

DRAFT
Engineering Evaluation
Mr. Vincent Agbayani; Plant Number 18103
Application Number 15420

Background

On behalf of Mr. Vincent Agbayani, LFR, Inc. (LFR) is applying for an Authority to Construct/Permit to Operate (AC/PO) for equipment necessary for a soil vapor extraction (SVE) system at 88 Dixon Court in Daly City. This SVE system consists of a 300 scfm capacity vacuum blower (S-1) vented to two 1000 pound Carbon vessels arranged in series (A-1). The SVE system is also equipped with a mist eliminator, sampling ports between the vessels, and flow indicators. Product information and a generalized work plan are included in the application. Operation of the system will be conditioned so as to ensure that Reg. 8-47 required destruction efficiencies are achieved.

The carbon unit influent and effluent VOC concentrations will be monitored with a Photo-ionization detector on a schedule reflecting current loading rates and predicted carbon capacity. To ensure proper operation of equipment and verify attainment of steady-state conditions, Carbon performance will be monitored daily for at least the first five days. LFR may then elect to change their monitoring schedule based on measured influent concentrations and calculated carbon loading. Monitoring schedule changes will be allowed only after District review of concentration measurements and subsequent receipt of District approval.

This source is located within 1,000 feet of the outer boundary of Jefferson High School, and as such, this application requires Public Notification via Reg. 2-1-412. A Public Notice was prepared and sent out to the home address of the students of the school and to each address within a radius of 1,000 feet of the source. Copies of the Public Notice were sent to the Principal of the school. This Evaluation Report was posted on the District Webpage along with the Public Notice. A phone line was set-up at the district to receive public comments and ?? were received.

Attached to this report are copies of the Public Notice, and a summary of the Public comments received. The total cost of the Public Notification amounted to \$??,00. This amount did/did not exceed the \$2000.00 Public Notice fee; the balance will be refunded to the applicant. All fees including the standard AC/PO fees of \$2442.00 have been paid.

Emission Calculations

LFR has provided emission estimates based on pilot testing of a similar system performed at the site. The evaluating engineer has estimated vapor concentrations based on these results combined with conservative engineering judgement. For a conservative estimate of toxic emissions we assume that the system will be operated for the entire year. Generalized assumptions follow:

- * Standard conditions: Pressure = 1 Atm; Temperature = 70°F; 1 mole occupies 24.15 L.
- * Influent concentrations based on estimates provided by applicant: Perchloroethylene = 220 ug/L; Total Organics = 5500 ug/L.
- * Influent flow rate based on operational parameters of equipment: 300 scfm (maximum capacity); abatement efficiency = 90% for each Carbon Vessel (99% aggregate).

Abated emissions of individual toxic compounds take the following form:

$$C_i * Q * C_o * (1 - 0.99) = E$$

where:

E = Abated Emissions in #/day;
C_i = Influent Concentration in ug/L;
Q = Flow Rate in scfm (300);
C_o = Dimensional Constant;

$$C_o = \frac{1 \#}{4.53593E8ug} * \frac{28.317 L}{1 ft^3} * \frac{1440 min}{1 day}$$

$$C_o = 8.99E-5 \{ \#*L*min \} / \{ ug*ft^3*day \}.$$

Thus, for operation of the SVE System, we have maximum abated emissions of:

<u>Compound(s)</u>	<u>Emissions in lbs/day</u>	<u>Emissions in lbs/yr</u>	<u>Trigger</u>
perchloroethylene	5.8E-2	2.2E+1	3.00E+1
Total Organics	1.48	5.4E+2	

Summary of Emissions of Precursor Organics:

Highest Daily Emissions	=	1.48 #/day
Annual Average	=	1.48 #/day
RFP	=	2.7E-1 t/yr

Toxics

Under the trigger levels as per Regulation 2-5, the emissions of all toxic substances are not considered sufficient to warrant a Health Risk Screening Analysis. In accordance with the exemption in section 2-5-111, the source is not subject to the provisions of the Regulation.

New Source Review

This proposed source will be abated to BACT level control through the use of Carbon Adsorption Vessels. Offsets need not be provided for this source as emissions are expected to be far below 15 tons per year

CEQA

The project is considered to be ministerial under the Districts proposed CEQA Regulation 2-2-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors and therefore is not discretionary as defined by CEQA.

Compliance

Based on the information submitted, this operation is expected to be in compliance with Regulation 8-47-301, Emission Control Requirements, Specific compounds and Regulation 8-47-302, Organic Compounds. The POC emissions will be vented through a carbon adsorption system at all times of operation. The application triggered Public Notification as required by Regulation 2-1-412. Public Notification was performed by the District and LFR was invoiced for the services required. Fees in the amount of \$?,?.00 (including the standard A/C and P/O fees) have been paid in full.

Recommendation

Recommend that an Authority to Construct be issued for source:

- S-1: Soil Vapor Extraction System consisting of a 300 max scfm vacuum blower, and ancillary equipment, abated by A-1, Carbon Adsorption System, consisting of at least two 180 lb minimum capacity Carbon Adsorption Vessels arranged in series.

Conditions

1. Source S-1 shall be vented at all times to A-1, at least two (180 lb minimum capacity) activated carbon vessels arranged in series. Influent vapor flow shall not exceed 300 scfm. [basis: Reg. 8-47-301,2]
2. The operator of this source shall monitor with a photo-ionization detector (PID), flame-ionization detector (FID), or other method approved in writing by the District's Source Test Manager at the following locations:
 - a. At the inlet to the second to last carbon vessel in series.
 - b. At the inlet to the last carbon vessel in series.
 - c. At the outlet of the carbon vessel that is last in series prior to venting to the atmosphere.

When using an FID to monitor breakthrough, readings may be taken with and without a Carbon filter tip fitted on the FID probe. Concentrations measured with the Carbon filter tip in place shall be considered methane for the purpose of these permit conditions.

3. These monitor readings shall be recorded in a monitoring log at the time they are taken. The monitoring results shall be used to estimate the frequency of Carbon change-out necessary to maintain compliance with conditions number 4 and 5, and shall be conducted on a daily basis. The operator of this source may propose for District review, based on actual measurements taken at the site during operation of the source, that the monitoring schedule be changed based on the decline in organic emissions and/or the demonstrated breakthrough rates of the carbon vessels. Written approval by the District's Engineering Division must be received by the operator prior to a change to the monitoring schedule.
4. The second to last Carbon vessel shall be immediately changed out with unspent Carbon upon breakthrough, defined as the detection at its outlet of the higher of the following:
 - a. 10 % of the inlet stream concentration to the Carbon vessel.
 - b. 10 ppmv (measured as C1).
5. The last Carbon vessel shall be immediately changed out with unspent Carbon upon detection at its outlet of 10 ppmv (measured as C1).
6. The operator of this source shall maintain the following records for each month of operation of the source:
 - a. The hours and times of operation.
 - b. Each monitor reading or analysis result for the day of operation they are taken.
 - c. The number of Carbon beds removed from service.

All measurements, records and data required to be maintained by the operator shall be retained and made available for inspection by the District for at least two years following the date the data is recorded.

[basis: Reg. 1-523]

7. Any non-compliance of these conditions shall be reported to the Compliance and Enforcement Division at the time that it is first discovered. **The submittal shall detail the corrective action taken and shall include the data showing the exceedance as well as the time of occurrence.**
8. Upon final completion of the remediation project, the operator of Source S-1 shall notify the Engineering Division within two weeks of decommissioning the operation.

by _____ date 3/13/07
Robert E. Cave
Air Quality Engineer II