

**EVALUATION REPORT AND STATEMENT OF BASIS  
JULY 2, 2004**

**CITY OF PALO ALTO REFUSE DISPOSAL FACILITY  
BYXBEE PARK  
PALO ALTO, CA 94301**

**APPLICATION NUMBER: 9783; PLANT NUMBER 2721**

**Background:**

The City of Palo Alto (Facility # A2721) is located in Byxbee Park, CA and is owned and operated by the City of Palo Alto. The facility includes an active municipal solid waste landfill, an active landfill gas collection, a landfill gas control system, and composting operations.

The landfill is a 63-year old waste disposal site with approximately 137 acres permitted for waste disposal. About 76 acres of the landfill have been closed in accordance with Title 27 requirements. The landfill is designed to accept primarily non-hazardous wastes including household waste, commercial waste, agricultural waste, industrial waste, construction and demolition waste, and contaminated soil whose VOC concentration does not exceed 50 ppm. The landfill has a maximum design capacity of 7.76 million yd<sup>3</sup> (5.93 million m<sup>3</sup>) and 5.83 million tons (5.29 million Mg), and currently contains approximately 4.58 million tons (4.15 million Mg).

The Major Facility Review (MFR) Permit covers all equipment operated by the City of Palo Alto at Byxbee Park. Specifically, this permit includes the following:

- S-1 Palo Alto Landfill with Gas Collection System
- A-3 Landfill Gas Flare
- S-5 Wood Grinder
- S-6 Diesel Engine (860 bhp, driver for S-5)
- S-7 Trommel Screen
- S-8 Diesel Engine (96 bhp, driver for S-7)
- A-5 Water Sprays (abating S-5 and S-7)

All the sources have been permitted with necessary conditions. The S-5 Wood Grinder and S-7 Trommel Screen are powered by S-6 and S-8 diesel engines. These diesel engines produce combustion emissions including: NO<sub>x</sub>, CO, POC, SO<sub>2</sub>, and PM<sub>10</sub>.

A Source test was conducted for Source S-6. The source failed the permit condition emission rate limits for carbon monoxide (CO) and precursor organic compound (POC) emissions resulting in the issuance of a Violation Notice. The limits specified in the conditions were based on emission factors supplied by the engine manufacturer. The source test indicated that the engine would meet the applicable BACT standards listed in the BACT/TBACT workbook. The company has applied for a change of condition for both S-6 and S-8 engines. The change is to reflect the applicable BACT standards for POC, CO and NO<sub>x</sub> in the condition rather than those predicted by the equipment manufacturer. There will be no change in the particulate emission factor. The owner/operator has agreed to a reduced diesel usage lowering PM emissions and resulting in a lower health impact. The annual diesel fuel throughput has been lowered

from 72,962 gallons per year to 35,000 gallons per year, providing additional support for changing the emission limits to the less stringent but more appropriate BACT standards.

The City of Palo Alto has applied for a change of condition for the following sources:

**Source S-6: Caterpillar 860 BHP Diesel IC Engine for powering source S-5, wood grinder, Condition #20477**

**Source S-8: Deutz 96 BHP Diesel IC Engine for powering Source S-7, Trommel Screen, Condition #20479**

Since The City of Palo Alto Byxbee Park is a Title V facility it is required to determine whether the change of condition constitutes a “Major or Minor Revision”. The permit revision is deemed minor.

#### **Title V Facility Minor Permit Revision Justification:**

The purpose of this permit revision is to modify the permit conditions for two operating diesel engines. The NO<sub>x</sub>, CO, and POC emission limits that were established under the original permit application for these engines were inadvertently set too low. These limits reflected expected emission rates provided by the manufacturer. However, these emission limits were more stringent than the appropriate BACT levels (BACT2) for a small compression ignition engine (S-8), or a “transportable” compression ignition engine with limited annual fuel usage throughput (capacity factor of only 8.9%) (S-6), as specified in the BACT/TBACT Workbook. A source test at S-6 indicated that the engine was not meeting the current permitted emission levels but would comply with the appropriate BACT2 standards. Since there is no basis for imposing limits that are more stringent than the appropriate BACT standard, the District is proposing to increase the existing NO<sub>x</sub>, CO, and POC permit emission rate limits up to the appropriate BACT standards. Potential emission increases based on the conditioned diesel throughput for this minor permit revision are: 1.3 tons/year of POC and 1.5 tons/year of CO. NO<sub>x</sub> emission potential will be reduced by 4.4 tons/year.

This proposed permit condition change does not constitute a significant revision under BAAQMD Regulations 2-6-201, 2-6-215 and 2-6-226. Therefore, this action constitutes a minor permit revision for the following:

- 1) The emission increases are less than the 40 CFR Parts 51 and 52 major modification thresholds. These thresholds are also listed under the District’s regulation 2-2-221 and are as follows:

<u>Compound</u>	<u>Tons/year</u>
POC	40
NO <sub>x</sub>	40
SO <sub>2</sub>	40
PM <sub>10</sub>	15
CO	100

- 2) The engines are not subject to NSPS, NESHAPS, or Section 112 of the Clean Air Act. The NESHAPS for the IC engines were adopted after the permit had been issued. Further, NESHAPS applies to sources that are located on a major facility emitting more than 10 tons per year of any particular HAP or 25 tons or more of any combination of HAPS.
- 3) The proposed revisions will not change any monitoring, recordkeeping, or reporting requirements.
- 4) The condition changes will not allow the facility to avoid applicable requirements of the Clean Air Act.
- 5) The proposed emission limits do not constitute the establishment of or change to a case-by-case determination of an emission limit, because the original emission limits were established in error and the proposed limits are from general BACT determinations that have been found to be appropriate for these source types.
- 6) The proposed revision does not establish or change a facility-specific determination for ambient impacts, visibility analysis, or increment analysis.
- 7) The proposed revision does not involve the incorporation of any requirements promulgated by EPA.

The facility has discontinued operation of the wood grinder diesel engine S-6, until the emission factor issues are resolved. With the proposed NO<sub>x</sub>, CO and POC emission limits in place, S-6 and S-8 are expected to comply with all applicable requirements.

### **Changes made to the Permit:**

The following changes have been made to the permit:

- For S-6 reduced diesel fuel usage from 72,962 gallons per year to 35,000 gallons per year
- For S-6, revised the POC, NO<sub>x</sub>, and CO emission limits increasing them up to the appropriate BACT limits in Condition # 20477, Parts 3, 4, and 5 and in Table VII-C.
- For S-6, changed the basis for the POC and CO emission limits from Cumulative Increase to BACT in Condition # 20477, Parts 3 and 5 and in Table IV-C.
- For S-8, revised the POC, NO<sub>x</sub>, and CO emission limits up to the BACT limits in Condition # 20479, Parts 3, 4, and 5 and in Table VII-E.
- For S-8, changed the basis for the POC and CO emission limits from Cumulative Increase to BACT in Condition # 20479, Parts 3 and 5 and in Table IV-E.
- Updated Section X, Revision History.

**Emission Changes and Plant Cumulative Increase:**

The following tables summarize the existing emission factors and the BACT emission factors and the differences in emissions:

**Source S-6 : 860 BHP Diesel Engine for S-5 Wood Grinder :**

	Permit Limit Emission Factors(g/bhp-hr)		
	<u>POC</u>	<u>CO</u>	<u>NO<sub>x</sub></u>
Existing permit limit	0.042	0.48	6.2
BACT limit factors (New condition)	1.5	2.75	6.9

Potential change in emissions due to the condition change: (Based on a throughput of 35,000 gallons per year, reduced from the former throughput limit of 72,962 gallons per year)

	Emissions(Tons/ year)		
	<u>POC</u>	<u>CO</u>	<u>NO<sub>x</sub></u>
Emission based on existing conditions	0.07	0.74	9.6
Emission based on new BACT level condition and lowered annual throughput	1.1	2.0	5.1

	Emissions (Lbs/day Max.)		
	<u>POC</u>	<u>CO</u>	<u>NO<sub>x</sub></u>
Emission based on existing conditions	1.28	14.6	188
Emission based on new BACT level condition and lowered annual throughput	45.5	83.5	209

**Source S-8 : 96 BHP Diesel Engine for S-7 Trommel screen:**

	Emission Factors(g/bhp-hr)		
	POC	CO	NO <sub>x</sub>
Existing permit limit	0.30	1.30	6.5
New BACT level factor (New condition)	1.5	2.75	6.9

**Change in emissions due to the condition change (Based on conditioned throughput of 7,557 gallons per year.**

	Emissions(Tons/ year)		
	POC	CO	NO <sub>x</sub>
Emission based on existing condition	0.051	0.22	1.10
Emission based on new BACT level condition	0.26	0.46	1.17

	Emissions (Lbs/day Max.)		
	POC	CO	NO <sub>x</sub>
Emission based on existing condition	1.01	4.4	22
Emission based on new BACT level condition	5.10	9.3	23

**Plant Cumulative Increase**

The facility-wide inventory of cumulative emission increases from all new and modified sources at Site # A2721 is summarized in the table below. As described in more detail in the Offsets discussion below, offsets are required for NO<sub>x</sub> and POC emission increases. The required emission reduction credits (ERC) will be provided from the District's Small Facility Banking Account (SFBA).

Table 4. Summary of Plant-Wide Cumulative Emission Increase Changes for Application # 8445

Pollutant	Existing Balance (tons/year)	Application Increases (tons/year)	ERC from SFBA (tons/year)	New Total Cumulative Emission Increases (tons/year)
NO <sub>x</sub>	10.40	-4.40	0.00	6.00
CO	0.94	1.54	0.00	2.48
POC	0.12	1.25	1.25	0.00
PM <sub>10</sub>	0.48	0.00	0.00	0.48
SO <sub>2</sub>	0.28	0.00	0.00	0.28

The following changes will be made in the data bank for NO<sub>x</sub>, CO and POC for both the sources.

	g/bhp-hr		
	CO	NO <sub>x</sub>	POC
Existing Condition Limits for S-6:	0.48	6.2	0.042
Existing Condition Limits for S-8:	1.30	6.50	0.3
S-6 and S8 conditions will be changed to BACT Limits:	2.75	6.90	1.5

**Compliance Issues Due to Change of Conditions:**

**BACT/TBACT:**

Sources S-6 and S-8 will comply with the BACT standards specified in the condition. These are the applicable standards established in the BACT/TBACT Workbook for stationary compression ignition engines. Compliance is demonstrated by Source test. Thus the engines comply with Regulation 2-2-302.

**OFFSETS:**

The POC emission for the facility exceeds the 15 tons per year offset trigger, thus requiring offsets from the small facilities bank. The amount required from the small facility bank is 1.49 tons per year. This will be credited from the Small Facility Bank. Thus the sources comply with Regulation 2-2-302.

**CONTRACTOR CERTIFICATION:**

Pending approval of the requested permit condition changes; the City of Palo Alto has temporarily ceased operation of engines S-6 and S-8. The city has continued its wood grinding operation by hiring a contractor with equipment registered with the California Air

Resources Board under its Portable Equipment Registration Program. A copy of the registration is enclosed in this permit application file.

**Recommendation:**

I recommend that the requested Changes in Condition be made

**Modifications to Conditions:**

1. The throughput amount will be reduced from 72,962 gallons per year to 35,000 gallons per year.

The following changes will be made in the data bank for NO<sub>x</sub>, CO and POC for both the sources.

	g/bhp-hr		
	CO	NO <sub>x</sub>	POC
Existing Condition Limits for S-6:	0.48	6.2	0.042
Existing Condition Limits for S-8:	1.30	6.50	0.3
S-6 and S8 conditions will be changed to BACT Limits:	2.75	6.90	1.5

The conditions will be changed as follows:

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**CONDITIONS**  
**City of Palo Alto**  
**Application Number: 9783; Plant Number: 2721**

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**FOR: S-6 DIESEL ENGINE, DRIVER FOR S-5; CONDITION# 20477**

1. The total amount of fuel combusted at the Diesel Engine (S-6) shall not exceed 35,000 gallons per year. (basis: Cumulative Increase Toxic Risk Management Policy)
2. Only low sulfur fuel (<0.05% sulfur by weight) shall be combusted at Diesel Engine. (basis: Cumulative Increase and Toxic Risk Management Policy)

3. Emissions of Precursor Organic Compounds (POC) from S-6 shall not exceed 1.5 grams/brake horsepower-hour of operation (g/bhp-hr). (basis: BACT)
4. Emissions of Nitrogen Oxides (NO<sub>x</sub>), calculated as NO<sub>2</sub>, from S-6 shall not exceed 6.9 g/bhp-hr. (basis: BACT)
5. Carbon Monoxide (CO) emissions from S-6 shall not exceed 2.75 g/bhp-hr. (basis: BACT)
6. In order to demonstrate compliance with Parts 1 and 2, the Permit Holder shall keep records of daily fuel usage and vendor certified sulfur content for the fuels combusted at this source. These records shall be kept on-site and be available for District inspection for a period of five years from the date on which a record was made. (basis: Cumulative Increase and Regulation 9-1-304)
7. In order to demonstrate compliance with Parts 3-5, the Permit Holder shall conduct annual source tests to determine the emission factors for POC, NO<sub>x</sub>, and CO in (g/bhp-hr) at the exhaust of the engine. Annual source tests shall be conducted no sooner 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 the Source Test Section within 45 days of the test date. (basis: BACT and Cumulative Increase)
8. The exhaust of the S-6 Diesel Engine shall be observed for visible smoke during all periods of operation. If persistent smoke is detected, the operator of the source shall take the necessary corrective action to stop the emissions. (basis: Regulations 6-301 and 6-305)

**FOR: S-8 DIESEL ENGINE, DRIVER FOR S-7; CONDITION# 20479;**

1. The total amount of fuel combusted at the Diesel Engine (S-8) shall not exceed 7,600 gallons per year. (basis: Cumulative Increase and Toxic Risk Management Policy)
2. Only low sulfur fuel (<0.05% sulfur by weight) shall be combusted at the S-8 Diesel Engine. (basis: Cumulative Increase and Toxic Risk Management Policy)
3. Emissions of Precursor Organic Compounds (POC) from S-8 shall not exceed 1.5 grams/brake horsepower-hour of operation (g/bhp-hr). (basis: BACT)
4. Emissions of Nitrogen Oxides (NO<sub>x</sub>), calculated as NO<sub>2</sub>, from S-8 shall not exceed 6.9 g/bhp-hr. (basis: BACT)



5. Carbon Monoxide (CO) emissions from S-8 shall not exceed 2.75 g/bhp-hr. (basis: Cumulative Increase)
6. In order to demonstrate compliance with Parts 1 and 2, the Permit Holder shall keep records of daily fuel usage and the vendor certified sulfur content for the fuels combusted at this source. These records shall be kept on-site and be available for District inspection for a period of five years from the date on which a record was made. (basis: Cumulative Increase and Regulation 9-1-304)
7. In order to demonstrate compliance with Parts 3-5, the Permit Holder shall conduct annual source tests to determine the emission factors for POC, NO<sub>x</sub>, and CO in (g/bhp-hr) at the exhaust of the engine. Annual source tests shall be conducted no sooner 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 the Source Test Section within 45 days of the test date. (basis: Cumulative Increase)

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**End of Conditions**

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