

Bay Area Air Quality Management District

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**Permit Evaluation
and
Statement of Basis
for
Minor Revision to the

MAJOR FACILITY REVIEW PERMIT**

**for
Kirby Canyon Landfill
Facility #A1812**

Facility Address:
910 Coyote Creek Golf Drive
Morgan Hill, CA 95037

Mailing Address:
P. O. Box 1870
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Application Engineer: Tamiko Endow
Site Engineer: Tamiko Endow

Application: 15618

**Title V – Minor Permit Revision
Statement of Basis
Kirby Canyon Landfill, Facility #A1812
Application #15618**

A. Background

Site Description

Kirby Canyon Landfill is an active Class III municipal solid waste landfill operated by Waste Management of California. The site is located 15 miles south of downtown San Jose, adjacent to US Highway 101 and opened in July 1986. The facility accepts non-hazardous residential, commercial, industrial, and inert wastes. It has a total permitted area of 827 acres with a permitted waste disposal footprint of 311 acres and a design capacity of 36.4 million cubic yards (20.5 million tons). Permitted sources at this facility include the landfill and gas collection system (S-1), a portable air compressor (S-8), and an enclosed landfill gas flare (A-11). The landfill gas flare, A-11, has been replaced with a new flare, A-12, which was brought online on December 3, 2007.

Current Project

This application proposes a minor revision to the MFR permit for this facility to incorporate the permit changes approved under NSR Applications #15617, #17017, and a change in the facility's responsible official.

Under NSR Application #15617, the District issued an Authority to Construct to Kirby Canyon Landfill for the following equipment:

A-12: Landfill Gas Flare with Condensate Injection System, 4500 scfm landfill gas capacity and 5 gallons per minute maximum condensate injection rate, 149 MMBtu/hr

This larger flare was intended to replace the existing 45 MMBtu/hr flare, A-11, and handle the landfill gas capacity of the 3 proposed landfill gas-fired engines (S-5, S-6, S-7), which were approved but not installed. Alternate well temperature limits for specified wells and an increase in the landfill gas condensate injection rate to the new flare were also approved. The changes were discussed in detail in the Engineering Evaluation for Application #15617, included in Appendix A.

Under NSR Application #17016, the District issued an Authority to Construct to Kirby Canyon Landfill for the following collection system changes:

**S-1: Municipal Solid Waste Landfill with Gas Collection System, equipped with (34) Landfill Gas Extraction Wells
Replacement of up to (9) Existing Vertical Gas Extraction Wells, Installation of up to (30) New Vertical Gas Extraction Wells, and Decommissioning of up to (20) Existing Vertical Gas Extraction Wells, Decommissioning of up to (2) Existing Horizontal Wells, and Connection of (4) Additional Risers to the Collection System.**

The permit allows modifications to the gas collection system, as indicated. These changes will be made over a period of up to 2 years from issuance of the Authority to Construct, and are required to maintain the collection efficiency of the gas collection system. The Engineering Evaluation for Application #17016 is included in Appendix B.

This minor permit revision proposes to incorporate the updated collection well count and the projected well modifications, the requirements for the approved replacement flare and its applicable requirements, the new well temperature and condensate injection limits, and removal of the permit terms related to the 3

engines which were not installed. In addition, the 2 existing diesel engines (S-3 and S-4) and their applicable requirements are proposed for deletion from the permit, as these engines were removed from the site. Waste Management has recently also requested that 5 additional wells be included under the alternate well temperature limits and a change in responsible official. The District proposes to approve these changes under this minor revision to the Title V permit.

B. Emissions

As discussed in the evaluation for Application #15617 (included in Appendix A), the alternate well temperature limits will not result in any emission increases from this site. The replacement of the existing flare, A-11, with the new the larger capacity flare, A-12, will result in additional emissions from the flare, summarized below:

Pollutant	Emissions from A-12 (tpy)	Reductions from Removal of A-11 (tpy)	Net Emission Increase (tpy)
PM10	11.095	5.525	5.570
POC	0	0	0
NOx	32.631	19.500	13.131
SO2	9.137	4.550	4.587
CO	195.786	97.500	98.286

There will be no increases in emissions due to the landfill gas collection system well modifications approved under Application #17016.

C. Proposed MFR Permit Modifications

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 in BAAQMD Regulation 2-6-204. The Emission Guidelines for Municipal Solid Waste Landfills (40 CFR Part 60, Subpart Cc) requires the owner or operator of a landfill subject to this part and having a design capacity of 2.5 million megagrams and 2.5 million cubic meters or more to obtain a federal operating permit pursuant to Part 70. This facility is a designated facility because it meets the criteria listed in 40 CFR, Section 60.32c(c).

Kirby Canyon Landfill received its initial Title V permit on July 10, 2003. This permit has undergone 3 minor permit revisions since that date on January 12, 2005, July 13, 2006, and most recently on January 28, 2007. Kirby Canyon Landfill has submitted an application for renewal of the MFR Permit, Application #17168, which will be processed separately. This report will only address the proposed minor revisions to the current MFR permit.

The proposed changes to the MFR permit are neither significant nor administrative, and are therefore minor permit revisions in accordance with Regulation 2-6-215. The proposed changes to each of the MFR Permit sections are described below in the order they appear in the permit. All proposed changes to the permit are identified by strikeout/underline formatting in the attached proposed MFR Permit.

Permit Cover

Dean Kattler has been identified as the responsible official for this facility, and he will be shown to be both the responsible official and facility contact on the permit cover page.

Section I – Standard Conditions

No changes are proposed for this section.

Section II - Equipment

Sources S-3 through S-7 will be deleted from Table IIA. S-3 and S-4 were removed from service and sources S-5 through S-7 were never installed. The new flare, A-12, will be added to Table IIB, and the replaced flare, A-11, will be removed.

Section III – Generally Applicable Requirements

No changes are proposed for this section.

Section IV – Source-Specific Applicable Requirements

- Table IV-A: Reference to the replaced flare, A-11 will be deleted from the table, and the new flare, A-12 will be identified as the abatement device for S-1. Part 17 of Condition 1437 will be added to the table. Condition 23024 will be deleted, since it applied to the facility due to the proposed installation of sources S-5 through S-7, sources that were not installed.
- Table IV-B will be deleted, since S-3 and S-4 have been removed from service.
- Table IV-C will be deleted, since S-5 through S-7 were never installed and will not be installed.

Section V – Schedule of Compliance

No changes are proposed for this section.

Section VI – Permit Conditions

Permit condition #1437 will be updated as follows:

- All references to the flare, A-11, will be deleted and replaced with the new flare, A-12. References to “permit holder” will be updated to “owner/operator.”
- In Part 6, the total number of leachate wells will be added to the condition, the total number of gas wells will be updated as shown, and the application references will also be updated.
- The maximum firing rate for the replaced flare A-11 will be deleted from Part 8 and replaced with the daily and annual firing limits for A-12.
- The NOx emission limit for A-11 will be deleted from Part 10 and replaced with the limit for A-12.
- The references to SO2 requirements for sources S-5, S-6, and S-7 will be deleted from Part 12, since these sources were not installed.
- In Part 14, the landfill gas condensate injection rate for A-11 will be deleted and replaced with the injection rate allowed for A-12.
- Part 17 related to alternate wellhead temperatures will be added.

Permit conditions #21582, 21583, and 23024 will be deleted because they were established as a part of the permitting of S-3, S-4, S-5, S-6, and S-7 Diesel IC Engines and those engines were either removed from service or never installed.

Section VII – Applicable Limits & Compliance Monitoring Requirements

- Table VII-A: A-12 will be added as the abatement device for S-1, replacing A-11. Condition 1437 requirements will be modified – the heat input limits for the new flare in Part 8, the NOx limit for the new flare in Part 10, and the condensate injection rate in Part 14. Part 17 of Condition 1437 will be added to the table. Condition 23024 will be deleted.
- Table VII-B will be deleted, since S-3 and S-4 have been removed from service.
- Table VII-C will be deleted, since S-5 through S-7 were not and will not be installed.

Section VIII-IX

Permit Evaluation and Statement of Basis:
Site A1812, Kirby Canyon Landfill, 910 Coyote Creek Dr., Morgan Hill 95037

No changes are proposed for these sections.

Section X

These proposed MFR Permit revisions will be summarized in the revision history section.

Sections XI –XII

No changes are proposed for these sections.

D. Summary

The District is proposing a minor revision to the MFR Permit for Facility #A1812 to update the designated responsible official for this site, update the well count and approved well modification plan, remove references to sources that were not installed at the site and sources which have been removed from service, add the new landfill gas flare and the requirements for this flare, and add the approved provisions for alternate wellhead temperature limits.

Permit Evaluation and Statement of Basis:
Site A1812, Kirby Canyon Landfill, 910 Coyote Creek Dr., Morgan Hill 95037

ATTACHMENT A
BAAQMD ENGINEERING EVALUATION REPORT
Application 15617

Engineering Evaluation Report
Kirby Canyon Landfill, P#1812
910 Coyote Creek Golf Drive, Morgan Hill
Application #15617

Background

Kirby Canyon Landfill (KCL) is an active Class III municipal solid waste landfill operated by Waste Management of California. The facility opened July 1986 and accepts non-hazardous residential, commercial, industrial, and inert wastes. The site has a total permitted area of 827 acres and is located 15 miles south of downtown San Jose, adjacent to US Highway 101. It is equipped with an active gas collection and system, including 36 vertical gas collection wells and an enclosed flare. The permitted waste disposal footprint is 311 acres, with a design capacity of 36.4 million cubic yards (20.5 million tons). The site reported approximately 15.05 million tons of waste in place as of June 2006 and estimates a closure date of June 2018.

Under this application KCL has proposed to replace the existing 45 MMBtu/hour flare, A-11, with a new 149 MMBtu/hour capacity flare. In 1994, the facility was issued Authorities to Construct for three 1,148 bhp landfill gas-fired internal combustion engines, S-5, S-6, and S-7 (Application #9220). The 3 engines were not installed. The proposed larger flare will be used to abate the landfill gas instead of these 3 engines and the existing flare. KCL has also requested that the permits for the 2 existing IC engines, S-3 and S-4, be archived, since these sources have been removed from the site.

Subsequent to the initial submittal of this application, KCL realized it was approaching the maximum annual landfill gas condensate injection rate in their permit (375,000 gallons per consecutive 12-month period) and added a request to increase the injection rate. In addition, elevated well temperatures greater than the limit of 131 degreesF specified in Regulation 8, Rule 34 were measured in February of this year. Subsequent monitoring has shown that the wells appear to be operating as designed, producing gas with methane levels of approximately 50% with corresponding low oxygen, nitrogen, and carbon monoxide concentrations. As a result, also subsequent to the initial submittal of this application, KCL requested approval of a higher maximum operating temperature of 145 degreesF at Wells 36, 37, 41, 42, 51, and 52.

The increase in condensate injection rate and establishment of an alternate operating temperature limit for designated wells at the landfill will require a Change of Conditions for the following source:

**S-1, Solid Waste Landfill with Gas Collection System, 36 extraction wells
abated by A-11, Landfill Gas Flare with Condensate Injection System, 1482 scfm landfill gas
capacity and 5 gallons per minute maximum condensate injection rate, 45 MMBtu/hr**

This application will also include review of the proposed replacement of the existing flare with the following new flare:

**A-12, Landfill Gas Flare with Condensate Injection System, 4500 scfm landfill gas capacity and 5
gallons per minute maximum condensate injection rate, 149 MMBtu/hr**

KCL will be installing a landfill gas condensate storage tank with a capacity of 1,000 gallons. As the landfill gas condensate contains less than 1% organic compounds by weight, this tank is exempt from District permit requirements per Rule 2-1-123.2.

Emission Calculations

Landfills are sources of air emissions, including particulate matter from the handling of waste, excavation and compaction activities, as well as vehicular traffic across paved and unpaved roads. Landfill gas control equipment such as flares and engines, as well as delivery vehicles and onsite mobile construction equipment, also generate combustion emissions from the combustion of fuel. The decomposition of waste in the landfill generates emissions of methane and volatile organic compounds, which is emitted in the form of fugitive leaks from uncollected landfill gas or as the small fraction of organic compounds which are uncombusted at the landfill gas abatement device. All of these forms of emissions are attributed to the landfill source, S-1, and are a function of the permitted capacity of the landfill. Under this application, KCL has not proposed any modification to the landfill itself, therefore there is no associated increase in any of these emissions, which were reviewed and addressed at the time the landfill was permitted. The only increase in emissions associated with the proposed replacement of the existing flare will be the secondary products of combustion created by the combustion of landfill gas and landfill gas condensate in the new larger flare – particulate matter (PM), nitrogen oxides (NO_x), carbon monoxide (CO), and sulfur dioxide (SO₂), and acid gases. These emission increases are calculated below.

NO_x and CO Emission Factors:

The facility has proposed that the flare meet a NO_x emission rate of 0.05 lbs/MMBtu. The flare manufacturer has indicated that this NO_x emission rate and a CO emission rate of 0.2 lbs/MMBtu can be achieved if the operating temperature is maintained at 1600 degreesF. The applicant has requested that a higher CO emission rate of 0.3 lbs/MMBtu be used in the evaluation of maximum emissions from this flare, as the operating temperature at maximum design capacity must be maintained below the high temperatures that produce higher NO_x emissions. At flow rates nearing the flare design capacity, the CO emissions can approach 0.3 lbs/MMBtu. This higher emission rate will therefore be used in the emission calculations below.

SO₂ Emission Factors:

Sulfur dioxide emissions are dependent on the levels of sulfur compounds present in the landfill gas and landfill condensate. The landfill gas analysis performed for this site in December 2002 showed a total reduced sulfur concentration of 43.2 ppmv. This is slightly less than the typical expected landfill gas total sulfur concentration of 50 ppmv. The higher concentration will be used to calculate the SO₂ emission rate:

$$(50e-6 \text{ lb-mole S/lb-mole gas})(\text{lb-mole SO}_2/\text{lb-mol S})(64 \text{ lbs SO}_2/\text{lb-mol SO}_2)(\text{lb-mol gas}/386 \text{ scf})/(596 \text{ Btu/scf}) = 1.4e-8 \text{ lb SO}_2/\text{Btu gas} = 0.014 \text{ lbs SO}_2/\text{MMBtu}$$

The landfill condensate was also sampled and analyzed in December 2002. The 5 samples were tested for hydrogen sulfide, carbonyl sulfide, methyl mercaptan, ethyl mercaptan, dimethyl sulfide, and dimethyl disulfide as required by permit condition. The analysis showed that the condensate primarily contained dimethyl sulfide, with dimethyl disulfide and ethyl mercaptan also present in some samples. The measured total concentrations of these sulfur compounds ranged between 6.97 and 48.23 micrograms/liter, which corresponds to a maximum possible SO₂ formation of 6E-8 to 6E-7 lbs/gallon. This sulfur content is an insignificant contribution to SO₂ formation:

$$\text{SO}_2, \text{ condensate} = (6E-7 \text{ lb SO}_2/\text{gal condensate})(1.5E6 \text{ gal condensate}/\text{yr}) = 0.89 \text{ lb}/\text{yr}$$

PM Emission Factors:

EPA's AP-42, Compilation of Air Pollutant Emission Factors, Table 2.4-5 "Emission Rates for Secondary Compounds Exiting Control Devices" specifies a PM emission factor of 17 lbs/million dscf methane. The landfill gas (LFG) at the facility has a maximum methane content of 60%, and at standard conditions, 60% methane landfill gas will have a higher heating value of 596 Btu/scf. Therefore, the AP-42 emission factor is equivalent to

$$(17 \text{ lbs PM}/1e6 \text{ dscf methane})(0.6 \text{ dscf methane}/\text{scf LFG})(1e6 \text{ scf LFG}/596 \text{ MMBtu}) = 0.017 \text{ lb}/\text{MMBtu}$$

Assuming continuous use of the flare at the maximum capacity and a maximum condensate injection of 1.5 million gallons/year, the secondary pollutant emissions from A-12 will be:

$$\text{NO}_x = (0.05 \text{ lb/MMBtu})(149 \text{ MMBtu/hr})(24 \text{ hr/day})(365 \text{ days/yr}) = 65,262 \text{ lbs/yr} = 32.631 \text{ tpy}$$

$$\text{CO} = (0.3 \text{ lb/MMBtu})(149 \text{ MMBtu/hr})(24 \text{ hr/day})(365 \text{ days/yr}) = 391,572 \text{ lbs/yr} = 195.786 \text{ tpy}$$

$$\text{SO}_2 = (0.014 \text{ lb/MMBtu})(149 \text{ MMBtu/hr})(24 \text{ hr/day})(365 \text{ days/yr}) = 18,273 \text{ lbs/yr} = 9.137 \text{ tpy}$$

$$\text{PM} = (0.017 \text{ lb/MMBtu})(149 \text{ MMBtu/hr})(24 \text{ hr/day})(365 \text{ days/yr}) = 22,189 \text{ lbs/yr} = 11.095 \text{ tpy}$$

The proposed increase in landfill gas condensate injection is not expected to change the secondary pollutant emissions calculated above, since the landfill gas condensate consists mostly of water and the calculations above are already based on the maximum heat capacity of the flare.

Contemporaneous Emission Reductions

KCL has ceased operation of 2 existing diesel-fired internal combustion engines, S-3 and S-4, and will be removing the existing flare, A-11, when the new flare is put online. The reduction in emissions from these sources and abatement device will offset the emission increases from this project. The procedures for calculating emission reduction credits are defined in Regulation 2, Rule 2, Section 605. The calculation is based on a baseline period consisting of the 3 years immediately preceding the date that the application is complete or shorter period if the source is less than 3 years old. The emission reduction credits are calculated from the average baseline usage and the emission rate during the baseline period.

The existing flare, A-11 was permitted under Application 8255 and has been operating for just over 3 years. Therefore, the baseline emissions have been calculated as the average 12-month baseline usage. The facility reported that the flare has combusted 2,031,849 thousand cubic feet of landfill gas in 38 months of operation. This gives an average 12-month baseline usage of 641,637 thousand cubic feet of landfill gas combusted. Assuming the gas is 50% methane (giving a HHV of 1013 Btu/scf), the average annual heat input to the flare during the baseline period is 649,978 MMBtu/yr. This flare was required to meet RACT levels for NO_x and CO. The emission reductions credits are calculated below based on the actual average baseline throughput and the RACT/BARCT emission rates charged to the device when permitted under Application 8255 in 2004:

$$\text{PM: } 0.017 \text{ lb/MMBtu}(649,978 \text{ MMBtu/yr}) = 11,050 \text{ lbs/yr} = 5.525 \text{ tpy}$$

$$\text{NO}_x: 0.06 \text{ lb/MMBtu}(649,978 \text{ MMBtu/yr}) = 38,999 \text{ lbs/yr} = 19.50 \text{ tpy}$$

$$\text{SO}_2: 0.014 \text{ lb/MMBtu}(649,978 \text{ MMBtu/yr}) = 9,100 \text{ lbs/yr} = 4.55 \text{ tpy}$$

$$\text{CO: } 0.3 \text{ lb/MMBtu}(649,978 \text{ MMBtu/yr}) = 194,993 \text{ lbs/yr} = 97.50 \text{ tpy}$$

Sources, S-3 and S-4, are diesel fired internal combustion engines (134 bhp and 62 bhp). The sources had been installed at the facility prior to 1991 and were exempt from District permit requirements at the time of installation, as the rated capacity for each is less than 250 bhp. The District reduced the exemption level 50 hp in May 2000, so KCL was required to obtain permits for the existing engines in accordance with Regulation 2, Rule 1, Section 424, Loss of Exemption or Exclusion. As loss of exemption sources, the engines were not subject to emission controls or emission limits and the emissions from S-3 and S-4 were calculated from EPA's AP42, Table 3.3-2, Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines.

The sources S-3 and S-4 were permitted for a maximum of 3,120 hours of operation per year, each, on diesel fuel containing less than 0.5% sulfur by weight. The baseline period for these sources is the 3 year period immediately preceding the date this application was deemed complete. KCL indicated that the S-4 was not used from 2004 to February 2007. KCL indicated that S-3 was used less than 15 minutes during 2004 and not at all since. Therefore, there are no contemporaneous emission reduction credits from shutdown of S-3 or S-4 to offset emission increases in the proposed flare replacement.

Pollutant	Emission Increases		Emission Reductions (tpy)		
	A-12, New Flare		A-11	S-3	S-4
	(lbs/day)	(tpy)	Existing Flare	IC Engine	IC Engine
PM10	5.479	11.095	5.525	0	0
POC	--	--	--	0	0
NOx	178.8	32.631	19.50	0	0
SO2	50.0	9.137	4.55	0	0
CO	1072.8	195.786	97.50	0	0

Cumulative Increase

The cumulative increases for all facilities in the District were reset in 1991, so the post 4/5/1991 increases are shown below as the current cumulative increase for this facility. The cumulative emission increases for this proposed project are included below, as well as the contemporaneous emission reductions from removal of S-3 and S-4.

Pollutant	Current, tpy	Project Increases, tpy	Contemporaneous Reductions, tpy	Post-Project, tpy
PM10	2.873	11.095	-5.525	8.443
POC	0.031	--	--	0.031
NOx	0	32.631	-19.50	13.131
SO2	2.517	9.137	-4.55	7.104
CO	52.086	195.786	-97.50	150.372

Compliance Determination

Regulation 1, "General Provisions and Definitions"

The facility is subject to Regulation 1, Section 301, which prohibits discharge of air contaminants resulting in public nuisance. The replacement flare will be subject to operating limits designed to ensure adequate combustion of the landfill gas and landfill condensate. It is not expected to be a source of public nuisance.

Public Notice Requirements, Regulation 2, Rule 1

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

California Environmental Quality Act (CEQA) Requirements, Regulation 2, Rule 1

This project involves only the proposed installation of a larger landfill gas flare, A-12. The flare is an abatement device, which is one of the specified control options for compliance with District Regulation 8, Rule 34 for the abatement of landfill gas. In accordance with Regulation 2, Rule 1, Section 312.2, permit application involving the installation of abatement equipment are categorically exempt from CEQA review. Therefore, the proposed installation of A-12 is exempt from CEQA review. The proposed increases in well temperatures and the proposed increase in landfill gas condensate injection to the flare are expected to have no effect on emissions.

Best Available Control Technology (BACT) Requirements, Regulation 2, Rule 2

Per Regulation 2, Rule 2, Section 112, BACT review does not apply to emissions of secondary pollutants that are the direct result of operation of an abatement device that complies with the BACT or BARCT requirements for the control of another pollutant. Since the proposed flare meets the BARCT

requirements of Regulation 8-34-301.3 for control of organic compounds, BACT does not apply to the secondary pollutants from this flare. However, Regulation 2, Rule 2, Section 112 does require secondary pollutants meet the Reasonably Available Control Technology Requirements (RACT). RACT for enclosed landfill gas flares is an emission rates of 0.06 lb NO_x/MMBtu and an emission rate of 0.30 lb CO/MMBtu. The proposed flare, A-12, meets RACT for NO_x and CO.

Emission Offsets and Prevention of Significant Deterioration (PSD), Regulation 2, Rule 2

The California Health and Safety Code Section 42301.2, specifies:

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

The proposed landfill gas flare is an abatement device as defined in Regulation 1-240, which is being installed to meet the control requirements in Regulation 8, Rule 34. There is no modification proposed to the landfill itself, so there is no increase in the capacity of the ‘unit being controlled.’ Therefore, emission offsets are not required for the secondary pollutant emissions from the combustion of landfill gas at the proposed flare.

Note that the facility currently has a facility-wide Condition #23024, which was imposed to limit facility NO_x emissions. This condition was imposed at the time that the portable engine S-8 was permitted, when the facility was still planning to install the 3 large landfill gas engines. The combined operation of the 3 contemplated landfill gas engines, existing flare, and portable engine on a continuous basis would have resulted in the facility-wide emissions greater than 35 tons per year, requiring offsets. However since S-8 was expected to be operated sporadically and the landfill gas volume at the time was insufficient to operate the existing flare and all 3 proposed landfill gas engines simultaneously, the maximum permitted NO_x emissions were much higher than actual emissions would be for some years. Therefore, the NO_x limit was imposed to allow KCL to obtain the permit for S-8 and demonstrate that the 35 tons per year NO_x offset threshold was not surpassed. Since KCL has decided not to install the 3 landfill gas engines, instead replacing the existing flare with a larger flare sized to manage all of the landfill gas from this site, the facility-wide NO_x emission limit is no longer necessary and will be deleted.

The Prevention of Significant Deterioration (PSD) requirements are found in Regulation 2, Rule 2, Section 304. PSD review is required prior to issuance of permits to a new major facility or for a major modification of an existing major facility. A major facility is defined as one which will emit 100 tons per year or more of a regulated air pollutant, if it is one of the 28 PSD source categories listed in Section 169(1) of the federal Clean Air Act. For an unlisted source category, a major facility is defined as one which will emit 250 tons per year or more of a regulated air pollutant. Since landfills are not one of the 28 listed source categories, a landfill would be considered major for PSD review if it will emit 250 tons per year or more of a regulated air pollutant. Since the maximum emissions from this facility will be less than 250 tons per year for each pollutant, KCL not a major PSD facility and is not subject to PSD review.

Health Risk Assessment Requirements, Regulation 2, Rule 5

The District’s regulation concerning toxic air contaminant emissions is codified in Regulation 2, Rule 5, New Source Review of Toxic Air Contaminants. All TAC emissions from new and modified sources are subject to risk assessment review, if emissions of any individual TAC exceed either the acute or chronic emission thresholds defined in Table 2-5-1.

Since the proposed flare A-12 has a larger capacity than the existing flare, A-11, operation of A-12 will result in higher levels of emissions, and the possible increased risk associated with these emissions must be evaluated. As previously discussed, there is no increase in landfill gas (organic) emissions assessed for a flare replacement, since the landfill is not being modified and the landfill gas emissions were evaluated

at the time the landfill was permitted. Therefore, any increased health risk associated with installation of a larger capacity flare will result from secondary pollutant emissions.

To estimate the secondary air pollutants from combusted landfill gas, the constituents of the landfill gas and landfill gas condensate at this site were reviewed for possible TAC emissions. Acid gases, hydrogen chloride, hydrogen fluoride, and hydrogen bromide, are TACs and will be emitted due to combustion of chlorinated, fluorinated, and brominated compounds. The landfill gas condensate analysis performed in January 2003 showed the presence of no halogenated compounds in the condensate, therefore the requested increase to the condensate injection rate to the flare should not result in additional acid gas emissions. However, the landfill gas itself contains numerous halogenated compounds that will result in higher acid gas emissions. Formaldehyde and benzene are also TACs emitted as a product of natural gas combustion. Therefore, benzene and formaldehyde emissions will also increase due to the greater firing capacity of the flare. Emission increases of acid gases, benzene, and formaldehyde must therefore be assessed.

Based on the waste disposal rates supplied by KCL in the Collection and Control System Design Plan approved in November 2003, the maximum landfill gas generation rate using the default parameters for EPA's LANDGEM emission model is expected to be 3,420 scfm, occurring in year 2032. At the standard collection efficiency of 75%, this corresponds to a maximum flowrate of 2,565 scfm of landfill gas being sent to the flare during peak gas production at this site. This maximum flowrate was combined with the halogenated compound concentrations from the landfill gas analysis to calculate the acid gas emissions. The standard emission factor for secondary benzene and formaldehyde emissions formed due to natural gas combustion from EPA's AP-42, Chapter 1.4, Table 1.4-3, "Emission Factors for Speciated Organic Compounds from natural Gas Combustion" dated 7/98 was converted to a landfill gas emission factor using the ratio of the heat capacity of the gases (500 Btu/scf for landfill gas and 1020 Btu/scf for natural gas) and combined with the maximum flowrate to calculate maximum hourly and maximum emissions of benzene and formaldehyde. The calculations are based on the assumptions that complete combustion occurs and that the flare is operated continuously at maximum capacity. These assumptions generate a worst-case emission estimate, summarized below with the acute and chronic emission thresholds published in Table 2-5-1 of Regulation 2, Rule 5:

Pollutant	Emissions		Acute Trigger Level	Chronic Trigger Level
	lbs/hr	lbs/yr	lbs/hr	lbs/yr
Benzene	0.000158	1.39	2.9	6.4
Formaldehyde	0.00566	49.6	0.21	30
HBr	0.00394	34.48	--	930
HCl	0.0719	629.5	4.6	350
HF	0.0108	94.97	0.53	540

The annual formaldehyde and hydrogen chloride emissions exceed the chronic risk screening trigger levels, and therefore a Health Risk Screening Analysis was required and performed using the ISCST3 air dispersion computer model and Screen3 meteorological data to estimate annual average and maximum 1-hour ambient air concentrations. Rural land use dispersion coefficients were used to represent the area surrounding the facility with the stack parameters provided by the applicant.

Estimates of residential risk assume exposure to annual average TAC concentrations occur 24 hours per day, 350 days per year for a 70-year lifetime. Risks to offsite workers assume exposure 8 hours per year, 245 days per year for 40 years. The resulting analysis indicates that the maximum increased cancer risk to both residents and workers is well below 1 in a million. In accordance with Regulation 2-5-301, the

small increased risk associated with the proposed flare is acceptable, and Toxics Best Available Control Technology review is not required.

Major Facility Review, Regulation 2, Rule 6

This facility is a designated facility, as it is currently subject to the requirements of 40 CFR Part 60. As a designated facility, this facility was required to obtain a Title V Federal Operating Permit. The requirements of this program have been codified in District Regulation 2, Rule 6.

The facility was issued the initial Title V permit on July 10, 2003. The permit has undergone 3 minor revisions since issuance, effective January 12, 2005, July 13, 2006, and January 28, 2007. The proposed establishment of an alternate well temperature limit constitutes a significant revision to the Title V permit, which will be processed under Application #15618. The replacement of the existing flare and increase in condensate injection rate will be included under the same application.

Regulation 6, "Particulate Matter and Visible Emissions"

The new landfill gas flare will be subject to the Ringelmann 1 limit and visible emissions prohibition in Sections 301 and 305. Visible particulate emissions are normally not associated with combustion of gaseous fuels, such as natural gas and landfill gas, so compliance with these sections is expected. The flare is also subject to the Section 310 filterable particulate emissions limit of 0.15 grains per dry standard cubic foot of exhaust volume. EPA's AP-42 emission factor for landfill gas combustion in a flare (0.0171 lbs PM10/MMBtu) is equivalent to 0.012 grains/dscf at 0% oxygen. Therefore, the proposed flare is expected to comply with Section 310.

Regulation 8, Rule 34, "Organic Compounds – Solid Waste Disposal Sites"

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

KCL has requested approval of higher well temperature limit of 145 degreesF for 6 wells at this site. The standard temperature limit per Section 8-34-305 is 131 degrees F. The well temperature limit is intended to minimize the potential for subterranean fires and to ensure anaerobic decomposition is not inhibited. Exceptions are allowed under Section 8-34-305 if the operator has satisfied the requirements of Section 8-34-414 (Repair Schedule for Wellhead Excesses) or has received permit conditions containing alternative operating levels.

It is not unusual to observe temperatures higher than 131 degreesF at wells that are operating properly. According to published data, the observed subsurface landfill gas temperature during normal thermophilic bacterial reaction can range between 113 and 149 degreesF. Temperatures as high as 158 degreesF have been measured with no corresponding subsurface combustion. The operator has investigated the wells which are running at higher temperatures and concluded that the wells are operating properly, producing gas with methane levels of approximately 50% with corresponding low oxygen, nitrogen, and carbon monoxide concentrations. Therefore, the requested higher well temperature will be added to the permit conditions for Wells 36, 37, 41, 42, 51, and 52 at the landfill. KCL will continue to monitor the landfill gas composition to ensure that the anaerobic decomposition is within normal tolerances and will perform CO monitoring if the temperatures exceed 145 degreesF, to ensure that fires are not occurring. No increase in emissions is expected as a result of this change.

Regulation 9, Rule 1, "Inorganic Gaseous Pollutants – Sulfur Dioxide"

The new flare will be subject to Regulation 9, Rule 1, Section 9-1-301 and Section 9-1-302. Section 9-1-302 limits sulfur dioxide emissions to no more than 300 ppmv in the exhaust.

Permit Evaluation and Statement of Basis:
Site A1812, Kirby Canyon Landfill, 910 Coyote Creek Dr., Morgan Hill 95037

Compliance with the SO₂ concentration limit for the existing flare is currently established through a surrogate limit of 1300 ppmv of total reduced sulfur (TRS) content in the landfill gas. Assuming all of the sulfur is converted to SO₂ upon combustion, this level of sulfur will result in the following SO₂ emissions:

$$(1300 \text{ E-6 lb mol S/lb-mol LFG})(\text{lb-mol SO}_2/\text{lb-mol S})(64.06 \text{ lbs SO}_2/\text{lb-mol SO}_2)(\text{lb-mol LFG}/387 \text{ scf}) \\ = 2.152\text{E-4 lbs SO}_2/\text{scf LFG}$$

The maximum landfill gas generation rate using the default parameters for EPA's LANDGEM emission model is expected to be 3,420 scfm, occurring in year 2032. At the standard collection efficiency of 75%, this corresponds to a maximum flowrate of 2,565 scfm of landfill gas being sent to the flare during peak gas production at this site. Therefore, the 1300 ppm TRS corresponds to a SO₂ emission rate of 33.1 lbs/hr. At zero excess oxygen and 54% methane, combustion of landfill gas produces 4.99 dscf exhaust per scf of landfill gas. The maximum exhaust flowrate will be 767,961 dscf/hour. The maximum concentration of SO₂ in the exhaust is therefore:

$$(33.1 \text{ lbs SO}_2/\text{hr})(\text{hr}/767,961 \text{ dscf})(\text{lb-mol SO}_2/64 \text{ lbs SO}_2)(386 \text{ dscf}/\text{lb-mol gas}) \\ = 2.6\text{E-4 lb-mol SO}_2/\text{lb-mol gas} = 260 \text{ ppmv SO}_2$$

Compliance with the TRS content of 1300 ppmv therefore ensures exhaust SO₂ concentration will not exceed 260 ppmv, which complies with the limit in Section 9-1-302. Compliance with the 300 ppmv SO₂ exhaust limit Section 9-1-301 is expected to ensure compliance with the ground level concentration limits in Section 9-1-301 of 0.5 ppm continuously for 3 minutes, 0.25 ppm averaged over 60 minutes, and 0.05 ppm averaged over 24 hours. The January 2003 analysis of the landfill gas at this site measured a total reduced sulfur content of only 43.2 ppmv.

Regulation 9, Rule 2, "Inorganic Gaseous Pollutants – Hydrogen Sulfide"

The ground level concentration limit on hydrogen sulfide in Section 9-2-301 is 0.06 ppm averaged over 3 minutes or 0.03 ppm averaged over 60 minutes. Hydrogen sulfide is generally identified by its characteristic rotten egg smell and can be detected by its odor at concentrations as low as 0.0005 ppmv. Therefore, H₂S emissions are usually detected by smell well before the concentrations approach the limits in Section 9-2-301. Hydrogen sulfide complaints are rarely received in association with Bay Area landfills, therefore area monitoring to demonstrate compliance with this rule has not been required.

40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS):

Subpart A, Standards of Performance for New Stationary Sources – General Provisions

Subpart Cc, Standards of Performance for New Stationary Sources – Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills

40 CFR Part 60, Subpart Cc, Emission Guidelines (EG) for Municipal Solid Waste (MSW) Landfills applies to MSW landfills that have had no design capacity modification since May 30, 1991, but that have accepted waste since November 8, 1987. This facility began accepting waste in July 1986 and facility is currently subject to the EG requirements. The District's Regulation 8, Rule 34 has been approved in the state plan for implementation of the EG requirements. Therefore, the facility is currently subject to the EG, which is enforced through compliance with District Regulation 8, Rule 34. See the discussion of Rule 8-34 requirements above.

Subpart A, Standards of Performance for New Stationary Sources – General Provisions

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

Subpart WWW applies to municipal solid waste landfills that commenced construction, reconstruction, or modification or began accepting waste on or after May 30, 1991. For the purposes of Subpart WWW, modification is defined as

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

The proposed replacement of the landfill gas flare, increase in condensate injection rate, and alternate wellhead landfill gas temperature limits will not affect the permitted design capacity of the landfill, therefore this site will not become subject to Subpart WWW due to these changes.

**40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants (NESHAPs):
Subpart M, National Emission Standard for Asbestos**

Subpart M applies to a number of asbestos related operations and handling activities, including active waste disposal sites that receive asbestos-containing waste material from sources subject to §61.149 (asbestos mills), 61.150 (manufacturing, fabricating, demolition, renovation, and spraying operations, and/or 61.155 (operations that convert asbestos-containing material into asbestos-free material). Asbestos-containing waste material is defined to include filters from control devices, friable asbestos waste, and bags or other packaging contaminated with commercial asbestos. This site accepts only non-friable asbestos and is therefore not subject to Subpart M.

40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories/Maximum Achievable Control Technology (MACT) Standards:

Subpart A, National Emission Standards for Hazardous Air Pollutants – General Provisions

Subpart AAAA, National Emission Standards for Hazardous Air Pollutants – Municipal Solid Waste Landfills

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

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

This site is actively accepting waste and has a design capacity greater than 2.5 million cubic meters and is therefore subject to this regulation. This regulation requires subject landfills to meet the requirements of 40 CFR Part 60, Subpart Cc or WWW (addressed above). In addition, subject facilities are required to develop, maintain, and comply with a written startup, shutdown, and malfunction (SSM) plan per §63.1960 and Subpart A of this part. §63.1980 of the rule also requires semiannual submittal of the reports required by 40 CFR 60.757(f) (instead of annually). Table 1 requires compliance with certain sections of 40 CFR Part 63, Subpart A which are mirrored in 40 CFR Part 60, Subpart A and the following sections of 40 CFR Part 63, Subpart A:

- §63.5(b), Requirements for existing, newly constructed, and reconstructed sources: This application does not constitute reconstruction of the affected source.
- §63.6(e), Operation and maintenance requirements: This section requires operation of the affected source in a manner consistent with safety and good control practices for minimizing emissions, including during any periods of startup, shutdown, or malfunction. The facility is expected to continue to comply with these requirements.
- §63.10(b)(2)(i) – (v), General recordkeeping requirements: This section requires maintenance of records pertaining to startup, shutdown, and malfunction of the source, as well as maintenance on control and monitoring equipment. This must include all information necessary to demonstrate

compliance with the SSM plan and documentation of actions taken that are different from the procedures in the SSM plan. The facility is expected to continue to comply with these requirements.

- §63.10(d)(5), General reporting requirements: Periodic reports of actions taken in compliance with the SSM plan must be reported if there was an exceedance of an emission limit. These reports must be submitted semiannually. If there was an exceedance of an emission limit and the actions taken are inconsistent with the SSM plan, an immediate report is required. The report must include a summary of the actions taken, must be reported within 2 working days, and a summary must follow within 7 working days after the event ends. The facility is expected to continue to comply with these requirements.

40 CFR Part 70, State Operating Permit Programs (Title V):

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

Permit Condition #1437

P#1812, Kirby Canyon Landfill

For: S-1, Active Landfill with Landfill Gas Collection System;

For: ~~A-11, Landfill Gas Flare~~ A-12, Landfill Gas Flare with Condensate Injection System, 5 gallons per minute maximum condensate injection rate, 149 MMBtu/hr

1. The owner/operator ~~Permit Holder~~ shall comply with the following waste acceptance and disposal limits and shall obtain the appropriate New Source Review permit, if one of the following limits is exceeded:
 - a. Except for temporary emergency situations approved by the Local Enforcement Agency, the total waste accepted and placed at the landfill shall not exceed 2600 tons in any day. (Basis: Regulation 2-1-301)
 - b. The total cumulative amount of all waste placed in the landfill shall not exceed 19.84 million tons. Exceedance of the cumulative tonnage limit is not a violation of the permit and does not trigger the requirement to obtain a New Source review permit, if the operator can, within 30 days of the date of discovery of the exceedance, provide documentation to the District demonstrating, in accordance with BAAQMD Regulation 2-1-234.3, that the limit should be higher. (Basis: Regulation 2-1-234.3)
 - c. The maximum design capacity of the landfill (total volume of all wastes placed in the landfill) shall not exceed 36.40 million cubic yards. (Basis: Regulation 2-1-301)
2. Handling Procedures for Soil Containing Volatile Organic Compounds
 - a. The procedures listed below in subparts b-l do not apply if the following criteria are satisfied. However, the record keeping requirements in subpart m, below, are applicable.
 - i. The owner/operator ~~Permit Holder~~ has appropriate documentation demonstrating that either the organic content of the soil or the organic concentration above the soil is below the “contaminated” level (as defined in Regulation 8, Rule 40, Sections 205, 207, and 211). The handling of soil containing VOCs in concentrations below the “contaminated” level is subject to Part 3 below.
 - ii. The owner/operator ~~Permit Holder~~ has no documentation to prove that soil is not contaminated, but source of the soil is known and there is no reason to suspect that the soil might contain organic compounds.

- b. The owner/operator ~~Permit Holder~~ shall provide verbal notification to the Compliance and Enforcement Division of the owner/operator's ~~Permit Holder's~~ intention to accept contaminated soil at the facility at least 24 hours in advance of receiving the contaminated soil. The owner/operator ~~Permit Holder~~ shall provide an estimate of the amount of contaminated soil to be received, the degree of contamination (range and average VOC Content), and the type or source of contamination.
- c. Any soil received at the facility that is known or suspected to contain volatile organic compounds (VOCs) shall be handled as if the soil were contaminated, unless the ~~Permit Holder~~ owner/operator receives test results proving that the soil is not contaminated. To prove that the soil is not contaminated, the ~~Permit Holder~~ owner/operator shall collect soil samples in accordance with Regulation 8-40-601 within 24 hours of receipt of the soil by the facility. The organic content of the collected soil samples shall be determined in accordance with Regulation 8-40-602.
 - i. If these test results indicate that the soil is still contaminated or if the soil was not sampled within 24 hours of receipt by the facility, the ~~Permit Holder~~ owner/operator must continue to handle the soil in accordance with the procedures set forth in subparts e-1, below, until the soil has completed treatment or has been placed in a final disposal location and adequately covered. Storing soil in a temporary stockpile or pit is not considered treatment. Co-mingling, blending, or mixing of soil lots is not considered treatment.
 - ii. If these test results indicate that the soil – as received at the facility – has an organic content of 50 ppmw or less, then the soil is no longer contaminated and shall be handled in accordance with the procedures in Part 3 instead of Part 2, subparts e-1.
- d. Any contaminated soil received at the facility shall be clearly identified as contaminated soil, shall be handled in accordance with subparts e-1. below, and shall be segregated from non-contaminated soil. Contaminated soil lots may not be co-mingled, blended, or otherwise mixed with non-contaminated soil lots prior to treatment, reuse, or disposal. Mixing soil lots in an attempt to reduce the overall concentration of the contaminated soil or to circumvent any requirements or limits is strictly prohibited.
- e. On-site handling of contaminated soil shall be limited to no more than 2 on-site transfers per soil lot. For instance, unloading soil from off-site transport vehicles into a temporary storage pile is 1 transfer. Moving soil from a temporary storage to a staging area is 1 transfer. Moving soil from a temporary storage pile to a final disposal site is 1 transfer. Moving soil from a staging area to a final disposal site is 1 transfer. Therefore, unloading soil from off-site transport into a temporary storage pile and then moving the soil from that temporary storage pile to the final disposal site is allowed. Unloading soil from off-site transport into a staging area and then moving the soil from that staging area to the final disposal site is allowed. However, unloading soil from off-site transport to a temporary storage pile, moving this soil to a staging area, and then moving the soil again to a final disposal site is 3 on-site transfers and is not allowed.
- f. If the contaminated soil has an organic content of less than 500 ppmw, the contaminated soil shall be treated, deposited in a final disposal site, or transported off-site for treatment within 90 days of receipt at the facility.
- g. If the contaminated soil has an organic content 500 ppmw or more, the contaminated soil shall be treated, deposited in a final disposal site, or transported off-site for treatment within 45 days of receipt at the facility.
- h. All active storage piles shall meet the requirements of Regulation 8-40-304 by using water sprays, vapor suppressants or approved coverings to minimize emissions. The exposed surface area of any active storage pile (including the active face at a landfill) shall be limited to 6000 ft². The types of storage piles that may become subject to these provisions include (but are not limited to) truck unloading areas, staging areas, temporary stockpiles, soil on conveyors,

- bulldozers or trucks, the active face of a landfill, or other permanent storage pile at the final disposal location.
- i. All inactive storage piles shall meet the requirements of Regulation 8-40-305 including the requirement to cover contaminated soil during periods of inactivity longer than one hour. The types of storage piles that may become subject to these provisions include (but are not limited to) soil on trucks or other on-site equipment, staging areas, temporary stockpiles, and the permanent storage pile at the final disposal location. District approved coverings for inactive storage piles include continuous heavy-duty plastic sheeting (in good condition, joined at the seams, and securely anchored) or encapsulating vapor suppressants (with re-treatment as necessary to prevent emissions).
 - j. The owner/operator ~~Permit Holder~~ must:
 - i. Keep contaminated soil covered with continuous heavy-duty plastic sheeting (in good condition, joined at the seams, and securely anchored) whenever soil is to be stored in temporary stockpiles or during on-site transport in trucks. Soil in trucks shall not be left uncovered for more than 1 hour.
 - ii. Establish a tipping area for contaminated soils near the active face that is isolated from the tipping area for other wastes.
 - iii. Spray contaminated soil with water or vapor suppressant immediately after dumping the soil from a truck at the tipping area.
 - iv. Ensure that all contaminated soil is transferred from the tipping area to the active face immediately after spraying with water or vapor suppressant.
 - v. Ensure that contaminated soil in the tipping area is not disturbed by subsequent trucks. Trucks shall not drive over contaminated soil in the tipping area or track contaminated soil out of the tipping area on their wheels.
 - vi. Spray contaminated soil on the active face with water or vapor suppressant (to keep the soil visibly moist) until the soil can be covered with an approved covering.
 - vii. Limit the area of exposed soil on the active face to no more than 6000 ft².
 - viii. Ensure that contaminated soil spread on the active face is completely covered on all sides with one of the following approved coverings: at least 6 inches of clean compacted soil, at least 12 inches of compacted garbage, or at least 12 inches of compacted green waste.
 - ix. Ensure that covering of soil on the active face is completed within one hour of the time that the soil was first dumped from a truck at the tipping area.
 - k. Contaminated soil shall not be used as daily, intermediate, or final cover material for landfill waste operations unless the requirements of Regulation 8, Rule 40, Sections 116 or 117 have been satisfied.
 - l. Contaminated soil is considered to be a decomposable solid waste pursuant to Regulation 8, Rule 34. All contaminated soil disposed of at a site shall be included in any calculations of the amount of decomposable waste in place that are necessary for annual reporting requirements or for purposes of 8-34-111 or 8-34-304.
 - m. The owner/operator ~~Permit Holder~~ shall keep the following records for each lot of soil received, in order to demonstrate on-going compliance with the applicable provisions of Regulation 8, Rule 40.
 - i. For all soil received by the facility (including soil with no known contamination), record the arrival date at the facility, the soil lot number, the amount of soil in the lot, the organic content or organic concentration of the lot (if known), the type of contamination (if any), and keep copies of any test data or other information that documents whether the soil is contaminated (as defined in 8-40-205) or not contaminated, with what, and by how much.
 - ii. If the soil is tested for organic content after receipt by the facility, record the sampling date, test results, and the date that these results were received.

- iii. For all on-site handling of contaminated soil, use a checklist or other approved method to demonstrate that appropriate procedures were followed during all on-site handling activities. One checklist shall be completed for each day and for each soil lot (if multiple lots are handled per day).
 - iv. For soil aerated in accordance with 8-40-116 or 117 record the soil lot number, the amount of soil in the lot, the organic content, the final placement date, the final placement location, and describe how the soil was handled or used on-site.
 - v. For final disposal at a landfill, record on a daily basis the soil lot number, the amount of soil placed in the landfill, the disposal date, and the disposal location.
- All records shall be retained for at least 5 years from the date of entry and shall be made available for District inspection upon request. (basis: Regulation 8-40-301, 8-40-304, and 8-40-305)
3. Low VOC soil (soil that contains 50 ppmw or less of VOC) is not considered to be “contaminated soil” and may be used as daily, intermediate, or final cover material for landfill waste operations if the organic concentration above the soil does not exceed 50 ppmv (expressed as methane, C1). To demonstrate compliance with this requirement, each lot of soil to be used as cover material shall be randomly screened for VOC surface emissions (in such a manner as to be representative of the entire lot) using the testing procedures outlined in Regulation 8-40-604. The ~~Permit Holder~~owner/operator shall keep the following records for each lot of soil subject to this requirement:
- a. The soil lot number as established in part 2m.i. (above).
 - b. The time and date of the soil screening.
 - c. The name and affiliation of the person performing the monitoring.
 - d. The results of the screening and an acknowledgement that the procedures outlined in Regulation 8-40-604 were used.
- (basis: Regulation 8-40-205 and 602)
4. Water and/or dust suppressants shall be applied to all unpaved roadways, active soil removal, and fill areas as necessary to prevent visible particulate emissions. Paved roadways shall be kept sufficiently clear of dirt and debris to prevent visible particulate emissions from vehicle traffic or wind. (basis: Regulations 2-1-403, 6-301, and 6-305)
5. All collected landfill gas shall be vented to properly operating ~~abatement equipment including the Landfill Gas Flare (A-11 or A-12) and/or the IC Engines (S-5, S-6, and S-7)~~. Raw landfill gas shall not be vented to the atmosphere, except for unavoidable landfill gas emissions that occur during collection system installation, maintenance, or repair that is performed in compliance with Regulation 8, Rule 34, Sections 113, 116, 117, or 118 and for component or surface leaks that do not exceed the limits specified in 8-34-301.2 or 8-34-303. (basis: Regulation 8-34-301)
6. The ~~owner/operator Permit Holder~~ shall apply for and receive an Authority to Construct before modifying the landfill gas collection system described in Parts 6a-b below. Increasing or decreasing the number of wells or collectors, changing the length of collectors, or changing the locations of wells or collectors are all considered to be modifications that are subject to the Authority to Construct requirement.
- a. The ~~owner/operator Permit Holder~~ has been issued a Permit to Operate for the landfill gas collection system components listed below. Well and collector locations, depths, and lengths are as described in detail in Permit Applications #2232 and #7835.

Total Number of Gas Wells:	Current 36
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Total Number of Leachate Collection Wells: 4

- b. The owner/operator Permit Holder was issued an Authority to Construct for additional landfill gas collection system components as described in Permit Application #11730. Additional wells installed under this Authority will be added to the Title V permit using the minor permit amendment procedures identified in Regulation 2-6-414.
(basis: Regulations 2-1-301, 8-34-301.1, 8-34-304, 8-34-305)
7. The landfill gas collection system described in Part 6a shall be operated continuously as defined in Regulation 8-34-219. Wells shall not be shut off, disconnected or removed from operation without written authorization from the APCO, unless the Permit Holderowner/operator complies with all applicable requirements of Regulation 8, Rule 34, Sections 113, 116, 117, and 118. (basis: Regulation 8-34-301.1)
8. The heat input to the A-11 Landfill Gas Flare shall not exceed 1,080 million BTU per day and shall not exceed 394,200 million BTU per year. When A-12 Landfill Gas Flare is started up, the A-11 Landfill Gas Flare shall be removed from service after a 3 month startup and commissioning period. The owner/operator shall ensure that the heat input to the A-12 Landfill Gas Flare does not exceed 3,576 million Btu per day and does not exceed 1,305,240 million Btu per year. In order to demonstrate compliance with this part, the Permit Holderowner/operator shall calculate and record, on a monthly basis, the maximum daily and total monthly heat input to the flare based on: (a) the landfill gas flow rate recorded pursuant to part 14h, (b) the average methane concentration in the landfill gas measured in most recent source test, and (c) a high heating value for methane of 1013 BTU per cubic foot at 60 degrees F. (basis: Regulation 2-1-301)
9. The minimum combustion zone temperature of the Flare ~~A-11~~ shall be determined by the results of the most recent source test in which compliance with all applicable requirements was demonstrated. The minimum combustion zone temperature shall be the average temperature measured during the complying source test minus 50 degrees F. Once the minimum temperature has been established, it shall be maintained during all periods of flare operation. Compliance with the temperature limit shall be based on a 3-hour averaging period. Under no circumstances shall the minimum flare temperature be less than 1,400 degrees F. Based on the results of required source testing of the flare, the APCO may add an explicit temperature limit to the conditions for the Flare ~~A-11~~ in accordance with the procedures identified in Regulation 2-6-414 or 2-6-415. (Basis: Regulation 8-34-301.3)
10. Emissions of Nitrogen Oxides (NO_x) from the Flare A-11 shall not exceed 0.06 pounds per million BTU (calculated as NO₂). The owner/operator shall ensure that emissions of Nitrogen Oxides (NO_x) from the Flare A-12 does not exceed 0.05 pounds per million BTU (calculated as NO₂). (basis: RACT and Offsets)
11. The owner/operator shall ensure that the Emissions of Carbon Monoxide (CO) from the Flare A-11 and A-12 do shall not exceed 0.3 pounds per million BTU. (basis: RACT and Offsets).
12. To demonstrate compliance with Regulation 8, Rule 34, Sections 301.3 and 412, and the above requirements, the owner/operator Permit Holder shall ensure that a District approved source test is conducted on the Landfill Gas Flare, A-12, within 90 days of startup, followed by annual source tests thereafter. The facility shall obtain prior approval from the Source Test Manager for the location of sampling ports and source testing procedures. The owner/operator shall ensure that source tests continue to be performed annually on the Landfill Gas Flare (A-11) until it is removed from service. The startup and annual source tests shall determine the following:
- a. landfill gas flow rate to the flare (dry basis);

- b. 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;
- c. stack gas flow rate from the flare (dry basis);
- d. concentrations (dry basis) of nitrogen oxides (NO_x), carbon monoxide (CO), THC, CH₄, NMOC, SO₂, and O₂ in the flare stack gas;
- e. the NMOC destruction efficiency achieved by the flare; and
- f. the average combustion temperature in the flare during the test period.

Annual source tests shall be conducted no earlier than 9 months and no later than 12 months after the previous source test. The Source Test Section of the District shall be contacted to obtain approval of the source test procedures at least 14 days in advance of each source test. The Source Test Section shall be notified of the scheduled test date at least 7 days in advance of each source test. The source test report shall be submitted to the Compliance and Enforcement Division and to the Source Test Section within 60 days of the test date. ~~This testing shall also be used to determine compliance with the SO₂ requirements of Regulation 9-1-302 for the IC Engine Generator Sets S-5, S-6, and S-7. For this purpose, the SO₂ concentration shall be corrected to zero percent oxygen.~~ (basis: RACT, Regulations 2-1-301, 8-34-301.3, 8-34-412, and 9-1-302)

13. The ~~owner/operator Permit Holder~~ shall conduct a characterization of the landfill gas concurrent with the annual source test required by part 12 above. The landfill gas sample shall be drawn from the main landfill gas header. In addition to the compounds listed in part 12b, the landfill gas shall be analyzed for all the compounds listed in the most recent version of EPA's AP-42 Table 2.4-1 excluding acetone, carbon monoxide, and mercury. All concentrations shall be reported on a dry basis. The test report shall be submitted to the Compliance and Enforcement Division within 60 days of the test date. After conducting three annual landfill gas characterization tests, the ~~owner/operator Permit Holder~~ may request to remove specific compounds from the list of compounds to be tested for 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: ~~Toxic Risk Management Policy~~ Regulation 2-5 and Regulation 8-34-412)
14. *The landfill gas condensate injection rate into the flare shall not exceed 5 gallons per minute. Total landfill gas condensate injection throughput shall not exceed ~~375,000~~ 1,500,000 gallons during any consecutive twelve-month period. The ~~owner/operator Permit Holder for S-1 and A-11~~ may submit a written petition to the District to increase the landfill gas condensate injection rate subject to current District-approved source test results. (basis: ~~Toxic Risk Management Policy~~ Regulation 2-5)
15. To demonstrate compliance with the above conditions, the ~~owner/operator Permit Holder~~ shall maintain the following records in a District approved logbook.
 - a. The total amount of municipal solid waste received at S-1 recorded on a daily basis. A summary of the daily waste acceptance records for each calendar month.
 - b. For each area or cell that is not controlled by a landfill gas collection system, a record of the date that waste was initially placed in the area or cell. The cumulative amount of waste placed in each uncontrolled area or cell recorded on a monthly basis.
 - c. If the ~~owner/operator Permit Holder~~ plans to exclude an uncontrolled area or cell from the collection system requirement, the ~~owner/operator Permit Holder~~ shall also record the types and amounts of all non-decomposable waste placed in the area and the percentage (if any) of decomposable waste placed in the area.
 - d. Low VOC soil screening data, pursuant to part 3.
 - e. The dates, locations, and frequency per day of all watering activities on unpaved roads or active soil or fill areas. The dates, locations, and type of any dust suppressant applications. The dates

and description of all paved roadway cleaning activities. All records shall be summarized monthly.

- f. The initial operation date for each new landfill gas well and collector.
- g. 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 6a. Any areas containing only non-decomposable waste shall be clearly identified. This map shall be updated at least once a year to indicate changes in refuse boundaries and to include any newly installed wells and collectors.
- h. The operating times and the landfill gas flow rate to the ~~A-11~~ Landfill Gas Flare recorded on a daily basis. A monthly summary of the heat input to the Landfill Gas Flare ~~A-11~~, pursuant to part 8 shall be calculated and recorded.
- i. Continuous records of the combustion zone temperature for the ~~A-11~~ Landfill Gas Flare during all hours of operation.
- j. Records of all test dates and test results performed to maintain compliance with parts 12 and 13 above or any applicable rule or regulation.
- k. Records of landfill gas condensate injection throughput and the duration of the injection recorded daily.

All records shall be maintained on site or shall be made readily available to District staff upon request for at least 5 years from the date of entry. These recordkeeping requirements do not replace the recordkeeping requirements contained in any applicable rules or regulations.

(basis: Cumulative Increase, 2-1-301, 2-6-501, 6-301, 6-305, 8-2-301, 8-34-301, 8-34-304, 8-34-501, and 9-1-302)

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 August 31, 2003. This first increment report shall be submitted by September 30, 2003. 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. 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 at each well head.

- a. The Regulation 8-34-305.2 temperature limit shall not apply to the Wells 36, 37, 41, 42, 51, and 52 provided that the landfill gas temperature at each of the Wells 36, 37, 41, 42, 51, and 52 does not exceed 145 degrees F (63 degrees C).
- b. The owner/operator shall demonstrate compliance with the alternative wellhead landfill gas temperature limit in 17(a) above by monitoring the temperature of each wellhead on a monthly basis, in accordance with Regulation 8-34-505.
- c. All records to demonstrate compliance with Part 17(a) and all applicable sections of BAAQMD Regulation 8, Rule 34 shall be recorded in a District-approved log and made available to District staff upon request in accordance with Regulation 8-34-501.4, 501.9, and 414.
- d. If the temperatures measured at any of the Part 17(a) wells are found to exceed the temperature limit in Part 17(a), the owner/operator shall take all measures necessary to investigate the possibility of subsurface fires, including landfill gas testing for carbon monoxide (CO) on those landfill gas collection wells in Part 17(a) that exceed the operating temperature limit. If a

fire is suspected, the owner/operator shall employ all means as appropriate to extinguish the fire, repair the well(s), and bring the well(s) back into service according to Section 8-34-414. (basis: Regulation 8-34-301.2, 8-34-303, and 8-34-305, 40 CFR Part 60.755(a) and 60.759)

Condition #23024

Facility Wide NOx Limit

~~1. Emissions of Nitrogen Oxides (NOx) from all permitted sources at the Kirby Canyon Recycling and Disposal Facility shall not exceed 40.90 tons during any consecutive 12 month period. [Basis: Cumulative Increase]~~

~~2. In order to demonstrate compliance with this limit the facility shall keep the following records in a District approved log. Records shall be kept for at least 5 years and shall be made available for District inspection upon request: [Basis: Cumulative Increase]~~

~~a. A list of the NOx emission factors for each permitted source. The currently permitted emission factors for NOx sources at this facility are as follows:~~

A 11:	Landfill Gas Flare	0.06 lb/MMBTU
S 3:	Diesel IC Engine Flare Generator	4.16 lb/hr
S 4:	Diesel IC Engine Trash Pump	1.92 lb/hr
S 5:	LFG IC Engine Generator #1	1.52 lb/hr
S 6:	LFG IC Engine Generator #2	1.52 lb/hr
S 7:	LFG IC Engine Generator #3	1.52 lb/hr
S 8:	Portable Diesel IC Engine Compressor	0.90 lb/hr

~~The facility may petition for a change of NOx emission factors based on actual test data, where a lower NOx emission factor has been clearly demonstrated during at least two consecutive District approved source tests.~~

~~b. The fuel consumption or hours of operation (as appropriate) for each NOx source on a monthly basis;~~

~~c. Calculated NOx emissions (tons) for each NOx source and total facility NOx emissions on a monthly basis.~~

~~3. Any exceedance of the NOx limit in part 1 will subject the facility to the requirements of Regulation 2, Rule 2 "New Source Review". [Basis: Regulation 2 1 234.2]~~

Recommendations

I recommend issuing a Change of Conditions to Condition #1437 for the following source:

S-1, Solid Waste Landfill with Gas Collection System, 36 extraction wells

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

A-12, Landfill Gas Flare with Condensate Injection System, 4500 scfm landfill gas capacity and 5 gallons per minute maximum condensate injection rate, 149 MMBtu/hr

After the commissioning of the new flare is complete, the existing flare, A-11, will be removed from service and the Permit to Operate will be cancelled.

I recommend issuing a Letter of Exemption for the following new tank:

Landfill Gas Condensate Tank, 1000 gallon capacity, exempt per §2-1-123.2 (storage of an aqueous solution containing less than 1% organic compounds by weight)

Permit Evaluation and Statement of Basis:
Site A1812, Kirby Canyon Landfill, 910 Coyote Creek Dr., Morgan Hill 95037

I also recommend deletion of the facility-wide Condition #23024 and archiving the expired the Authorities to Construct for the following sources:

S-5, IC Engine Generator Set #1

S-6, IC Engine Generator Set #2

S-7, IC Engine Generator Set #3

The Permits to Operate for the following sources have been archived:

S-3, Diesel Engine – Flare Generator

S-4, Diesel Engine – Trash Pump

Signed by Tamiko Endow

Tamiko Endow

Air Quality Engineer

_____ Date

ATTACHMENT B
BAAQMD ENGINEERING EVALUATION REPORT
Application 17016

Engineering Evaluation Report

Kirby Canyon Recycling and Disposal Facility, P#1812

910 Coyote Creek Gold Drive, Morgan Hill

Application #17016

Background

Kirby Canyon Landfill (KCL) is an active Class III municipal solid waste landfill operated by Waste Management of California. The facility opened July 1986 and accepts non-hazardous residential, commercial, industrial, and inert wastes. The site has a total permitted area of 827 acres and is located 15 miles south of downtown San Jose, adjacent to US Highway 101. It is equipped with an active gas collection and system, including 34 vertical gas collection wells and an enclosed flare. The permitted waste disposal footprint is 311 acres, with a design capacity of 36.4 million cubic yards (20.5 million tons). The site reported approximately 15.05 million tons of waste in place as of June 2006 and estimates a closure date of June 2018.

Waste Management has applied for an Authority to Construct for the following modifications to the Kirby Canyon Landfill, S-1:

S-1, Municipal Solid Waste Landfill with Gas Collection System, equipped with (34) Landfill Gas Extraction Wells –

Replacement of up to (9) Existing Vertical Gas Extraction Wells, Installation of up to (30) New Vertical Gas Extraction Wells, and Decommissioning of up to (20) Existing Vertical Gas Extraction Wells, Decommissioning of up to (2) Existing Horizontal Wells, and Connection of (4) Additional Risers to the Collection System.

Emission Calculations

The existing gas collection and control system currently collects and processes landfill gas at a rate of approximately 1,250 cubic feet per minute (scfm). The landfill gas recovery rate is expected to increase by approximately 25 scfm for each new well installed. Therefore, the 30 new wells proposed for installation are expected to increase the landfill gas collection rate by 750 scfm, bringing the total collection rate to 2,000 scfm. Waste Management has indicated only non-performing wells will be decommissioned, so the decommissioning of wells is expected to have a negligible effect on the landfill gas collection rate. Note that the maximum landfill gas generation rate calculated using EPA's LANDGEM emission model is expected to be 3,420 scfm. At the standard collection efficiency of 75%, this corresponds to a maximum collected flowrate of 2,565 scfm to be sent to the flare at peak production.

The collected landfill gas is currently being abated at the existing 45 MMBtu/hr Enclosed Landfill Gas Flare, A-11, which has a processing capacity of 1,482 scfm of landfill gas. The facility has recently installed and is in the process startup source testing on the new replacement 149 MMBtu/hr flare, A-12, which has a landfill gas processing capacity of 4,500 scfm. The capacity of the new landfill gas flare, which is expected to be online shortly, is adequate to process the increase in landfill gas collection from the proposed additional wells, and in fact all of the gas expected to be generated at this landfill. As the emissions from the flare have already been fully accounted for under Application #15617, there is no increase in emissions due to this application.

Statement of Compliance

There are no new District or federal regulations triggered by this proposed landfill gas collection system modification. However, changing the number of landfill gas collection wells will require that the Title V

permit for the facility be modified. This change qualifies as a minor revision to the Title V permit and will be processed with issuance of the District Permit to Operate, when the well modifications have been completed.

Permit Condition Modifications

Part 6 of the permit condition #1437 will be modified as indicated below to address the gas collection system modifications proposed under this application:

- 6. The owner/operator shall apply for and receive an Authority to Construct before modifying the landfill gas collection system described in Parts 6a-b below. Increasing or decreasing the number of wells or collectors, changing the length of collectors, or changing the locations of wells or collectors are all considered to be modifications that are subject to the Authority to Construct requirement.
 - e. The owner/operator has been issued a Permit to Operate for the landfill gas collection system components listed below. Well and collector locations, depths, and lengths are as described in detail in Permit Applications #2232, ~~and #7835, and #11730.~~

	Current
Total Number of Gas Wells:	3634
Total Number of Leachate Collection Wells:	<u>42</u>

- f. The owner/operator was issued an Authority to Construct for additional landfill gas collection system components as described in Permit Application #~~11730~~17016. Additional wells installed under this Authority will be added to the Title V permit using the minor permit amendment procedures identified in Regulation 2-6-414.
(basis: Regulations 2-1-301, 8-34-301.1, 8-34-304, 8-34-305)

Recommendations

I recommend issuing an Authority to Construct to the following source:

S-1, Municipal Solid Waste Landfill with Gas Collection System, equipped with (34) Landfill Gas Extraction Wells – Replacement of up to (9) Existing Vertical Gas Extraction Wells, Installation of up to (30) New Vertical Gas Extraction Wells, and Decommissioning of up to (20) Existing Vertical Gas Extraction Wells, Decommissioning of up to (2) Existing Horizontal Wells, and Connection of (4) Additional Risers to the Collection System.

<u>Signed by Tamiko Endow</u>	_____
Tamiko Endow	Date
Air Quality Engineer	