

# Draft Engineering Evaluation

AE Incorporated dba Andersen Environment  
Plant Number: 22189  
Application Number: 25854  
4640 Meridian Ave, San Jose, CA 95124

## Background

- S-1 Soil Vapor Extraction Unit**  
**Mako Industries, Model 220 VES, 8.5 HP, 220 cfm**
- A-1 Carbon Adsorption Vessels, 200 lb minimum each**

AE Incorporated dba Andersen Environment has applied for an Authority to Construct for a Soil Vapor Extraction Unit. Soil vapor extraction (SVE) will be accomplished by means of a vacuum blower S-1 with a maximum operating capacity of 220 scfm. Soil vapor and groundwater will be extracted and treated by A-1, VFD-55 vapor phase granular activated carbon (GAC) drums with 200 lbs of virgin coconut shell GAC. The carbon unit influent and effluent VOC concentrations will be monitored with a portable flame-ionization detector (FID) or photon-ionization detector (PID) 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 the first five day, the owner/operator 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. Emission monitoring for operation of the equipment will be conducted according to established Source Test methodology.

## Emission Calculations

- For a conservative estimate of POC emissions we assume that the combined system will be operated for the entire year based on the maximum capacity of the equipment. Generalized assumptions follow:
- Standard conditions: Pressure = 1 Atm; Temperature = 70°F; 1 mole occupies 24.15 Liter.
- Molecular weight of Tetrachloroethane (PCE) is 165.8 g/mol, Trichloroethane is 131.4 g/mol, Vinyl chloride is 62.5 g/mol
- Abatement Efficiency is assumed to be 98.5%
- Influent values based on operational parameters of equipment: influent rate = 220 scfm (maximum);
- The annual emissions are calculated assuming 24 hr per day and 365 days per year of operation

**Table 1- Estimated Emissions from S-1**

	Effluent Concentration (ug/m3)	Effluent Concentration (PPMV)	Abated Effluent Concentration (PPMV)	Emissions (lb/hr)	Emissions (lb/yr)	Emissions (lb/day)
<b>Tetrachloroethane (PCE)</b>	34617	5.042	7.56E-02	4.28E-04	3.75	1.03E-02
<b>Trichloroethane (TCE)</b>	27439	5.042	7.56E-02	3.39E-04	2.97	8.14E-03
<b>Vinyl Chloride</b>	13051	5.042	7.56E-02	1.61E-04	1.41	3.87E-03

Total POC = 8.13 lb per year

**Toxics Health Risk Screening Analysis (HRSA)**

**Table 2- Estimated Toxics Emissions compared with Toxics Trigger Levels**

	<b>Emissions (lb/hr)</b>	<b>Emissions (lb/yr)</b>	<b>Acute Trigger Levels (lb/hr)</b>	<b>Chronic Trigger Levels (lb/yr)</b>	<b>HRSA Required?</b>
<b>Tetrachloroethane (PCE)</b>	4.28E-04	3.75	44	18	no
<b>Trichloroethane (TCE)</b>	3.39E-04	2.97	N/A	54	no
<b>Vinyl Chloride</b>	1.61E-04	1.41	400	14	no

A Toxic Risk Screen need not be prepared as the applicant has agreed to monitor emissions of toxics emissions and determine the cumulative annual emissions. From the table above, the emissions are expected to be less than the toxics trigger levels specified under Regulation 2-5, Table 2-5-1.

**Best Available Control Technology (BACT)**

This proposed project is expected to emit in less than 10 pounds per highest day. Abatement devices are required in order to reduce the emissions below 10 lbs per day in the process. The requirement to use abatement devices were reflected in the permit conditions below. Offsets need not be provided, as annual emissions are not in excess of 10 tons per year.

**CEQA**

The project is considered to be ministerial under the District's proposed 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.

**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. The POC emissions will be vented through a Thermal/Catalytic Oxidizer and/or Activated Carbon Vessels at all times of operation. Operating conditions have been worded to ensure that the equipment meets the criteria regarding portability as per Regulation 2-1-220. Criteria pollutants are not expected to exceed 10 tons per year, and emissions of toxic substances shall be below the trigger levels found in Table 2-5-1.

This project is within 1,000 ft from the nearest K-12 school and is therefore subject to the public notification requirements of Regulation 2-1-412. A Public Notice was prepared and will be sent to the parents or guardians of children enrolled in the following school(s) and resident and business within a radius of 1,000 feet of the source.

Branham High School  
1570 Branham Lane  
San Jose, CA 95118

PSD, NSPS, and NESHAPS are not triggered.

**Permit Conditions**

*Condition #25727*

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## S-1 SVE Operation

1. The owner/operator shall vent Source S-1 at all times to Abatement device A-1, at least two (200 lb minimum capacity) activated carbon vessels arranged in series. Influent vapor flow shall not exceed 220 scfm.  
[Basis: Cumulative Increase, Regulation 2-5]
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 Air Pollution Control Officer 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 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 monitoring results shall be used to estimate the frequency of carbon change-out necessary to maintain compliance with part 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 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 Permit Services 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 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.[Basis: Cumulative Increase, Regulation 2-5, TBACT]
5. The owner/operator shall 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. Days and hours 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.Such records shall be retained and made available for inspection by the District for at least two years following the date that data is recorded. [Basis: Regulation 1-523]
7. The owner/operator shall report any non-compliance with parts 4 and 5 to the Director of the Compliance & Enforcement Division at the time that it is first discovered. The owner/operator shall detail the corrective action taken and include the data showing the exceedance as well at the time of occurrence in the submittal.  
[Basis: Cumulative Increase, Regulation 2-5, TBACT]
8. Upon final completion of the remediation project, the owner/operator of Source S-1 shall notify the Engineering Division within two weeks of decommissioning the operation. [Basis: Cumulative Increase, Regulation 2-5, TBACT]

**Recommendation:**

The District has reviewed 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 2-1-412.6. After any 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 Unit**  
**Mako Industries, Model 220 VES, 8.5 HP, 220 cfm**
- A-1      Carbon Adsorption Vessels, 200 lb minimum each**

by \_\_\_\_\_  
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