DRAFT
ENGINEERING EVALUATION
Tamalpais Union High School District (Sir Francis Drake High School)
PLANT NO. 20085
APPLICATION NO. 21557

BACKGROUND

The Tamalpais Union High School District is applying for a Permit to Operate/Authority to Construct the following equipment at Sir Francis Drake High School in San Anselmo, California:

S-1 85 kW Natural Gas Fired Cogeneration System: General Motors 8.1L (122 bhp) abated by A-1 NSCR: Johnson Matthey Banditto CXX8

EMISSIONS SUMMARY

Annual Emissions:
The cogeneration system will be run 24 hr/day, 365 day/yr. The owner/operator will be conditionally permitted to meet the emissions limit for NOx that will be in effect in 2012. The limit in Regulation 9-8-301 that will be in effect on January 1, 2012 is 25 ppmvd NOx at 15% O2 (0.4 g/bhp-hr). The manufacturer currently guarantees a much lower NOx emission with the NSCR (< 0.1 g/hp-hr) and should easily meet the future limit at this time. The owner/operator will be conditionally permitted with emission limits that keep the applicant below 10 lb/day of CO and POC as to not trigger Best Available Control Technology (BACT) levels.

Emission Factors

1.14 MMBtu/hr

Pollutant	Emission Limits	Daily Emissions	Annual Emissions
NOx	0.40 g/bhp-hr	2.58 lb/day	942 lb/yr 0.47 tpy
CO	1.40 g/bhp-hr	9.03 lb/day	3,296 lb/yr 1.65 tpy
POC	1.40 g/bhp-hr	9.03 lb/day	3,296 lb/yr 1.65 tpy
PM10	9.50E-3 lb/MMBtu*	0..26 lb/day	95 lb/yr 0.05 tpy
SO2	5.88E-4 lb/MMBtu*	0.02 lb/day	6 lb/yr Negligible tpy

*The emission factor for PM10 and SO2 are from Chapter 3, Table 3.2-3 of the EPA Document AP-42, Compilation of Air Pollutant Emission Factors.

Plant Cumulative Increase: (tons/year)

Pollutant	Existing	New	Total
NOx	0	0.47	0.47
POC	0	1.65	1.65
CO	0	1.65	1.65
SO2	0	0	0
PM10	0	0.05	0.05
NPOC	0	0	0

Toxic Risk Screening:

The toxic emissions from the cogeneration system with NSCR do not exceed any District Risk Screening Trigger levels and a Risk Screening Analysis is not required.

Emissions of Toxic Air Contaminants

8760 hrs/yr, 99,890 therms/yr

	Emission Factor	Emissions		Trigger Levels	
	(lbs/therm)	lbs/hr	lbs/yr	lbs/hr	lbs/yr
Benzene	2.06E-7	2.35E-6	0.02	2.9	3.8
Formaldehyde	7.35E-6	8.38E-5	0.73	0.12	18
Toluene	3.33E-7	3.80E-6	0.03	82	12,000

STATEMENT OF COMPLIANCE

The owner/operator of S-1 Natural Gas Fired Cogeneration System abated by A-1 Johnson Matthey NSCR shall comply with Reg. 6 (Particulate Matter and Visible Emissions Standards) and Reg. 9-1-301 (Inorganic Gaseous Pollutants: Sulfur Dioxide for Limitations on Ground Level Concentrations). The owner/operator is expected to comply with Regulation 6 since the unit is fueled with natural gas. Thus for any period aggregating more than three minutes in any hour, there should be no visible emission as dark or darker than No. 1 on the Ringlemann Chart (Regulation 6-301) and no visible emission to exceed 20% opacity (Regulation 6-302). Sulfur oxides are also very low since natural gas is being used to fire the compressor. Sulfur compounds are removed from natural gas at processing plants. The engine on the cogeneration system is 122 BHP. Engines rated less than 250 BHP are exempt from the emission limits of Regulation 9-8-301 as per Regulation 9-8-110.1 until January 1, 2012. After January 1, 2012, the owner/operator is subject to the NOx and CO limits in Regulation 9-8-301. After January 1, 2010, the NOx and CO limits for a rich-burn engine are 25 ppmvd NOx and 2000 ppmvd CO at 15% O2. The owner/operator is being conditionally permitted not to exceed the 25 ppmvd NOx limit (0.4 g/bhp-hr). The manufacturer guarantees a NOx emission less than 0.1 g/bhp-hr and should easily meet the NOx limit. In addition, the owner/operator is being conditionally permitted not to exceed 145 ppmvd CO at 15% O2 (1.4 g/bhp-hr), which meets the CO limit of 2000 ppmvd at 15% O2 in Regulation 9-8-301.

The project is considered to be ministerial under the District's CEQA regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emissions factors and therefore is not discretionary as defined by CEQA. (Permit Handbook Chapter 2.3.2)

The project is located at Sir Francis Drake High School and is therefore subject to the public notification requirements of Reg. 2-1-412. A public notice will be prepared and sent to:

All addresses within 1000 feet of the cogeneration system
Parents and guardians of students at Sir Francis Drake High School

All comments received during the 30-day comment period will be addressed.

Best Available Control Technology: In accordance with Regulation 2, Rule 2, Section 301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NOx, CO, SO_2 or PM_{10}. Based on the emission calculations above, the owner/operator of S-1 is not subject to BACT.

Offsets: Offsets must be provided for any new or modified source at a facility that emits more than 10 tons/yr of POC or NOx. The District may provide offsets from the Small Facility Banking Account for a facility with emissions between 10 and 35 tons/yr of POC or NOx, provided that facility has no available offsets. Based on the emission calculations above, offsets are not required for this application.

PSD, NSPS, and NESHAPS do not apply.

PERMIT CONDITIONS
Application 21557 (February 2010)

S-1 85 kW Natural Gas Fired Cogeneration System: General Motors 8.1L (122 bhp) abated by A-1 NSCR: Johnson Matthey Banditto CXX8

1. The owner/operator of S-1 Natural Gas Fired Cogeneration System abated by A-1 Johnson Matthey NSCR, shall fire it exclusively with natural gas at a firing rate not to exceed 1.14 MMBtu/hr.
   (basis: Cumulative Increase and BACT)

2. The owner/operator shall not operate the cogeneration system unless NOx, CO and POC emissions are abated by the NSCR unit.
   (basis: Cumulative Increase, BACT)

3. The owner/operator of S-1 shall not exceed the following emissions limits:

NOx	0.40 g/bhp-hr (25 ppmvd at 15% O2)
CO	1.40 g/bhp-hr (145 ppmvd at 15% O2)
POC	1.40 g/bhp-hr (250 ppmvd at 15% O2)

   (basis: Cumulative Increase and BACT)

4. To demonstrate compliance with Part 3, the owner/operator shall measure the NOx and CO concentration from S-1. Measurements may be made using a District-approved source test, or using a hand-held portable NOx and CO monitor. All emission readings shall be taken with the engine operating at conditions representative of normal operations. Testing shall be done according to the following schedule:
   a) Within 30 days of startup.
   b) If using a hand-held monitor, at least every 3-months, following startup.
   c) If using a District Approved source test, at least once per consecutive 24-month period, following startup.

   Hand-held portable monitors shall be operated, maintained and calibrated in accordance with manufacturer guidelines. If a portable monitor is used, NOx emission readings shall be averaged over a consecutive 15-minute period.

   All source testing shall be done in accordance with the District's Manual of Procedures. The facility shall receive approval from the District's Source Test Manager for installation of test ports and source testing procedures. The results shall be delivered to the District no later than 30 days from the date of the source test.
   (basis: Cumulative Increase and BACT, Regulation 9-8-502 and 503)

5. The owner/operator shall retain the following records on-site for two years, from the date of entry, and make them available for inspection by District staff upon request.
   a. NOx and CO concentration measurements taken as per Part 4.
   b. Any source test records.
   (basis: BACT, Cumulative Increase, Reg. 9-8-502 and 503)

RECOMMENDATION
Issue an Authority to Construct to the Tamalpais Unified School District for the following source:

S-1 85 kW Natural Gas Fired Cogeneration System: General Motors 8.1L (122 bhp) abated by A-1 NSCR: Johnson Matthey Banditto CXX8

EXEMPTIONS
None.

By:_____
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February 22, 2010