the semi-annual MFR Permit monitoring reports that are required by Section I.F. of the MFR Permit for this site. (Basis: Regulation 8-34-411 and 40 CFR Part 63.1980(a))
17. This facility has been granted contemporaneous on-site emission reduction credits for the shut-down of the A-3, A-4, and A-5 Landfill Gas Flares. To ensure the validity of these credits, the owner/operator shall ensure that operation of these three flares (A-3, A-4, and A-5) is permanently discontinued by no later than 90 days after the initial start-up date for the new flares (A-6, A-7, and A-8). The start-up and shut-down of these flares may be staggered over a longer period of

time, provided that the final flare shutdown occurs no later than 90 days after the initial start-up date for the third new flare. The owner/operator shall record the final operation date for each flare (A-3, A-4, and A-5) and shall notify the District permit engineer of these shutdown dates upon completion of this flare replacement project. (Basis: Cumulative Increase and Offsets)

RECOMMENDATION

I recommend issuing an Authority to Construct for the following equipment abating S-1 Closed Landfill and Landfill Gas Collection System subject to Condition #16065. (The Make, Model and Manufacturer to be determined following the bidding and selection process):

- A-6 Landfill Gas Flare, enclosed – 270 scfm landfill gas capacity, 8.2 MM BTU/hour.**
- A-7 Landfill Gas Flare, enclosed – 530 scfm landfill gas capacity, 16.0 MM BTU/hour.**
- A-8 Landfill Gas Flare, enclosed – 800 scfm landfill gas capacity, 24.2 MM BTU/hour.**

Issue a Change of Permit Conditions for the following equipment, subject to Condition # 16065.

- S-1 City of Mountain View Closed Landfill, abated by A-6, A-7, and A-8 Landfill Gas Flares.**

Judith Cutino, PE / Carol Allen, PE
Senior Air Quality Engineer / Supervising Air Quality Engineer

Date

APPENDIX B

GLOSSARY

ACT

Federal Clean Air Act

APCO

Air Pollution Control Officer

ARB

Air Resources Board

BAAQMD

Bay Area Air Quality Management District

BACT

Best Available Control Technology

Basis

The underlying authority which allows the District to impose requirements.

CAA

The federal Clean Air Act

CAAQS

California Ambient Air Quality Standards

CAM

Compliance Assurance Monitoring per 40 CFR Part 64

CAPCOA

California Air Pollution Control Officers Association

CEM

Continuous Emission Monitor

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.

CO

Carbon Monoxide

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

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.

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.

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.

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.

MOP

The District's Manual of Procedures.

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-meth

ane Organic Compounds (Same as NMHC)

NOx

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.)

Offset Requirement

A New Source Review requirement to provide federally enforceable emission offsets for the emissions from a new or modified source. Applies to emissions of POC, NOx, PM10, and SO2.

Phase II Acid Rain Facility

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

POC

Precursor Organic Compounds

PM

Particulate Matter

PM10

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

PSD

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

PTE

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

SIP

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

SO2

Sulfur dioxide

THC

Total Hydrocarbons (NMHC + Methane)

Title V

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

TOC

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

TPH

Total Petroleum Hydrocarbons

TSP

Total Suspended Particulate

VOC

Volatile Organic Compounds

Units of Measure:

bhp	=	brake-horsepower
btu	=	British Thermal Unit
cu. ft.	=	cubic foot
cfm	=	cubic feet per minute
dscf	=	dry standard cubic foot
dscfm	=	dry standard cubic foot per minute
g	=	gram
gal	=	gallon
gpm	=	gallons per minute
gr	=	grain
hp	=	horsepower
hr	=	hour
lb	=	pound
in	=	inch
max	=	maximum
m ²	=	square meter
min	=	minute
mm	=	million
MMbtu	=	million btu
MMcf	=	million cubic feet
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
tpy	=	tons per year
yr	=	year

Permit Evaluation and Statement of Basis:

A2740, City of Mountain View (Shoreline)
2600 Shoreline Boulevard, Mountain View, CA 94043