

Bay Area Air Quality Management District

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

**for
Redwood Landfill, Inc
Facility #A1179**

Facility Address:
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Novato, CA 94948

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Application 8501
August, 2004

ENGINEERING EVALUATION
Redwood Landfill, Inc.; PLANT #1179
APPLICATION #8501

BACKGROUND

Redwood Landfill, Inc. operates the Redwood Landfill Facility in Novato, CA. This facility includes the active landfill (S-5 with about 11 million tons of refuse in place), a 75 MM BTU/hour landfill gas flare (A-50), a 5 MM BTU/hour leachate evaporator, sludge handling and composting operations (S-2, S-25, S-28, S-34, S-35, S-37, S-38, S-39, and S-41), soil stockpiles (S-42), a non-retail gasoline dispensing facility (S-55), and five diesel engines providing portable or standby power (S-45, S-46, S-37, S-48, and S-49). Redwood Landfill does not hold an Authority to Construct for any other equipment.

The A-50 Landfill Gas Flare was first issued an Authority to Construct with a maximum permitted capacity of 30 MM BTU/hour pursuant to Application # 18034 in December 1997. The maximum permitted throughput capacity of A-50 was increased to 75 MM BTU/hour in April 1998 pursuant to Application # 17639. This flare is the primary control device for landfill gas from the S-5 Redwood Landfill. A small amount (up to 168 scfm) of landfill gas may be burned as fuel in S-50, while the remainder of the collected gas (currently about 1459 scfm) is burned in the flare.

Although Redwood stated in both Applications # 18034 and # 17639 that the maximum firing capacity of the flare was 75 MM BTU/hour, Redwood Landfill is now claiming that the flare is capable of firing at a maximum heat input rate of 120 MM BTU/hour (HHV). Redwood Landfill submitted this application to request that A-50 be permitted for its full firing capacity of 120 MM BTU/hour and that Permit Condition # 19867, Part 20 be revised accordingly.

CRITERIA POLLUTANT EMISSIONS

The current maximum permitted criteria pollutant emission rates for the A-50 Landfill Gas Flare are based on Application # 17639. The emission factors, throughput basis, and emissions are summarized below in Table 1.

Table 1. Current Maximum Permitted Criteria Pollutant Emissions From A-50 *

| Criteria Pollutants | Pounds/MM BTU | MM BTU/Hour | Pounds/Hour | Pounds/Day | Tons/Year |
|---------------------|---------------|-------------|-------------|------------|-----------|
| POC | 0.0067 | 75 | 0.50 | 12.03 | 2.196 |
| NO _x | 0.0600 | 75 | 4.50 | 108.00 | 19.710 |
| CO | 0.3000 | 75 | 22.50 | 540.00 | 98.550 |
| PM ₁₀ | 0.0183 | 75 | 1.38 | 33.00 | 6.023 |
| SO ₂ | 0.0765 | 75 | 5.74 | 137.72 | 25.134 |

* The origin of each emission factor is discussed in the evaluation report for Application # 17639. All emissions are based on maximum possible operating time (24 hours/day & 8760 hours/year).

The applicant has requested to increase the maximum permitted flare capacity from 75 MM BTU/hour to 120 MM BTU/hour. The emission factors, throughput limits, and new maximum permitted emission rates for A-50 are summarized in Table 2 below. The basis for the throughput limits and emission factors are discussed in more detail following Table 2.

Table 2. New Maximum Permitted Criteria Pollutant Emissions From A-50

| Criteria Pollutants | Pounds / MM BTU | MM BTU / Hour | Pounds / Hour | MM BTU / Day | Pounds / Day | MM BTU / Year | Tons / Year |
|---------------------|-----------------|---------------|---------------|--------------|--------------|---------------|-------------|
| POC | 0.01393 | 120 | 1.672 | 2,880 | 40.13 | 745,000 | 5.190 |
| NO _x | 0.06000 | 120 | 7.200 | 2,880 | 172.80 | 745,000 | 22.350 |
| CO | 0.30000 | 120 | 36.000 | 2,880 | 864.00 | 745,000 | 111.750 |
| PM ₁₀ | 0.01710 | 120 | 2.052 | 2,880 | 49.26 | 745,000 | 6.371 |
| SO ₂ | 0.07694 | 120 | 9.233 | 2,880 | 221.59 | 745,000 | 28.661 |
| NPOC | 0.00005 | 120 | 0.006 | 2,880 | 0.14 | 745,000 | 0.018 |

Emission Factors:

All emission factors are based on landfill gas containing 50.0% methane with a heat content of 496.943 BTU/scf (HHV at 70 °F) and a flue gas generation rate of 9628.24 scdf/MM BTU (at 70 °F and 0% O₂).

The POC emission factor is derived from Regulation 8-34-301.3, which requires the flare to either:

- (a) emit no more than 30 ppmv of NMOC (expressed as methane at 3% O₂), or
- (b) achieve at least 98% destruction of NMOC.

For landfill gas at 50% methane, the 30 ppmv NMOC outlet concentration is equivalent to an outlet emission rate of 0.01398 pounds/MM BTU:

$$(30 \text{ ft}^3 \text{ NMOC} / 10^6 \text{ ft}^3 \text{ flue gas at 3\% O}_2) * (20.9 - 0) / (20.9 - 3) * (9628.24 \text{ ft}^3 \text{ flue gas at 0\% O}_2 / \text{MM BTU}) / (387.006 \text{ ft}^3 \text{ NMOC} / \text{lbmol}) * (16.0426 \text{ lbs} / \text{lbmol}) = 0.01398 \text{ pounds NMOC} / \text{MM BTU}$$

For this facility, Condition # 19867, Part 18a limits the total NMOC concentration in landfill gas to 750 ppmv (expressed as hexane). At this 750 ppmv inlet limit and 98% control, the maximum NMOC emission rate (expressed as methane) is 0.00751 lbs/MM BTU. Maximum NMOC emissions for the flare are based on the higher of these two factors (0.01398 lbs/MM BTU for the NMOC outlet concentration limit). The POC emission factor is equal to the highest NMOC emission factor minus the NPOC emission factor:

$$0.01398 - 0.00005 = 0.01393 \text{ pounds POC} / \text{MM BTU}$$

The NPOC emission factor is the sum of the abated emission factors for individual non-precursor organic compounds including: methylene chloride, perchloroethylene, 1,1,1 trichloroethane, and chlorofluorocarbons. The inlet concentrations of methylene chloride and perchloroethylene are equal to the limits in Condition # 19867, Part 18b. The inlet concentrations for the other compounds are based on source test data. The assumed destruction efficiency for each compounds is based on AP-42 (fifth edition) Chapter 2.4 (November 1998), page 2-4-13, which states that the typical destruction efficiency achieved by flares is 98.0% for halogenated species.

The NO_x and CO emission factors are the RACT limits for these pollutants. The A-50 Landfill Gas Flare is subject to RACT for secondary pollutant emissions instead of BACT (pursuant to Regulation 2-2-112), because this flare is meeting BARCT for control of POC emissions from the S-5 Redwood Landfill (per Regulation 8-34-301.3). The emission factors, 0.06 pounds of NO_x/MM BTU and 0.30 pounds of CO/MM BTU, are standard RACT emission factors for landfill gas flares.

The PM₁₀ emission factor is derived from the PM₁₀ emission factor for flares (17 pounds/10⁶ scdf of methane) cited in AP-42 (fifth edition) Chapter 2.4 (November 1998), page 2-4-15:

$$(17 \text{ pounds PM}_{10} / 10^6 \text{ ft}^3 \text{ CH}_4) * (0.5 \text{ ft}^3 \text{ CH}_4 / \text{ft}^3 \text{ LFG}) / (496.943 \text{ BTU} / \text{ft}^3 \text{ LFG}) * (10^6 \text{ BTU} / \text{MM BTU}) = 0.01710 \text{ pounds PM}_{10} / \text{MM BTU}$$

The SO₂ emission factor is calculated from the Condition # 19867, Part 18a limit of 231 ppmv of total reduced sulfur compounds (expressed as H₂S) in the landfill gas. The calculation assumes that all of the sulfur is converted to SO₂.

$$(231 \text{ ft}^3 \text{ H}_2\text{S}/10^6 \text{ ft}^3 \text{ LFG}) * (1 \text{ ft}^3 \text{ SO}_2/1 \text{ ft}^3 \text{ H}_2\text{S}) / (387.006 \text{ ft}^3/\text{lbmol}) * (64.0588 \text{ lbs SO}_2/\text{lbmol}) / (496.943 \text{ BTU}/\text{ft}^3 \text{ LFG}) * (10^6 \text{ BTU}/\text{MMBTU}) = 0.07694 \text{ pounds SO}_2/\text{MM BTU}$$

Throughput Limits:

The maximum daily throughput limit is based on 24 hours/day of operation (2880 MM BTU/day or 5,760,000 scf/day at an HHV of 500 BTU/scf).

At the maximum possible operating time of 8760 hours/year, the CO emission increases for this application would have exceeded 100 tons/year, which would require a CO modeling analysis pursuant to Regulation 2-2-305.2. In order to avoid the need for this analysis, the District is imposing an annual throughput limit that will prevent CO emission from exceeding 100 tons/year. The new annual throughput limit will be 1490 MM scf/year (at 500 BTU/scf), which is equivalent to 745,000 MM BTU/year and an average operating rate of ~2835 scfm (~85 MM BTU/hour).

Baseline Emissions:

Baseline emissions are determined in accordance with 2-2-605.1-605.3, where baseline emissions are equal to the baseline throughput rate times the baseline emission rate. In this case, baseline throughput is determined from annual update information submitted by the applicant and baseline emission rates are determined from source test data (except for the baseline PM₁₀ emission rate, which is from AP-42). The baseline emissions are summarized in Table 3 below.

Table 3. Baseline Emissions from A-50 Landfill Gas Flare

| Criteria Pollutants | Pounds / MM BTU | MM BTU / Year | Tons / Year |
|---------------------|-----------------|---------------|-------------|
| POC | 0.00710 | 378469 | 1.344 |
| NO _x | 0.04855 | 378469 | 9.187 |
| CO | 0.06225 | 378469 | 11.780 |
| PM ₁₀ | 0.01710 | 378469 | 3.237 |
| SO ₂ | 0.10160 | 378469 | 19.226 |
| NPOC | 0.00000 | 378469 | 0.000 |

Cumulative Emission Increases:

Cumulative emission increases for the A-50 flare will be calculated in accordance with Regulation 2-2-604.2, where cumulative emission increases are equal to the proposed permitted emissions minus the baseline emissions (for each pollutant resulting in increases of the annual emission limit). The cumulative emission increases for this application are this facility are summarized in Table 4 below.

Table 4. Plant Cumulative Emission Increases

| | New A-50 Emission Limits Tons/Year | Baseline Emissions from A-50 Tons/Year | App # 8501 Cumulative Increases Tons/Year | Current Balance ^(a) for Plant # 1179 Tons/Year | Offsets ^(b) for App # 8501 (from SFBA) Tons/Year | New Total for Plant # 1179 Tons/Year |
|------------------|------------------------------------|--|---|---|---|--------------------------------------|
| POC | 5.190 | 1.344 | 3.846 | 0.000 | 3.846 | 0.000 |
| NO _x | 22.350 | 9.187 | 13.163 | 0.005 | 13.168 | 0.000 |
| CO | 111.750 | 11.780 | 99.970 | 180.918 | | 280.888 |
| PM ₁₀ | 6.371 | 3.237 | 3.135 | 31.478 | | 34.613 |
| SO ₂ | 28.661 | 19.226 | 9.435 | 41.771 | | 51.206 |
| NPOC | 0.018 | 0.000 | 0.018 | 5.013 | | 5.031 |

(a) The current balances include previous emission increases for A-50 and other permitted equipment as well as some emission increases from equipment that has been shut down or was never installed.

- (b) After approval of this application, maximum permitted emissions for this facility will be: 32.706 tons/year of POC, 37.145 tons/year of NO_x, 117.654 tons/year of CO, 224.078 tons/year of PM₁₀ (215.639 tons/year of fugitive PM₁₀), and 30.567 tons/year of SO₂. Since permitted emissions of POC and NO_x will exceed 15 tons/year but are less than 50 tons/year, POC and NO_x offsets are required and may be provided from the Small Facility Banking Account (SFBA) at a ratio of 1.0 to 1.0. Offsets are not required for PM₁₀ or SO₂ emission increases, because this facility is not a Major Facility for PM₁₀ or SO₂ (non-fugitive emissions < 100 tons/year).

TOXIC POLLUTANT EMISSIONS

Current maximum permitted toxic compound emissions from the A-50 Landfill Gas Flare are based on Application # 17639. TAC concentrations in the landfill gas and secondary emissions of HCl, HF, and HBr were based on limits in Condition # 19867, Part 18b, site-specific landfill gas analyses, or AP-42 data. When A-50 was initially permitted, limited data was available about the destruction efficiency achieved by flares for individual toxic organic compounds. The District conservatively assumed that the minimum destruction efficiency for any individual TAC was 80%. The maximum permitted emission rates for the most significant TACs are summarized below in Table 5. The risk screening analysis that was conducted under Application # 17639 determined that the maximum increased cancer risk from A-50 was 0.6 in a million and the hazard index was 0.6.

In November 1998, AP-42 was amended, and EPA provided new destruction efficiency guidelines for individual compounds from landfill gas control equipment. These new guidelines (AP-42, page 2.4-13) indicate that the typical destruction efficiencies achieved by flares are 98.0% for halogenated compounds and 99.7% for non-halogenated compounds. These new destruction efficiency guidelines, the most recent uncontrolled landfill gas emission factors, and the new A-50 annual throughput rate were used to calculate the maximum proposed emissions from A-50. These maximum proposed emission rates are presented in Table 5 for the most significant TACs.

Table 5. Maximum Permitted TAC Emissions From A-50 Per Application # 17639

| Significant TACs | Current Permitted Emissions from A-50 Pounds/Year | Maximum Proposed Emissions from A-50 Pounds/Year | Risk Screen Trigger Levels Pounds/Year |
|---------------------------|---|--|--|
| Acrylonitrile | 9.7 | 0.17 | 0.67 |
| Benzene | 17.0 | 0.31 | 6.70 |
| 1,3 Butadiene | 9.9 | 1.17 | 1.10 |
| Carbon Tetrachloride | 7.0 | 0.83 | 4.60 |
| Chloroform | 5.4 | 0.65 | 36.00 |
| 1,4 Dichlorobenzene | 28.0 | 4.56 | 18.00 |
| 1,1 Dichloroethane | 9.4 | 1.15 | 120.00 |
| Ethylene Dibromide | 8.6 | 1.02 | 2.70 |
| Ethylene Dichloride | 19.5 | 0.54 | 8.70 |
| Hydrogen Bromide | 363.7 | 1482.80 | 4600.00 |
| Hydrogen Chloride | 4340.0 | 2677.92 | 1400.00 |
| Hydrogen Fluoride | 478.5 | 150.91 | 1100.00 |
| Hydrogen Sulfide | 3074.6 | 607.21 | 8100.00 |
| Methylene Chloride | 13.3 | 2.11 | 190.00 |
| Perchloroethylene | 42.8 | 5.78 | 33.00 |
| 1,1,2,2 Tetrachloroethane | 7.6 | 0.91 | 3.30 |
| 1,1,2 Trichloroethane | 6.1 | 0.71 | 12.00 |
| Trichloroethylene | 21.4 | 2.54 | 97.00 |
| Vinyl Chloride | 721.9 | 4.26 | 2.50 |

As shown above, the maximum proposed TAC emissions do not exceed the original maximum permitted emission rate for any TAC except hydrogen bromide. Therefore, this application will not result in any increases of TACs except for hydrogen bromide. For hydrogen bromide, the maximum proposed hydrogen bromide emissions are less than the risk screen trigger level. Therefore, a new risk screening analysis is not required.

For TACs in the landfill gas, a comparison of the current maximum permitted emission rates (after control) to the proposed uncontrolled emission rates indicates that A-50 must achieve a minimum destruction efficiency of 83% to ensure that this application will not result in emission increases for these compounds. An example calculation is shown below for acrylonitrile:

New Uncontrolled Emissions: $(745,000 \text{ MM BTU/yr}) * (7.726E-5 \text{ lbs/MM BTU}) = 57.56 \text{ lbs/year}$
Current Permitted Emissions: 9.70 lbs/year
New Destruction Efficiency: $(57.56 - 9.70)/(57.56) * 100 = 83.1\%$

STATEMENT OF COMPLIANCE

Regulation 2, Rule 1:

This application is for a change of permit conditions at the A-50 Landfill Gas Flare. The permitting of abatement equipment such as the A-50 Landfill Gas Flare meets the requirements of District Regulation 2-1-312.2. Therefore, the permitting of a change of conditions at A-50 is categorically exempt from CEQA review.

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

Regulation 2, Rule 2, NSR (BACT and RACT):

This project will result in both daily and annual emission increases of POC, NO_x, CO, PM₁₀, SO₂, and NPOC at the A-50 Landfill Gas Flare. Therefore, A-50 is considered a modified device and subject to Regulation 2, Rule 2: New Source Review (NSR). Since maximum daily emissions will be less than 10 pounds/day of NPOC, BACT is not required for NPOC emissions from the A-50 Flare. Maximum daily POC emissions from A-50 will exceed 10 pounds/day, and BACT is required for POC emissions from A-50. Compliance with this BACT requirement is discussed below. Since the A-50 Flare satisfies a BARCT requirement (Regulation 8-34-301.3) for control of NMOC emissions from the S-5 Redwood Landfill, the secondary pollutant emissions (NO_x, CO, PM₁₀, and SO₂) are exempt from BACT requirements pursuant to Regulation 2-2-112. Regulation 2-2-112 requires that Reasonably Available Control Technology (RACT) be used to control secondary pollutant emissions. RACT for each of the secondary pollutants (NO_x, CO, PM₁₀, and SO₂) is discussed in detail below.

BACT for POC: From the District's BACT/TBACT Workbook (Document # 80.1 12/16/91), BACT for POC emissions from a landfill gas flare is 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 A-50 Flare is an enclosed ground flare and meets the three criteria identified above. Therefore, A-50 satisfies the BACT requirements for POC emissions.

RACT for NO_x and CO: The current RACT limits for NO_x and CO emissions from landfill gas flares are 0.06 pounds NO_x/MM BTU and 0.30 pounds CO/MM BTU. A-50 has been complying with these emission limits since it was permitted in 1998. The District has permitted numerous other landfill gas fired flares at these emission limits since 1998. While it may be feasible to achieve lower emission levels, the proposed NO_x and CO emission limits allow reasonable compliance margins and are accepted as RACT for landfill gas fired flares.

RACT for PM₁₀: PM₁₀ 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 PM₁₀ emissions from landfill gas fired flares. Since A-50 is equipped with a fuel pretreatment system, it is complying with RACT for PM₁₀ emissions.

RACT for SO₂: Landfill gas contains reduced sulfur compounds (mainly hydrogen sulfide with small percentages of mercaptans, carbon disulfide, and other sulfur compounds). Gypsum (from wallboard) decomposition and sewage sludge decomposition are the main sources of these sulfur compounds. Landfill gas combustion produces sulfur dioxide (SO₂) as a byproduct.

The only reasonable method of reducing SO₂ emissions from landfill gas combustion is to reduce the amount of sulfur compounds in the landfill gas. This can be accomplished by using pollution prevention (i.e. reducing gypsum or sewage sludge disposal) or by treating the landfill gas to remove the sulfur compounds. Since the landfill is not being modified in this application, it would not be appropriate to impose new limits on the waste disposal stream at this time. Therefore, the only available sulfur dioxide control method for the A-50 Flare is treatment of the landfill gas to remove the sulfur compounds prior to combustion. Although an internet search did find several commercially available methods for removing sulfur compounds from landfill gas (iron sponges, liquid scrubbers, and catalytic iron-redox systems), searches of EPA's RACT/BACT/LAER Clearinghouse, ARB's BACT Clearinghouse, and South Coast's Major Source BACT Determinations found no cases where a sulfur removal system was required in order to meet BACT for SO₂ emissions from a landfill gas flare. Therefore, no landfill gas treatment options are considered to be BACT for controlling SO₂ emissions from a landfill gas flare.

In the Bay Area, RACT for SO₂ emissions from landfill gas fired combustion equipment is usually achieved by limiting landfill gas sulfur content to 150 ppmv (expressed as H₂S). This 150 ppmv sulfur limit was based on South Coast Air Quality Management District Rule 431.1, which limits the sulfur content of landfill gas to 150 ppmv, averaged on a daily basis. The staff report for this rule indicated that all landfills were expected to meet this sulfur content limit without any gas treatment and that no South Coast landfills were expected to exceed a peak sulfur content of 200 ppmv in the raw landfill gas. At one time, the South Coast rule required that all fuel gas meet a sulfur content limit of 40 ppmv. Several South Coast landfills operated under a variance from this requirement while the commercially available sulfur removal systems were evaluated for landfill gas applications. Although the sulfur removal systems proved feasible, the landfill operators experienced difficulty with the realistic operation and high operating costs of these sulfur removal systems. Ultimately, South Coast revised Rule 431.1 and established the 150 ppmv daily average limit for landfill gas with no landfill gas sulfur treatment systems required for any South Coast landfills.

Although landfill gas sulfur treatment systems are available, these systems are not being used on a wide spread basis and have not been required to meet BARCT, RACT, or BACT for landfill gas combustion operations. Therefore, landfill gas sulfur treatment systems do not constitute a "reasonably" available control measure. Instead, RACT for SO₂ emissions from landfill gas combustion operations will be compliance with a reasonable landfill gas sulfur content limit.

For most landfills, a peak sulfur content limit of 150 ppmv is easily met and is considered RACT for the landfill gas combustion operations associated with these landfills. However, landfill gas from the S-5 Redwood Landfill has the highest sulfur content of any of the Bay Area landfills (probably due to this site's extensive use of dried sewage sludge in daily cover material). A February 19, 2004 analysis of Redwood Landfill's gas found 192 ppmv of TRS (expressed as H₂S) with 98% of this TRS coming from hydrogen sulfide. Redwood Landfill could not meet a peak landfill gas sulfur content limit of 150 ppmv without using landfill gas treatment measures. Therefore, the 150 ppmv peak sulfur content limit is not considered to be reasonable for Redwood Landfill's landfill gas.

The current peak sulfur content limit for Redwood's landfill gas is 231 ppmv (expressed as H₂S). Considering the variability of the sulfur content found during previous site tests, the peak emission limit of 231 ppmv of TRS provides a reasonable compliance margin for this facility. For the A-50 Landfill Gas Flare, a peak landfill gas sulfur content limit of 231 ppmv (expressed as H₂S) shall be considered RACT for SO₂ emissions.

Regulation 2, Rule 2, NSR (Offsets):

POC and NO_x: Maximum potential emissions for this facility (including the revised limits for A-50) are 32.7 tons/year of POC and 37.1 tons/year of NO_x. Since facility wide emissions will exceed 15 tons/year, POC and NO_x offsets are required for any emission increases of these pollutants. Redwood Landfill qualifies to use the Small Facility Banking Account (SFBA) for the required offsets, because facility-wide maximum permitted emissions will be less than 50 tons/year of each pollutant.

Cumulative emission increases for this application plus any current balances are 3.846 tons/year of POC and 13.168 tons/year of NO_x. The offset ratio for facilities using the SFBA is 1.0 to 1.0. The SFBA will provide 3.846 tons/year of POC emission reduction credits and 13.168 tons/year of NO_x emission reduction credits for this application.

PM₁₀ and SO₂: The PM₁₀ and SO₂ offset requirements in Regulation 2-2-303 only apply if the facility is considered a Major Facility for that pollutant. Total facility wide emissions are 30.6 tons/year of SO₂ and 224.1 tons/year of PM₁₀. Since facility-wide SO₂ emissions are less than 100 tons/year, this facility is not a Major Facility for SO₂. Although this facility will emit more than 100 tons/year of PM₁₀, most of the emissions are from fugitive sources (mainly from vehicle traffic on haul roads). The definition of Major Facility (Regulation 2-6-212.1) excludes fugitive emissions at landfills from the determination of whether or not the facility is major. For the Redwood Landfill facility, total emissions from point sources are only 8.44 tons/year of PM₁₀. Therefore, this facility is not considered to be a Major Facility for PM₁₀; and Regulation 2-2-303 does not apply.

Regulation 2, Rule 2 (PSD)

Since this facility will not emit more than 100 tons/year of non-fugitive emissions of POC, NO_x, SO₂, or PM₁₀, this facility is not a Major Facility for any of these pollutants. Consequently, the PSD requirements of Regulation 2-2-304 do not apply.

This facility is a Title V Major Facility of CO (because CO emissions will exceed 100 tons/year), but it is not a PSD Major Facility of CO (because CO emissions will not exceed 250 tons/year and landfills are not one of the 28 PSD categories subject to the lower PSD threshold of 100 tons/year). Since this not a PSD Major Facility, Regulation 2-2-305.1 does not apply. However, Regulation 2-2-305.2 (a CO modeling analysis requirement) is potentially applicable, because Redwood Landfill is a Title V Major Facility for CO. To prevent triggering this Regulation 2-2-305.2 modeling requirement, Redwood Landfill requested to limit CO emission increases for this application to less than 100 tons/year. The District is imposing an annual throughput limit of 745,000 MM BTU/year and a CO emission rate limit of 0.3 lbs/MM BTU. These limits will ensure that CO emissions from A-50 will not exceed 111.75 tons/year of CO.¹ The baseline CO emissions from A-50 are 11.78 tons/year. Maximum permitted CO emission increases will be no more than 99.97 tons/year. Therefore, Regulation 2-2-305.2 does not apply.

¹ Source test data indicates that the flare emissions are much lower than the 0.3 lbs/MM BTU limit. Actual CO emissions from A-50 are not expected to exceed 30 tons/year and facility-wide actual CO emissions are not expected to exceed 35 tons/year.

None of the emission limit thresholds for non-criteria pollutant PSD applicability will be exceeded at this facility. Therefore, Regulation 2-2-306 does not apply.

New Source Review for Toxic Air Contaminants:

As shown in Table 5, the maximum proposed TAC emissions do not exceed the original maximum permitted emission rate for any TAC (except hydrogen bromide). Therefore, this application will not result in any increases of TACs except for hydrogen bromide. Since maximum proposed hydrogen bromide emissions are less than the risk screen trigger level, a new risk screening analysis is not required. Therefore, this project complies with the District's Toxic Risk Management Policy as proposed. TBACT does not apply.

The MACT requirements of Regulation 2-2-317 do not apply, because this facility is not a major facility of HAPs.

Regulation 2, Rule 6:

This facility is subject to the Operating Permit requirements of Title V of the federal Clean Air Act (40 CFR, Part 70) and BAAQMD Regulation 2, Rule 6, Major Facility Review (MFR), because it is a major facility, as defined by Regulation 2-6-212. This facility has the "potential to emit," as defined by Regulation 2-6-218, more than 100 tons per year of a regulated air pollutant, specifically more than 100 tons per year of carbon monoxide. Therefore, this facility is required to have an MFR permit pursuant to Regulation 2-6-301.

This facility is also subject to the Title V operating permit requirements and Regulation 2, Rule 6, MFR permit requirements, because it is a designated facility as defined by Regulation 2-6-204. The Standards of Performance for Municipal Solid Waste Landfills (40 CFR Part 60, Subpart WWW) require the owner or operator of a landfill that is subject to Subpart WWW and that has a design capacity of greater than or equal to 2.5 million megagrams (Mg) and 2.5 million cubic meters (m³) to obtain an operating permit pursuant to Part 70. The landfill at this facility is subject to 40 CFR, Part 60, Subpart WWW and has design capacities of 14.6 million m³ and 15.5 million Mg. Therefore, this facility is a designated facility and is required to have an MFR permit pursuant to 2-6-304.

The initial MFR Permit for this facility was issued on November 10, 2003. This application will require a revision of the current MFR permit. Since this application involves establishing limits (specifically annual throughput and CO emission rate limits that will keep CO emission increases below 100 tons/year) in order to avoid a requirement (the CO modeling analysis requirement of Regulation 2-2-305.2), this application requires a significant revision of the MFR Permit pursuant to Regulation 2-6-226.4.

The proposed MFR permit revisions related to this application are described later in this document.

Regulation 8, Rule 34:

The A-50 Landfill Gas Flare is subject to Regulation 8, Rule 34 "Solid Waste Disposal Sites". Regulation 8-34-301.3 limits the organic emissions from landfill gas flares and requires A-50 to either achieve 98% destruction of non-methane hydrocarbons (NMHC) or to emit no more than 30 ppmv of NMHC, expressed as methane, at 3% oxygen. From the September 2003 source test, the flare is emitting <22.2 ppmv of NMHC, expressed as methane and corrected to 3% O₂ dry basis, and is complying with Regulation 8-34-301.3.

Federal Requirements:

NSPS for MSW Landfills: The landfill at this facility is subject to the 40 CFR Part 60, Subpart WWW, the NSPS for Municipal Solid Waste (MSW) Landfills. The A-50 Landfill Gas Flare is subject to 40 CFR 60.752(b)(2)(iii)(B), which requires the control system to achieve either 98% removal of NMOC or emit no more than 20 ppmv of NMOC, expressed as hexane at 3% O₂. The

outlet concentration limit is equivalent to a limit of 120 ppmv of NMOC expressed as methane and is less stringent than Regulation 8-34-301.3. As discussed above for Regulation 8-34-301.3, the flare is emitting less than 22.2 ppmv of NMOC as methane (<3.7 NMOC as hexane) and is complying with 40 CFR 60.752(b)(2)(iii)(B). The flare will also comply with the temperature and gas flow monitoring requirements of 40 CFR 60.756(b)(1) and 60.756(b)(2), respectively.

NESHAPs for MSW Landfills: Any landfills that are subject to the landfill gas collection and control requirements of either the NSPS for MSW Landfills or the EG for MSW Landfills are also subject to the NESHAPs for MSW Landfills (40 CFR, Part 63, Subpart AAAAA). This NESHAP requires that subject facilities prepare and implement startup, shutdown, malfunction plans and additional reporting requirements. All applicable requirements are contained in the existing MFR permit, and this facility is expected to comply with these requirements.

MFR PERMIT MODIFICATIONS

The proposed revisions to each section of the MFR Permit are discussed below. All changes are clearly identified by ~~strikeout~~ and underline formatting.

Section I:

No changes are proposed to this section.

Section II:

The District is proposing to modify the capacity description for the A-50 Landfill Gas Flare in Table II-B, as shown below.

**Table II - B
Abatement Devices**

| A-# | Description | Source(s) Controlled | Applicable Requirement | Operating Parameters | Limit or Efficiency |
|------|--|---|--|--|---|
| A-18 | Water Sprays | S-5, S-25, S-34, S-35, S-37, S-39, and S-42 | BAAQMD Regulation 6-301 | None | Ringelmann No. 1 |
| A-41 | Water Sprays | S-41 | BAAQMD Regulation 6-301 | None | Ringelmann No. 1 |
| A-50 | Landfill Gas Flare, Power Strategies, EV-4000, 75-120 MM BTU/hour | S-5 | BAAQMD 8-34-301.3, see also Table IV-B | Minimum combustion zone temperature of 1475 °F, see also Table VII-B | 98% destruction of NMOC or < 30 ppmv of NMOC, as CH ₄ , at 3% O ₂ , dry |

Section III:

No changes are proposed to this section.

Section IV:

The District is proposing to add several applicable requirements from 40 CFR Part 60, Subpart WWW (related to flare operating requirements) that are currently missing from Table IV-B. The District is proposing to revise Condition #19867 (see discussion for Section VI below), and these revisions will be reflected in Table IV-B.

In Tables IV-B and IV-M, the District is also proposing to delete the future effective dates that have passed for 40 CFR Part 63, Subparts A and AAAA and to correct citation errors (SIP 1-523.5 does not exist).

Table IV – B
Source-Specific Applicable Requirements
 S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM;
 A-18 WATER SPRAYS; AND A-50 LANDFILL GAS FLARE

| Applicable Requirement | Regulation Title or Description of Requirement | Federally Enforceable (Y/N) | Future Effective Date |
|-------------------------------------|---|-----------------------------|-----------------------|
| BAAQMD Regulation 1 | General Provisions and Definitions (5/2/01) | | |
| 1-523 | Parametric Monitoring and Recordkeeping Procedures | N | |
| 1-523.1 | Reporting requirement for periods of inoperation > 24 hours | Y | |
| 1-523.2 | Limit on duration of inoperation | Y | |
| 1-523.3 | Reporting requirement for violations of any applicable limits | N | |
| 1-523.4 | Records of inoperation, tests, calibrations, adjustments, & maintenance | Y | |
| 1-523.5 | Maintenance and calibration | N | |
| SIP Regulation 1 | General Provisions and Definitions (6/28/99) | | |
| 1-523 | Parametric Monitoring and Recordkeeping Procedures | Y ¹ | |
| 1-523.3 | Reports of Violations | Y ¹ | |
| 1-523.5 | Maintenance and Calibration | Y¹ | |
| BAAQMD Regulation 6 | Particulate Matter and Visible Emissions (12/19/90) | | |
| 6-301 | Ringelmann No. 1 Limitation | Y | |
| 6-305 | Visible Particles | Y | |
| 6-310 | Particle Weight Limitation (applies to A-50 only) | Y | |
| 6-401 | Appearance of Emissions | Y | |
| BAAQMD Regulation 8, Rule 2 | Organic Compounds-Miscellaneous Operation (6/15/94) | Y | |
| 8-2-301 | Miscellaneous Operations | Y | |
| BAAQMD Regulation 8, Rule 34 | Organic Compounds – Solid Waste Disposal Sites (10/6/99) | | |
| 8-34-113 | Limited Exemption, Inspection and Maintenance | Y | |
| 8-34-113.1 | Emission Minimization Requirement | Y | |
| 8-34-113.2 | Shutdown Time Limitation | Y | |
| 8-34-113.3 | Recordkeeping Requirement | Y | |

Table IV – B
Source-Specific Applicable Requirements
 S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM;
 A-18 WATER SPRAYS; AND A-50 LANDFILL GAS FLARE

| Applicable Requirement | Regulation Title or Description of Requirement | Federally Enforceable (Y/N) | Future Effective Date |
|------------------------|---|-----------------------------|-----------------------|
| 8-34-116 | Limited Exemption, Well Raising | Y | |
| 8-34-116.1 | New Fill | Y | |
| 8-34-116.2 | Limits on Number of Wells Shutdown | Y | |
| 8-34-116.3 | Shutdown Duration Limit | Y | |
| 8-34-116.4 | Capping Well Extensions | Y | |
| 8-34-116.5 | Well Disconnection Records | Y | |
| 8-34-117 | Limited Exemption, Gas Collection System Components | Y | |
| 8-34-117.1 | Necessity of Existing Component Repairs/Adjustments | Y | |
| 8-34-117.2 | New Components are Described in Collection and Control System Design Plan | Y | |
| 8-34-117.3 | Meets Section 8-34-118 Requirements | Y | |
| 8-34-117.4 | Limits on Number of Wells Shutdown | Y | |
| 8-34-117.5 | Shutdown Duration Limit | Y | |
| 8-34-117.6 | Well Disconnection Records | Y | |
| 8-34-118 | Limited Exemption, Construction Activities | Y | |
| 8-34-118.1 | Construction Plan | Y | |
| 8-34-118.2 | Activity is Required to Maintain Compliance with this Rule | Y | |
| 8-34-118.3 | Required or Approved by Other Enforcement Agencies | Y | |
| 8-34-118.4 | Emission Minimization Requirement | Y | |
| 8-34-118.5 | Excavated Refuse Requirements | Y | |
| 8-34-118.6 | Covering Requirements for Exposed Refuse | Y | |
| 8-34-118.7 | Installation Time Limit | Y | |
| 8-34-118.8 | Capping Required for New Components | Y | |
| 8-34-118.9 | Construction Activity Records | Y | |
| 8-34-301 | Landfill Gas Collection and Emission Control System Requirements | Y | |
| 8-34-301.1 | Continuous Operation | Y | |
| 8-34-301.2 | Collection and Control Systems Leak Limitations | Y | |
| 8-34-301.3 | Limits for Enclosed Flares (<u>applies to A-50</u>) | Y | |
| 8-34-303 | Landfill Surface Requirements | Y | |
| 8-34-304 | Gas Collection System Installation Requirements | Y | |
| 8-34-304.1 | Based on Waste Age For Inactive or Closed Areas | Y | |
| 8-34-304.2 | Based on Waste Age For Active Areas | Y | |
| 8-34-304.3 | Based on Amount of Decomposable Waste Accepted | Y | |
| 8-34-304.4 | Based on NMOC Emission Rate | Y | |
| 8-34-305 | Wellhead Requirements | Y | |
| 8-34-305.1 | Operate Under Vacuum | Y | |
| 8-34-305.2 | Temperature < 55 °C | Y | |
| 8-34-305.3 | Nitrogen < 20% or | Y | |
| 8-34-305.4 | Oxygen < 5% | Y | |

Table IV – B
Source-Specific Applicable Requirements
 S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM;
 A-18 WATER SPRAYS; AND A-50 LANDFILL GAS FLARE

| Applicable Requirement | Regulation Title or Description of Requirement | Federally Enforceable (Y/N) | Future Effective Date |
|------------------------|---|-----------------------------|-----------------------|
| 8-34-405 | Design Capacity Reports | Y | |
| 8-34-408 | Collection and Control System Design Plans | Y | |
| 8-34-408.2 | Sites With Existing Collection and Control Systems | Y | |
| 8-34-411 | Annual Report | Y | |
| 8-34-412 | Compliance Demonstration Tests | Y | |
| 8-34-413 | Performance Test Report | Y | |
| 8-34-414 | Repair Schedule for Wellhead Excesses | Y | |
| 8-34-414.1 | Records of Excesses | Y | |
| 8-34-414.2 | Corrective Action | Y | |
| 8-34-414.3 | Collection System Expansion | Y | |
| 8-34-414.4 | Operational Due Date for Expansion | Y | |
| 8-34-415 | Repair Schedule for Surface Leak Excesses | Y | |
| 8-34-415.1 | Records of Excesses | Y | |
| 8-34-415.2 | Corrective Action | Y | |
| 8-34-415.3 | Re-monitor Excess Location Within 10 Days | Y | |
| 8-34-415.4 | Re-monitor Excess Location Within 1 Month | Y | |
| 8-34-415.5 | If No More Excesses, No Further Re-Monitoring | Y | |
| 8-34-415.6 | Additional Corrective Action | Y | |
| 8-34-415.7 | Re-monitor Second Excess Within 10 days | Y | |
| 8-34-415.8 | Re-monitor Second Excess Within 1 Month | Y | |
| 8-34-415.9 | If No More Excesses, No Further Re-monitoring | Y | |
| 8-34-415.10 | Collection System Expansion for Third Excess in a Quarter | Y | |
| 8-34-415.11 | Operational Due Date for Expansion | Y | |
| 8-34-416 | Cover Repairs | Y | |
| 8-34-501 | Operating Records | Y | |
| 8-34-501.1 | Collection System Downtime | Y | |
| 8-34-501.2 | Emission Control System Downtime | Y | |
| 8-34-501.3 | Continuous Temperature Records for Enclosed Combustors (<u>applies to A-50</u>) | Y | |
| 8-34-501.4 | Testing | Y | |
| 8-34-501.6 | Leak Discovery and Repair Records | Y | |
| 8-34-501.7 | Waste Acceptance Records | Y | |
| 8-34-501.8 | Non-decomposable Waste Records | Y | |
| 8-34-501.9 | Wellhead Excesses and Repair Records | Y | |
| 8-34-501.10 | Gas Flow Rate Records for All Emission Control Systems | Y | |
| 8-34-501.12 | Records Retention for 5 Years | Y | |
| 8-34-503 | Landfill Gas Collection and Emission Control System Leak Testing | Y | |
| 8-34-504 | Portable Hydrocarbon Detector | Y | |
| 8-34-505 | Well Head Monitoring | Y | |

Table IV – B
Source-Specific Applicable Requirements
 S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM;
 A-18 WATER SPRAYS; AND A-50 LANDFILL GAS FLARE

| Applicable Requirement | Regulation Title or Description of Requirement | Federally Enforceable (Y/N) | Future Effective Date |
|-------------------------------------|---|-----------------------------|-----------------------|
| 8-34-506 | Landfill Surface Monitoring | Y | |
| 8-34-507 | Continuous Temperature Monitor and Recorded (applies to A-50) | Y | |
| 8-34-508 | Gas Flow Meter | Y | |
| 8-34-510 | Cover Integrity Monitoring | Y | |
| BAAQMD Regulation 8, Rule 40 | Organic Compounds – Aeration of Contaminated Soil and Removal of Underground Storage Tanks (12/15/99) | | |
| 8-40-110 | Exemption, Storage Pile | Y | |
| 8-40-112 | Exemption, Sampling | Y | |
| 8-40-113 | Exemption, Non-Volatile Hydrocarbons | Y | |
| 8-40-116 | Exemption, Small Volume | Y | |
| 8-40-116.1 | Volume does not exceed 1 cubic yard | Y | |
| 8-40-116.2 | Volume does not exceed 8 cubic yards, organic content does not exceed 500 ppmw, may be used only once per quarter | Y | |
| 8-40-117 | Exemption, Accidental Spills | Y | |
| 8-40-118 | Exemption, Aeration Projects of Limited Impact | Y | |
| 8-40-301 | Uncontrolled Contaminated Soil Aeration | Y | |
| 8-40-304 | Active Storage Piles | Y | |
| 8-40-305 | Inactive Storage Piles | Y | |
| BAAQMD Regulation 9, Rule 1 | Inorganic Gaseous Pollutants – Sulfur Dioxide (3/15/95) | | |
| 9-1-301 | Limitations on Ground Level Concentrations (applies to A-50 only) | Y | |
| 9-1-302 | General Emission Limitations (applies to A-50 Flare only) | Y | |
| BAAQMD Regulation 9, Rule 2 | Inorganic Gaseous Pollutants – Hydrogen Sulfide (10/6/99) | | |
| 9-2-301 | Limitations on Hydrogen Sulfide | N | |
| 40 CFR Part 60, Subpart A | Standards of Performance for New Stationary Sources – General Provisions (5/4/98) | | |
| 60.4(b) | Requires Submission of Requests, Reports, Applications, and Other Correspondence to the Administrator | Y | |
| 60.7 | Notification and Record Keeping | Y | |
| 60.8 | Performance Tests | Y | |
| 60.11 | Compliance with Standards and Maintenance Requirements | Y | |
| 60.11(a) | Compliance determined by performance tests | Y | |
| 60.11(d) | Control devices operated using good air pollution control practice | Y | |
| 60.12 | Circumvention | Y | |

Table IV – B
Source-Specific Applicable Requirements
 S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM;
 A-18 WATER SPRAYS; AND A-50 LANDFILL GAS FLARE

| Applicable Requirement | Regulation Title or Description of Requirement | Federally Enforceable (Y/N) | Future Effective Date |
|------------------------------------|---|-----------------------------|-----------------------|
| 60.13 | Monitoring Requirements | Y | |
| 60.13(a) | Applies to all continuous monitoring systems | Y | |
| 60.13(b) | Monitors shall be installed and operational before performing performance tests | Y | |
| 60.13(e) | Continuous monitors shall operate continuously | Y | |
| 60.13(f) | Monitors shall be installed in proper locations | Y | |
| 60.13(g) | Multiple monitors are required for multiple stacks | Y | |
| 60.14 | Modification | Y | |
| 60.15 | Reconstruction | Y | |
| 60.19 | General Notification and Reporting Requirements | Y | |
| 40 CFR Part 60, Subpart WWW | Standards of Performance for New Stationary Sources – Standards of Performance for Municipal Solid Waste Landfills (2/24/99) | | |
| 60.752 | Standards for Air Emissions from Municipal Solid Waste Landfills | Y | |
| 60.752(b) | Requirements for MSW Landfills with Design Capacity equal to or greater than 2.5 million Mg and 2.5 million m ³ (Large Designated Facilities) | Y | |
| 60.752(b)(2) | Comply with all requirements in sections (b)(2)(i through iv) | Y | |
| 60.752(b)(2)(i) | Submit a Collection and Control System Design Plan | Y | |
| 60.752(b)(2)(i)(A) | The collection and control system in the Design Plan shall comply with 60.752(b)(2)(ii) | Y | |
| 60.752(b)(2)(i)(B) | Design Plan shall include all proposed alternatives to 60.753 through 60.758 | Y | |
| 60.752(b)(2)(i)(C) | Design Plan shall conform to 60.759 (active collection system) or demonstrate sufficiency of proposed alternatives | Y | |
| 60.752(b)(2)(ii) | Install a collection and control system | Y | |
| 60.752(b)(2)(iii) | Route collected gases to a control system. | Y | |
| 60.752(b)(2)(iii)(B) | <u>Reduce NMOC emissions by 98% by weight or reduce NMOC outlet concentration to less than 20 ppmv as hexane at 3% O₂, dry basis, as demonstrated by initial performance test within 180 days of start-up.</u> | <u>Y</u> | |
| 60.752(b)(2)(iv) | Operate in accordance with 60.753, 60.755, and 60.756 | Y | |
| 60.752(c) | Title V Operating Permit Requirements | Y | |
| 60.752(c)(1) | Subject date is June 10, 1996 for Landfills new or modified between May 30, 1991 and March 12, 1996 | Y | |
| 60.753 | Operational Standards for Collection and Control Systems | Y | |

Table IV – B
Source-Specific Applicable Requirements
 S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM;
 A-18 WATER SPRAYS; AND A-50 LANDFILL GAS FLARE

| Applicable Requirement | Regulation Title or Description of Requirement | Federally Enforceable (Y/N) | Future Effective Date |
|------------------------|---|-----------------------------|-----------------------|
| 60.753(a) | Operate a Collection System in each area or cell in which: | Y | |
| 60.753(a)(1) | Active Cell – solid waste in place for 5 years or more | Y | |
| 60.753(a)(2) | Closed/Final Grade – solid waste in place for 2 years or more | Y | |
| 60.753(b) | Operate each wellhead under negative pressure unless: | Y | |
| 60.753(b)(1) | Fire or increased well temperature or to prevent fire | Y | |
| 60.753(b)(2) | Use of geomembrane or synthetic cover (subject to alternative pressure limits) | Y | |
| 60.753(b)(3) | Decommissioned well after approval received for shut-down | Y | |
| 60.753(c) | Operate each wellhead at < 55 °C, and either < 20% N ₂ or < than 5% O ₂ (or other approved alternative levels) | Y | |
| 60.753(c)(1) | N ₂ determined by Method 3C | Y | |
| 60.753(c)(2) | O ₂ determined by 3A and as described in (2)(i-v) | Y | |
| 60.753(d) | Surface Leak Limit is less than 500 ppm methane above background at landfill surface. This section also describes some surface monitoring procedures. | Y | |
| 60.753(e) | Vent all collected gases to a control system complying with 60.752(b)(2)(iii). If collection or control system inoperable, shut down gas mover and close all vents within 1 hour | Y | |
| 60.753(f) | <u>Operate the control system at all times when collected gas is routed to the control system</u> | <u>Y</u> | |
| 60.753(g) | If monitoring demonstrates that 60.753(b), (c), or (d) are not being met, corrective action must be taken | Y | |
| 60.754 | Test Methods and Procedures | Y | |
| 60.754(c) | For PSD, NMOC emissions shall be calculated using AP-42 | Y | |
| 60.754(d) | Test Methods for Performance Test (Method 18 or 25C) | Y | |
| 60.755 | Compliance Provisions | Y | |
| 60.755(a) | For Gas Collection Systems | Y | |
| 60.755(a)(1) | Calculation procedures for maximum expected gas generation flow rate | Y | |
| 60.755(a)(1)(i) | Equation for unknown year-to-year waste acceptance rate | Y | |
| 60.755(a)(1)(ii) | Equation for known year-to-year waste acceptance rate | Y | |
| 60.755(a)(2) | Vertical wells and horizontal collectors shall be of sufficient density to meet all performance specifications | Y | |
| 60.755(a)(3) | Measure wellhead pressure monthly. If pressure is positive, take corrective action (final corrective action = expand system within 120 days of initial positive pressure reading) | Y | |
| 60.755(a)(4) | Expansion not required during first 180 days after startup. | Y | |

Table IV – B
Source-Specific Applicable Requirements
 S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM;
 A-18 WATER SPRAYS; AND A-50 LANDFILL GAS FLARE

| Applicable Requirement | Regulation Title or Description of Requirement | Federally Enforceable (Y/N) | Future Effective Date |
|------------------------|--|-----------------------------|-----------------------|
| 60.755(a)(5) | Monitor wellheads monthly for temperature and either nitrogen or oxygen. If readings exceed limits, take corrective action up to expanding system within 120 days of first excess. | Y | |
| 60.755(b) | Wells shall be placed in cells as described in Design Plan and no later than 60 days after: | Y | |
| 60.755(b)(1) | Five years after initial waste placement in cell, for active cells | Y | |
| 60.755(b)(2) | Two years after initial waste placement in cell, for closed/final grade cells. | Y | |
| 60.755(c) | Procedures for complying with surface methane standard | Y | |
| 60.755(c)(1) | Quarterly monitoring of surface and perimeter | Y | |
| 60.755(c)(2) | Procedure for determining background concentration | Y | |
| 60.755(c)(3) | Method 21 except probe inlet placed 5-10 cm above ground | Y | |
| 60.755(c)(4) | Excess is any reading of 500 ppmv or more. Take corrective action indicated below (i-v). | Y | |
| 60.755(c)(4)(i) | Mark and record location of excess | Y | |
| 60.755(c)(4)(ii) | Repair cover or adjust vacuum. Re-monitor within 10 calendar days. | Y | |
| 60.755(c)(4)(iii) | If still exceeding 500 ppmv, take additional corrective action. Re-monitor within 10 calendar days of 2 nd excess. | Y | |
| 60.755(c)(4)(iv) | Re-monitor within 1 month of initial excess. | Y | |
| 60.755(c)(4)(v) | For any location with 3 monitored excesses in a quarter, additional collectors (or other approved collection system repairs) shall be operational within 120 days of 1 st excess. | Y | |
| 60.755(c)(5) | Monitor cover integrity monthly and repair as needed. | Y | |
| 60.755(d) | Instrumentation and procedures for complying with 60.755(c). | Y | |
| 60.755(d)(1) | Portable analyzer meeting Method 21 | Y | |
| 60.755(d)(2) | Calibrated with methane diluted to 500 ppmv in air | Y | |
| 60.755(d)(3) | Use Method 21, Section 4.4 instrument evaluation procedures | Y | |
| 60.755(d)(4) | Calibrate per Method 21, Section 4.2 immediately before monitoring. | Y | |
| 60.755(e) | Provisions apply at all times except during startup, shutdown, or malfunction, provided the duration of these shall not exceed 5 days for collection systems or 1 hour for control systems. | Y | |
| 60.756 | Monitoring of Operations | Y | |
| 60.756(a) | For active collection systems, install wellhead sampling port | Y | |
| 60.756(a)(1) | Measure gauge pressure in wellhead on a monthly basis | Y | |
| 60.756(a)(2) | Measure nitrogen or oxygen concentration in wellhead gas on a monthly basis. | Y | |

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Source-Specific Applicable Requirements
 S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM;
 A-18 WATER SPRAYS; AND A-50 LANDFILL GAS FLARE

| Applicable Requirement | Regulation Title or Description of Requirement | Federally Enforceable (Y/N) | Future Effective Date |
|------------------------|---|-----------------------------|-----------------------|
| 60.756(a)(3) | Measure temperature of wellhead gas on a monthly basis. | Y | |
| 60.756(b) | <u>Enclosed combustors shall comply with (b)(1) and (b)(2)</u> | <u>Y</u> | |
| 60.756(b)(1) | <u>Temperature monitor and continuous recorder (not required for boilers and process heaters with capacity > 44 MW)</u> | <u>Y</u> | |
| 60.756(b)(2) | <u>Device that records flow to or bypass of the control device (i or ii below)</u> | <u>Y</u> | |
| 60.756(b)(2)(i) | <u>Install, calibrate, and maintain a device that records flow to the control device at least every 15 minutes.</u> | <u>Y</u> | |
| 60.756(e) | Procedures for requesting alternative monitoring parameters | Y | |
| 60.756(f) | Monitor surface on a quarterly basis. | Y | |
| 60.757 | Reporting Requirements | Y | |
| 60.757(a)(3) | Amended Design Capacity Report required within 90 days of receiving a permitted increase in design capacity or within 90 days of an annual density calculation that results in a design capacity over the thresholds. | Y | |
| 60.757(b)(3) | Sites with collection and control systems operating in compliance with this subpart are exempt from (b)(1) and (b)(2) above. | Y | |
| 60.757(c) | Submit a Collection and Control System Design Plan within 1 year of first NMOC emission rate report showing NMOC > 50 MG/year, except as follows | Y | |
| 60.757(f) | Submit Annual Reports containing information required by (f)(1) through (f)(6) | Y | |
| 60.757(f)(1) | Value and length of time for exceedance of parameters monitored per 60.756(a), (b) or (d) | Y | |
| 60.757(f)(2) | Description and duration of all periods when gas is diverted from the control device by a by-pass line | Y | |
| 60.757(f)(3) | Description and duration of all periods when control device was not operating for more than 1 hour | Y | |
| 60.757(f)(4) | All periods when collection system was not operating for more than 5 days. | Y | |
| 60.757(f)(5) | Location of each surface emission excess and all re-monitoring dates and concentrations. | Y | |
| 60.757(f)(6) | Location and installation dates for any wells or collectors added as a result of corrective action for a monitored excess. | Y | |
| 60.757(g) | Initial Performance Test Report Requirements (g)(1-6) | Y | |
| 60.757(g)(1) | Diagram of collection system showing positions of all existing collectors, proposed positions for future collectors, and areas to be excluded from control. | Y | |
| 60.757(g)(2) | Basis for collector positioning to meet sufficient density req. | Y | |

Table IV – B
Source-Specific Applicable Requirements
 S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM;
 A-18 WATER SPRAYS; AND A-50 LANDFILL GAS FLARE

| Applicable Requirement | Regulation Title or Description of Requirement | Federally Enforceable (Y/N) | Future Effective Date |
|------------------------|---|-----------------------------|-----------------------|
| 60.757(g)(3) | Documentation supporting percentage of asbestos or non-degradable material claims for areas without a collection system. | Y | |
| 60.757(g)(4) | For areas excluded from collection due to non-productivity, calculations and gas generation rates for each non-productive area and the sum for all nonproductive areas. | Y | |
| 60.757(g)(5) | Provisions for increasing gas mover equipment if current system is inadequate to handle maximum projected gas flow rate. | Y | |
| 60.757(g)(6) | Provisions for control of off-site migration | Y | |
| 60.758 | Recordkeeping Requirements | Y | |
| 60.758(a) | Design Capacity and Waste Acceptance Records (retain 5 years) | Y | |
| 60.758(b) | Collection and Control Equipment Records (retain for life of control equipment except 5 years for monitoring data) | Y | |
| 60.758(b)(1) | Collection System Records | Y | |
| 60.758(b)(1)(i) | Maximum expected gas generation flow rate. | Y | |
| 60.758(b)(1)(ii) | Density of wells and collectors | Y | |
| 60.758(b)(2) | <u>Control System Records - enclosed combustors other than boilers or process heaters with heat input > 44 MW</u> | <u>Y</u> | |
| 60.758(b)(2)(i) | <u>Combustion temperature measured every 15 minutes and averaged over the same time period as the performance test</u> | <u>Y</u> | |
| 60.758(b)(2)(ii) | <u>Percent NMOC reduction achieved by the control device</u> | <u>Y</u> | |
| 60.758(c) | Records of parameters monitored pursuant to 60.756 and periods of operation when boundaries are exceeded (retain for 5 years). | Y | |
| 60.758(c)(1) | <u>Exceedances subject to record keeping are</u> | <u>Y</u> | |
| 60.758(c)(1)(i) | <u>All 3-hour periods when average combustion temperature was more than 28 C below the average combustion temperature during the most recent complying performance test</u> | <u>Y</u> | |
| 60.758(c)(2) | Records of continuous flow to control device or monthly inspection records if seal and lock for bypass valves | Y | |
| 60.758(d) | Plot map showing location of all existing and planned collectors with a unique label for each collector (retain for life of collection system) | Y | |
| 60.758(d)(1) | Installation date and location of all newly installed collectors | Y | |
| 60.758(d)(2) | Records of nature, deposition date, amount, and location of asbestos or non-degradable waste excluded from control | Y | |
| 60.758(e) | Records of any exceedance of 60.753, location of exceedance and re-monitoring dates and data (for wellheads and surface). Retain for 5 years. | Y | |
| 60.759 | Specifications for Active Collection Systems | Y | |

Table IV – B
Source-Specific Applicable Requirements
 S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM;
 A-18 WATER SPRAYS; AND A-50 LANDFILL GAS FLARE

| Applicable Requirement | Regulation Title or Description of Requirement | Federally Enforceable (Y/N) | Future Effective Date |
|-------------------------------------|--|-----------------------------|-----------------------|
| 60.759(a) | Active wells and collectors shall be at sufficient density | Y | |
| 60.759(a)(1) | Collection System in refuse shall be certified by PE to achieve comprehensive control of surface gas emissions | Y | |
| 60.759(a)(2) | Collection Systems (active or passive) outside of refuse shall address migration control | Y | |
| 60.759(a)(3) | All gas producing areas shall be controlled except as described below (i-iii). | Y | |
| 60.759(b) | Gas Collection System Components | Y | |
| 60.759(b)(1) | Must be constructed of PVC, HDPE, fiberglass, stainless steel, or other approved material and of suitable dimensions to convey projected gas amounts and withstand settling, traffic, etc. | Y | |
| 60.759(b)(2) | Collectors shall not endanger liner, shall manage condensate and leachate, and shall prevent air intrusion and surface leaks. | Y | |
| 60.759(b)(3) | Header connection assemblies shall include positive closing throttle valve, seals and couplings to prevent leaks, at least one sampling port, and shall be constructed of PVC, HDPE, fiberglass, stainless steel, or other approved materials. | Y | |
| 60.759(c) | Gas Mover Equipment shall be sized to handle maximum expected gas generation rate over the intended period of use. | Y | |
| 60.759(c)(1) | For existing systems, flow data shall be used to project maximum flow rate. | Y | |
| 60.759(c)(2) | For new systems, gas generation rate shall be calculated per 60.755(a)(1) | Y | |
| 40 CFR Part 63, Subpart A | National Emission Standards for Hazardous Air Pollutants: General Provisions (3/16/94) | | |
| 63.4 | Prohibited activities and circumvention | Y | 1/16/04 |
| 63.5(b) | Requirements for existing, newly constructed, and reconstructed sources | Y | 1/16/04 |
| 63.6(e) | Operation and maintenance requirements and SSM Plan | Y | 1/16/04 |
| 63.6(f) | Compliance with non-opacity emission standards | Y | 1/16/04 |
| 63.10(b)(2) (i-v) | Records for startup, shutdown, malfunction, and maintenance | Y | 1/16/04 |
| 63.10(d)(5) | Startup, Shutdown, and Malfunction (SSM) Reports | Y | 1/16/04 |
| 40 CFR Part 63, Subpart AAAA | National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills (1/16/03) | | |
| 63.1955 | What requirements must I meet? | Y | 1/16/04 |
| 63.1955(a)(1) | Comply with 40 CFR Part 60, Subpart WWW | Y | 1/16/04 |

Table IV – B
Source-Specific Applicable Requirements
 S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM;
 A-18 WATER SPRAYS; AND A-50 LANDFILL GAS FLARE

| Applicable Requirement | Regulation Title or Description of Requirement | Federally Enforceable (Y/N) | Future Effective Date |
|---------------------------------|---|------------------------------------|------------------------------|
| 63.1955(a)(2) | Comply with State Plan that implements 40 CFR Part 60, Subpart Cc | Y | 1/16/04 |
| 63.1955(b) | Comply with 63.1960-63.1985, if a collection and control system is required by 40 CFR Part 60, Subpart WWW or a State Plan implementing 40 CFR Part 60, Subpart Cc | Y | 1/16/04 |
| 63.1955(c) | Comply with all approved alternatives to standards for collection and control systems plus all SSM requirements and 6 month compliance reporting requirements | Y | 1/16/04 |
| 63.1960 | How is compliance determined? | Y | 1/16/04 |
| 63.1965 | What is a deviation? | Y | 1/16/04 |
| 63.1975 | How do I calculate the 3-hour block average used to demonstrate compliance? | Y | 1/16/04 |
| 63.1980 | What records and reports must I keep and submit? | Y | 1/16/04 |
| 63.1980(a) | Comply with all record keeping and reporting requirements in 40 CFR Part 60, Subpart WWW or the State Plan implementing 40 CFR Part 60, Subpart Cc, except that the annual report required by 40 CFR 60.757(f) must be submitted every 6 months | Y | 1/16/04 |
| 63.1980(b) | Comply with all record keeping and reporting requirements in 40 CFR Part 60, Subpart A and 40 CFR Part 63, Subpart A, including SSM Plans and Reports | Y | 1/16/04 |
| BAAQMD Condition # 19867 | | | |
| Part 1 | Design capacity limit (Regulation 2-1-301) | Y | |
| Part 2 | Cumulative decomposable waste limit (Regulation 2-1-301) | Y | |
| Part 3 | Waste acceptance rate limits (Regulation 2-1-301) | Y | |
| Part 4 | Cover materials usage limits (Regulation 2-1-301) | Y | |
| Part 5 | Record keeping requirements for Parts 1-4 (Regulations 2-1-301, 8-34-501, and 40 CFR 60.758) | Y | |
| Part 6 | Off-site vehicle fleet weight limit (Regulation 2-1-301) | Y | |
| Part 7 | On-site vehicle fleet weight limit (Regulation 2-1-301) | Y | |
| Part 8 | Limit on vehicle miles traveled for off-site vehicle fleet (Regulation 2-1-301) | Y | |
| Part 9 | Limit on vehicle miles traveled for on-site vehicle fleet (Regulation 2-1-301) | Y | |
| Part 10 | Record keeping requirements for Parts 6-9 (Regulations 2-1-301, 8-34-501, and 40 CFR 60.758) | Y | |
| Part 11 | Particulate emissions control measures (Regulations 1-301, 2-1-301, and 6-301) | Y | |
| Part 12 | Public nuisance consequences (Regulation 1-301) | N | |

Table IV – B
Source-Specific Applicable Requirements
 S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM;
 A-18 WATER SPRAYS; AND A-50 LANDFILL GAS FLARE

| Applicable Requirement | Regulation Title or Description of Requirement | Federally Enforceable (Y/N) | Future Effective Date |
|------------------------|---|-----------------------------|-----------------------|
| Part 13 | Handling procedures for non-hazardous materials with no or low VOC Content (Toxic Risk Management Policy) | N | |
| Part 14 | Usage limits and record keeping requirements for VOC laden soil. (Offsets and Regulation 8-2-301) | Y | |
| Part 15 | Handling procedures VOC contaminated soil (Offsets and Regulations 8-40-301, 8-40-304, and 8-40-305) | Y | |
| Part 16 | Control requirements for collected landfill gas (Regulations 8-34-301.1 and 8-34-301.3 and 40 CFR 60.752(b)(2)(iii)) | Y | |
| Part 17 | Landfill gas collection system description (Regulations 2-1-301, 8-34-301.1, 8-34-304, 8-34-305, and 2-6-413) | Y | |
| Part 18 | Permit requirements if landfill gas concentrations exceed listed levels (Cumulative Increase, RACT, and Toxic Risk Management Policy) | Y | |
| Part 19 | Allowable fuels for flare (RACT and Regulation 2-2-112) | Y | |
| Part 20 | Landfill gas throughput limit and gas flow meter requirement for flare (Cumulative Increase and 40 CFR 60.756(b)(2)(i)) | Y | |
| Part 21 | Operating and alarm requirements for flare (Regulation 8-34-301.1) | Y | |
| Part 22 | Flare combustion zone temperature limit and monitoring requirement (Toxic Risk Management Policy, Regulations 8-34-301.1 and 8-34-501.3, and 40 CFR 60.756(b)(1)) | Y | |
| Part 23 | NMOC destruction efficiency/concentration limit for flare (Cumulative Increase, Regulation 8-34-301.3, and 40 CFR 60.752(b)(2)(iii)(B)) | Y | |
| Part 24 | Flare destruction efficiency requirement for HAPs and toxic compounds (Toxic Risk Management Policy) | N | |
| Part 25 | NOx emission limit for flare (RACT and Offsets) | Y | |
| Part 26 | CO emission limit for flare (RACT and Cumulative Increase) | Y | |
| Part 27 | Particulate emission limit for flare (RACT) | Y | |
| Part 28 | SO2 emission limit for flare (Cumulative Increase) | Y | |
| Part 29 | Record keeping and reporting requirements for flare (Regulations 2-6-501, 8-34-501, and 40 CFR 60.758) | Y | |
| Part 30 | Annual source test requirements (Cumulative Increase, Toxic Risk Management Policy, RACT, Offsets, Regulations 8-34-301.3, 8-34-412, 9-1-302, and 40 CFR 60.8 and 60.752(b)(2)(iii)(B)) | Y | |
| Part 31 | Annual landfill gas characterization test requirements (Toxic Risk Management Policy and Regulations 8-34-412 and 9-1-302) | Y | |
| Part 32 | Reporting periods and report submittal due dates for the Regulation 8, Rule 34 report (Regulation 8-34-411 and 40 CFR 63.1980(a)) | Y | |

1. This section has been removed from BAAQMD Regulations because it has been superseded. Nevertheless, the source must comply with this regulation until US EPA has reviewed and approved (or disapproved) the District's revision of the regulation.

Table IV – M
Source-Specific Applicable Requirements
 S-50 LEACHATE VAPORATOR

| Applicable Requirement | Regulation Title or Description of Requirement | Federally Enforceable (Y/N) | Future Effective Date |
|-------------------------------------|---|-----------------------------|-----------------------|
| SIP Regulation 1 | General Provisions and Definitions (6/28/99) | | |
| 1-523 | Parametric Monitoring and Recordkeeping Procedures | Y ¹ | |
| 1-523.3 | Reports of Violations | Y ¹ | |
| 1-523.5 | Maintenance and Calibration | Y¹ | |
| 40 CFR Part 63, Subpart A | National Emission Standards for Hazardous Air Pollutants: General Provisions (3/16/94) | | |
| 63.4 | Prohibited activities and circumvention | Y | 1/16/04 |
| 63.5(b) | Requirements for existing, newly constructed, and reconstructed sources | Y | 1/16/04 |
| 63.6(e) | Operation and maintenance requirements and SSM Plan | Y | 1/16/04 |
| 63.6(f) | Compliance with non-opacity emission standards | Y | 1/16/04 |
| 63.10(b)(2)(i-v) | Records for startup, shutdown, malfunction, and maintenance | Y | 1/16/04 |
| 63.10(d)(5) | Startup, Shutdown, and Malfunction (SSM) Reports | Y | 1/16/04 |
| 40 CFR Part 63, Subpart AAAA | National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills (1/16/03) | | |
| 63.1955 | What requirements must I meet? | Y | 1/16/04 |
| 63.1955(a)(1) | Comply with 40 CFR Part 60, Subpart WWW | Y | 1/16/04 |
| 63.1955(b) | Comply with 63.1960-63.1985, if a collection and control system is required by 40 CFR Part 60, Subpart WWW or a State Plan implementing 40 CFR Part 60, Subpart Cc | Y | 1/16/04 |
| 63.1955(c) | Comply with all approved alternatives to standards for collection and control systems plus all SSM requirements and 6 month compliance reporting requirements | Y | 1/16/04 |
| 63.1960 | How is compliance determined? | Y | 1/16/04 |
| 63.1965 | What is a deviation? | Y | 1/16/04 |
| 63.1975 | How do I calculate the 3-hour block average used to demonstrate compliance? | Y | 1/16/04 |
| 63.1980 | What records and reports must I keep and submit? | Y | 1/16/04 |
| 63.1980(a) | Comply with all record keeping and reporting requirements in 40 CFR Part 60, Subpart WWW or the State Plan implementing 40 CFR Part 60, Subpart Cc, except that the annual report required by 40 CFR 60.757(f) must be submitted every 6 months | Y | 1/16/04 |
| 63.1980(b) | Comply with all record keeping and reporting requirements in 40 CFR Part 60, Subpart A and 40 CFR Part 63, Subpart A, including SSM Plans and Reports | Y | 1/16/04 |

Section V:

No changes are proposed to this section.

Section VI:

The proposed revisions to Condition # 19867 are explained below for each part being revised. The revised text is shown following this explanation.

Revisions to Condition # 19867:

- Part 16: The text concerning the proposed IC engines (S-52, S-53, and S-54) will be deleted because these engines were never installed and the Authority to Construct has expired.
- Part 20: The daily and annual throughput limits will be increased as requested by the applicant. The daily limit is equivalent to the new maximum capacity (120 MM BTU/hour) times 24 hours/day of operation. The annual limit was set at the maximum throughput increase that would not result in CO emission increases of more than 100 tons/year.
- Part 22: The effective date for the flare temperature limit has passed and will be deleted.
- Part 23: The NMOC concentration limit in Part 23b is equal to the inlet NMOC limit (Part 18a) times the destruction efficiency limit (Part 23a). It is not really an outlet concentration limit but is actually an emission factor limit: 15 ft³ NMOC (as hexane) emitted/10⁶ ft³ LFG burned. For landfill gas at 50% methane, the Part 23b emission factor limit is equal to an outlet concentration of 16.15 ppmv of NMOC as methane at 3% oxygen. This limit is more stringent than Regulation 8-34-301.3 (30 ppmv of NMOC as methane at 3% O₂). The only basis for the more stringent limit is that cumulative emission increases due to POC emissions from A-50 were calculated using this factor. For this application, the maximum permitted flare emissions were based on the highest limit allowed by Regulation 8-34-301.3 (which in this case is the outlet concentration limit of 30 ppmv of NMOC). Cumulative emission increases for POC from A-50 were increased accordingly. Therefore, the Part 23b limit is no longer applicable, and the A-50 flare will be required to comply with Regulation 8-34-301.3 instead.
- Part 24: As discussed in the Toxic Pollutant Emissions sections of this evaluation, the uncontrolled toxic pollutant emissions from the A-50 Flare will increase due to the increase in annual throughput. However, the maximum permitted emissions will not increase as long as the flare achieves a minimum destruction efficiency of 83% by weight. This revised destruction efficiency requirement is identified in Part 24.
- Part 27: This PM₁₀ limit is being deleted, because it is not necessary. The RACT requirement for PM₁₀ emissions from a landfill gas flare is the use of a fuel pretreatment system and not a specific pounds/hour PM₁₀ emission limit. The only applicable PM₁₀ emission limit is the annual emission rate of 6.371 tons/year, and the basis for this limit is cumulative emission increases. This annual emission limit is calculated based on annual throughput and an AP-42 emission rate factor. The AP-42 emission factor is not expected to change, and A-50 is expected to comply with this factor with a high margin of compliance. Thus, only the annual throughput limit is necessary to ensure that the annual PM₁₀ emission limit is not exceeded.
- Part 28: This SO₂ limit is being deleted, because it is not necessary. The RACT requirement for SO₂ emissions from the A-50 Landfill Gas Flare is compliance with the landfill gas sulfur content limit of Part 18a. Since the emission calculations assume that all sulfur in the landfill gas is converted to SO₂ in the flare, no other limits are necessary to comply with RACT. The only other applicable SO₂ emission limit is the annual emission rate of 28.661 tons/year, and the basis for this limit is cumulative emission increases. This annual emission limit is calculated based on annual throughput, the Part 18a limit, and 100% conversion to SO₂. Thus, only the annual throughput limit (Part 20) and the

landfill gas sulfur content limit (Part 18a) are necessary to ensure that the annual SO₂ emission limit is not exceeded.

Part 30: Several typographical errors in this part will be corrected.

Excerpts from Condition # 19867

FOR: S-5, REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM; A-18, WATER SPRAYS; AND A-50, LANDFILL GAS FLARE

16. All landfill gas collected by the Landfill Gas Collection System shall be vented to either the A-50 Landfill Gas Flare alone or A-50 and the S-50 Leachate Vaporator. Up to 5 MM BTU/hour (approximately 167 scfm) of landfill gas may be diverted from the flare and used as fuel at the S-50 Leachate Vaporator. ~~Upon construction of one or more of the landfill gas-fired Internal Combustion Engines (S-52, S-53, and S-54), landfill gas may be vented to the A-50 Landfill Gas Flare and any combination of S-50, S-52, S-53, and/or S-54).~~
(Basis: 8-34-301.1, 8-34-301.3, and 40 CFR 60.752(b)(2)(iii))
20. The total throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-50 Landfill Gas Flare shall not exceed ~~1,314,000,000~~ 1,490,000,000 scf during any consecutive 12-month period and shall not exceed ~~3,600,000-5,760,000~~ scf during any one day. In order to demonstrate compliance with this condition, the A-50 Flare shall be equipped with a properly operating continuous gas flow meter.
(Basis: Cumulative Increase, 40 CFR 60.756(b)(2)(i))
22. ~~Effective December 1, 2002,~~ The temperature in the combustion zone of A-50 shall be maintained at a minimum of 1475 degrees F, averaged over any 3-hour period. In order to demonstrate compliance with this condition, A-50 shall be equipped with a continuous temperature monitor and recorder. If a source test demonstrates compliance with all applicable requirements at a different temperature, the APCO may revise this temperature limit, in accordance with the procedures identified in Regulation 2-6-414 or 2-6-415, based on the following criteria. The minimum combustion zone temperature for A-2 shall be equal to the average combustion zone temperature determined during the most recent complying source test minus 50 degrees F, provided that the minimum combustion zone temperature is not less than 1400 degrees F.
(Basis: Toxic Risk Management Policy, Regulations 8-34-301.3 and 8-34-501.3, and 40 CFR 60.756(b)(1))
23. The A-50 Landfill Gas Flare shall ~~either~~ comply with the NMOC emission limit in Regulation 8-34-301.3.
a. ~~Achieve a minimum destruction efficiency of 98% by weight for non-methane organic compounds~~

- ~~b. — or emit no more than 15 ppmv of NMOC as C₆
(Basis: Cumulative Increase, 8-34-301.3, and 40 CFR
60.752(b)(2)(iii)(B))~~
- *24. The A-50 Landfill Gas Flare shall achieve a minimum destruction efficiency of ~~80~~83% by weight for any EPA Hazardous Air Pollutants or any District toxic compounds that are determined to be present in the landfill gas or leachate vapors. (Basis: Toxic Risk Management Policy)
25. Nitrogen oxides (NO_x) emissions from the A-50 Landfill Gas Flare shall not exceed 0.06 pounds of NO_x, calculated as NO₂, per million BTU. Compliance with this emission limit may be demonstrated by meeting the following concentration limit. The concentration of NO_x in the flue gas from A-50 shall not exceed 15 ppmv of NO_x, corrected to 15% oxygen, dry basis.
(Basis: RACT and Offsets)
26. Carbon monoxide (CO) emissions from the A-50 Landfill Gas Flare shall not exceed 0.30 pounds of CO per million BTU. Compliance with this emission limit may be demonstrated by meeting the following concentration limit. The concentration of CO in the flue gas from A-50 shall not exceed 123 ppmv of CO, corrected to 15% oxygen, dry basis.
(Basis: RACT and Cumulative Increase)
- ~~27. — Particulate emissions from A-50 shall not exceed 3.56 pounds per hour.
(Basis: RACT)[deleted]~~
- ~~28. — Sulfur dioxide emissions from A-50 shall not exceed 5.74 pounds per hour.
(Basis: Cumulative Increase)[deleted]~~
30. In order to demonstrate compliance with Parts 23, 25, and 26, ~~and 28~~ above, Regulation 8, Rule 34, Sections 301.3 and 412, and 40 CFR 60.8 and 60.752(b)(2)(iii)(B), the Permit Holder shall ensure that a District approved source test is conducted annually on the A-50 Landfill Gas Flare. Each 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, NMOC, and O₂ in the flare stack gas;
 - ~~the~~ NMOC destruction efficiency achieved by the flare;
 - ~~the~~ NO_x and CO emission rates from the flare in units of pounds per MM BTU,

- g. ~~the~~ average combustion zone temperature in the flare during the test period.

Each annual source test shall be conducted no earlier than 9 months and 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, RACT, Offsets, Regulations 8-34-301.3, 8-34-412, 40 CFR 60.8 and 40 CFR 60.752(b)(2)(iii)(B))

Section VII:

The following revisions to Tables VII-B and VII-M will reflect the revisions discussed above for Sections IV and VI. However, there are no new, revised, or deleted monitoring requirements for this application.

The current gas flow rate and record keeping requirements are adequate for ensuring compliance with the new daily and annual landfill gas throughput limits.

As discussed in the SOB for the initial MFR Permit, the TAC destruction efficiency requirement is not federally enforceable. An excess of this limit requires the Permit Holder to submit a permit application so that staff can conduct a new risk screening analysis, if required. AP-42 indicates that landfill gas flares are expected to achieve greater than 98% destruction for individual halogenated and non-halogenated species. The TAC destruction efficiency identified in Part 24 (83% destruction of any individual TAC) is therefore quite conservative, and routine analysis to demonstrate compliance with this non-federally enforceable limit is not justified.

Table VII – B
Applicable Limits and Compliance Monitoring Requirements
 S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM
 AND A-50 LANDFILL GAS FLARE

| Type of Limit | Citation of Limit | FE Y/N | Future Effective Date | Limit | Monitoring Requirement Citation | Monitoring Frequency (P/C/N) | Monitoring Type |
|--------------------------|-----------------------------------|--------|-----------------------|---|---|------------------------------|-----------------------------|
| Landfill Gas Through-put | BAAQMD Condition # 19867, Part 20 | Y | | ≤ 3,600,000 5,760,000 scf per day and ≤ 1,314,000,000 1,490,000,000 scf per 12-month period (applies to A-50 Flare only) | BAAQMD Condition # 19867, Parts 20 and 29 | C | Gas Flow Meter and Recorder |

Table VII – B
Applicable Limits and Compliance Monitoring Requirements
 S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM
 AND A-50 LANDFILL GAS FLARE

| Type of Limit | Citation of Limit | FE Y/N | Future Effective Date | Limit | Monitoring Requirement Citation | Monitoring Frequency (P/C/N) | Monitoring Type |
|--|---|--------------|-----------------------|--|---|------------------------------|---|
| Startup Shutdown or Mal-function Pro-cedures | 40 CFR 63.6(e) | Y | 4/16/04 | Minimize Emissions by Implementing SSM Plan | 40 CFR 63.1980(a-b) | P/E | Records (all occurrences, duration of each, corrective actions) |
| NMOC | BAAQMD 8-34-301.3 and BAAQMD Condition # 19867, Part 23 | Y | | 98% removal by weight OR < 30 ppmv, dry basis @ 3% O ₂ , expressed as methane (applies to A-50 Flare only) | BAAQMD 8-34-412 and 8-34-501.4 and BAAQMD Condition # 19867, Part 30 | P/A | Annual Source Tests and Records |
| NMOC | BAAQMD Condition # 19867, Part 23 | Y | | 98% removal by weight OR < 15 ppmv, dry basis @ 3% O₂, expressed as hexane (applies to A-50 Flare only) | BAAQMD 8-34-412 and 8-34-501.4 and BAAQMD Condition # 19867, Part 30 | P/A | Annual Source Tests and Records |
| PM10 | BAAQMD Condition # 19867, Part 27 | Y | | ≤ 3.56 pounds per hour (applies to A-50 Flare only) | None | N | NA |
| SO ₂ | BAAQMD Condition # 19867, Part 28 | Y | | ≤ 5.74 pounds per hour (applies to A-50 Flare only) | BAAQMD Condition # 19867, Parts 18a and 31 | P/Q | Quarterly Landfill Gas Analysis |
| TAC / HAP | BAAQMD Condition # 19867, Part 24 | N | | Destruction Efficiency ≥ 80% by weight for any TAC or HAP | None | N | NA |

Table VII – M
Applicable Limits and Compliance Monitoring Requirements
 S-50 LEACHATE VAPORATOR

| Type of Limit | Citation of Limit | FE Y/N | Future Effective Date | Limit | Monitoring Requirement Citation | Monitoring Frequency (P/C/N) | Monitoring Type |
|--|-------------------|--------|-----------------------|---|---------------------------------|------------------------------|---|
| Startup Shutdown or Mal-function Pro-cedures | 40 CFR 63.6(e) | Y | 1/16/04 | Minimize Emissions by Implementing SSM Plan | 40 CFR 63.1980(a-b) | P/E | Records (all occurrences, duration of each, corrective actions) |

Section VIII:

The test methods for Condition # 19867, Parts 27 and 28 will be deleted, because these parts are no longer applicable.

**Table VIII
Test Methods**

| Applicable Requirement | Description of Requirement | Acceptable Test Methods |
|-----------------------------------|---|--|
| BAAQMD Condition # 19867, Part 27 | Particulate Emissions Limit for Flare | Manual of Procedure, Volume IV, ST 15, Particulates, Continuous Sampling, or EPA Reference Method 5, Determination of Particulate Matter Emissions from Stationary Sources |
| BAAQMD Condition # 19867, Part 27 | Sulfur Dioxide (SO ₂) Emissions Limit for Flare | Manual of Procedures, Volume IV, ST 19A, Sulfur Dioxide, Continuous Sampling |

Sections IX:

No changes are proposed to this section.

Section X:

This is a new section that will summarize each issuance, revision, or renewal of the MFR Permit for this facility. The revisions associated with this application are described below.

X. REVISION HISTORY

Title V Permit Issuance (Application 17363): **November 10, 2003**

Significant Revision (Application 8501): **[Insert Approval Date]**

- In Table II-B, change the capacity of the A-50 Flare from 75 MM BTU/hour to 120 MM BTU/hour.

- Add several missing sections of 40 CFR Part 60, Subpart WWW (flare operating and monitoring requirements) to Table IV-B.
- Delete future effective dates that have passed from Tables IV-B, IV-M, VII-B, VII-M and Condition # 19867, Part 22.
- Delete unnecessary requirements of Condition # 19867 (Parts 27 and 28) and delete references to these parts in Tables IV-B, VII-B, and VIII.
- Correct errors in Tables IV-B and IV-M and in Condition # 19867, Parts 16 and 30.
- Revise landfill gas throughput limits for A-50 in Condition # 19867, Part 20 and Table VII-B.
- Revise the NMOC emission limit for A-50 in Condition # 19867, Part 23 and Table VII-B.
- Revise the non-federally enforceable TAC destruction efficiency limit for A-50 in Condition # 19867, Part 24 and Table VII-B.

Sections XI-XII:

These section numbers will be revised due to the addition of Section X above. No other changes will be made.

RECOMMENDATION

Issue a revised Permit to Operate and a Change of Conditions for the following equipment:

- A-50 Landfill Gas Flare**, Power Strategies, Model EV-4000, 10' X 40', 120 MM BTU/hour; equipped with low MRW NOx burners; abating S-5 Redwood Landfill with Gas Collection System, and abating S-50 Leachate Vaporator.

By: Carol S. Allen
Senior Air Quality Engineer

July 15, 2004
Date