

**DRAFT**  
**ENGINEERING EVALUATION REPORT**  
**AEI CONSULTANTS**  
**PLANT NUMBER 22459**  
**APPLICATION NUMBER 26308**

**41200-C Blacow Road**  
**Fremont, CA 94538**

## **Background**

AEI Consultants has applied to obtain an Authority to Construct and a Permit to Operate for a soil vapor extraction system operation at the above referenced dry cleaning site in Fremont, CA. The soil vapor extraction system consists of a regenerative vacuum blower with a capacity of up to 200 cfm and water knockout drums. Soil vapor will be extracted and abated by two (200 pound each) carbon beds arranged in series. Any liquid phase wastewater that is collected from the knockout drums will be collected in 55 gallon drums and disposed off-site for treatment. Emission monitoring for operation of the equipment will be conducted according to established Source Test methodology. Procedures are outlined in the permit conditions.

The Carbon unit influent and effluent VOC concentrations will be monitored with a portable flame-ionization detector (OVA-FID) on a schedule reflecting initial loading rates and predicted Carbon capacity. Monitoring schedule changes will be allowed only after District review of concentration measurements and subsequent receipt of District approval.

The application covers the following source:

- S-1 Soil Vapor Extraction System Operation – Regenerative Blower, 200 cfm, etc. abated by A-1.**
- A-1 Carbon Adsorption Vessels (200 lb each) – 2 in series, Baker Tanks or equivalent.**

## **Emission Calculations**

For a conservative estimate of yearly emissions, it is assumed that the system is operated for an entire year within an inlet concentration corresponding to the initial soil vapor concentration level.

### **Basis:**

- \* Operating conditions: Pressure = 1 Atm; Inlet Temperature = 21°C; 1 mole occupies 24.15L
- \* Influent values based on operational parameters of equipment and soil vapor test results:
  - Influent rate = 200 scfm maximum;
  - No POC was detected, however Method Detection Limit of 0.5 ug/L for perchloroethylene (POC of main concern at dry cleaning site) is used to estimate emissions,
  - Carbon adsorption efficiency = 95% by wt.

$$\begin{aligned} \text{POC (PCE) emissions} &= 0.5 \text{ ug/L} * 200 \text{ scfm} * 1440 \text{ min/day} * 28.32 \text{ L/cf} * 10^{-6} \text{ g/ug} * 1 \text{ lb/454 g} * (1 - 0.95) \\ &= 0.0004 \text{ lb/day} \\ &= 0.146 \text{ lb/yr @ 365 days/yr} \\ &= 0.0001 \text{ tpy} \end{aligned}$$

## **Plant Cumulative Increase**

$$\text{POC} = 0.0001 \text{ tpy}$$

## **Toxics Emissions and Health Risk Screening Analysis**

PCE is a toxic compound and its emissions of 0.146 lb/yr and 0.00002 lb/hr are below the chronic toxic trigger level of 18 lb/yr and acute toxic trigger level of 44 lb/hr given in the Table 2-5-1 of Regulation 2-5. Therefore, a health risk screening is not required.

## **BACT**

POC emissions from the proposed project will be < 10 pounds per highest day and therefore are not subject to the BACT requirements of Regulation 2-2-301.

## **Offsets**

Offsets requirements of Regulation 2-2-302 are not triggered for facility wide or permitted POC emissions < 10 tpy.

## **CEQA**

The project is considered to be ministerial under the Districts 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 emission factors and therefore is not discretionary as defined by CEQA. This project is evaluated as per the guidance in Chapter 9.2 of the permit handbook.

## **Statement of 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 8-47-302, Organic compounds. The POC emissions will be vented through a Carbon adsorption system at all times of operation.

The project is located within 1000 feet of the nearest K-12 school, Irvington High School, and therefore is subject to the public notice requirements of Regulation 2-1-412. A public notice was distributed on-----to the parents and guardians of the students of the schools within ¼ mile of the project and to all the addresses within 1000 feet of the project. The comment period ended on-----and ----- comments were received.

### **[Discuss comments, if any.]**

PSD, NSPS, and NESHAPS are not triggered.

## **Permit Conditions**

**S-1 Soil Vapor Extraction System Operation – Regenerative Blower, 200 cfm, etc. abated by A-1.**  
**A-1 Carbon Adsorption Vessels (200 lb each) – 2 in series, Baker Tanks or equivalent.**

1. The owner/operator shall abate the Precursor Organic Compound (POC) emissions from Source S-1 by A-1 SVE Abatement System, two (200 lb minimum capacity) Activated Carbon Vessels arranged in series, during all periods of operation. Influent vapor flow shall not exceed 200 cfm. In no event shall POC emissions to the atmosphere exceed 0.0004 pound per day and any toxic emissions above the trigger levels listed in the Table 2-5-1 of Regulation 2-5 for S-1.  
[Basis: Cumulative increase, Regulation 2-5, Regulation 8-47-301]
2. The owner/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 the 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 purposes of these permit conditions.

[Basis: Cumulative Increase, Regulation 2-5, TBACT]

3. The owner/operator shall record these monitor readings in a monitoring log at the time they are taken. The owner/operator shall use the monitoring results to estimate the frequency of carbon change-out necessary to maintain compliance with Parts 4 and 5, and shall be conducted on a daily basis. The owner/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 owner/operator prior to a change to the monitoring schedule.  
[Basis: Cumulative Increase, Regulation 2-5, TBACT]

4. The owner/operator shall immediately change out the second to last Carbon vessel 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 or greater (measured as hexane).

[Basis: Cumulative Increase, Regulation 2-5, TBACT]

5. The owner/operator shall immediately change out the last carbon vessel with unspent Carbon upon detection at its outlet of 10 ppmv (measured as hexane).

[Basis: Cumulative Increase, Regulation 2-5, TBACT]

6. The owner/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 owner/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: Regulation 8-47-501, Regulation 1-523]

7. The owner/operate shall report any non-compliance of these conditions to Compliance & Enforcement Division at the time that it is discovered. The owner/operator shall detail the corrective action taken and include the data showing the exceedance as well as the time of occurrence in the submittal.

[Basis: Cumulative Increase, Regulation 2-5, TBACT]

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.

[Basis: Cumulative Increase, Regulation 2-5, TBACT]

## Recommendations

The District has reviewed the material contained in the permit application for the proposed project and has made a preliminary determination that the project is expected to comply with all applicable requirements of District, state, and federal air quality-related regulations. The preliminary recommendation is to issue an Authority to Construct for the equipment listed below. However, the proposed source will be located within 1000 feet of a school, which

triggers the public notification requirements of District Regulation 2-1-412. After the comments are received and reviewed, the District will make a final determination on the permit.

I recommend that the District initiate a public notice and consider any comments received prior to taking any final action on issuance of an Authority to Construct for the following source:

**S-1 Soil Vapor Extraction System Operation – Regenerative Blower, 200 cfm, etc. abated by A-1.**  
**A-1 Carbon Adsorption Vessels (200 lb each) – 2 in series, Baker Tanks or equivalent.**

**By:** \_\_\_\_\_  
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