

DRAFT
Engineering Evaluation Report
Argonaut Investments
Plant Number 24222
Application Number 29459

4475 Treat Boulevard, Suite 1
Concord, CA 94521

Background

On behalf of Argonaut Investments, AEI Consultants (AEI) has applied to obtain an Authority to Construct and a Permit to operate a Sub-Slab Depressurization System at the above referenced site in Concord, Ca. The sub-slab depressurization system will mitigate any migration of volatile organic compounds (VOC) to indoor air resulting from any accumulation of VOC below the commercial building slab. Extracted vapors will be abated by a set of two activated carbon vessels arranged in series before discharge to the atmosphere through an exhaust vent. Emissions of toxic compounds are expected to be below the respective triggers levels listed in Table 2-5-1 of Regulation 2, Rule5.

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 Sub-Slab Depressurization System (1 blower & ancillary), AIRTECH, 3BA1330, 50 cfm (or equivalent), abated by A-1.**
- A-1 Activated Carbon Adsorption Vessels (2 nos. arranged in series) – Baker Tanks (or equivalent), 100 lb carbon (each vessel).**

Emission Calculations

For a conservative estimate of emissions, it is assumed that the system will be operated for 24 hours a day and 8760 hours a year with maximum inlet concentration level of each compound while the actual inlet concentration will be an average from all the wells. Generalized operating conditions are as follows:

- * Operating conditions: Pressure = 1 Atm; Inlet Temperature = 21°C
- * Influent values based on operational parameters of equipment and applicant's supplied soil vapor test results:
 - influent rate: 50 cfm;
 - Tetrachloroethylene (PCE): 38,000 ug/m³ (= 38 ug/L)
 - Trichloroethylene (TCE) and other VOC concentrations were below lab reporting limits.
 - abatement efficiency: 90%

Emission of each compound is calculated using the following equations:

$$\text{Emissions, lb/hr} = \text{ug/L} * \text{cfm} * 60 \text{ min/hr} * 28.32 \text{ L/cf} * E^{-6} \text{ g/ug} * 1 \text{ lb/454 g} * (1-0.9)$$
$$\text{Emissions, lb/yr} = (\text{emissions, lb/hr}) * (8760 \text{ hrs/yr})$$

Emissions, as calculated, are given in the table below:

Compound	Acute trigger level, lb/hr	Chronic trigger level, lb/yr	S-1		
			ug/L	lb/hr	lb/yr
Tetrachloroethylene (PCE)	44	14	38	0.0007	6.23

Non-Precursor Compound (NPOC) emissions = PCE emissions = 6.23 lb/yr
= 0.0031 tpy

Plant Cumulative Increase

NPOC = 0.0031 tpy

Toxics Emissions and Health Risk Screening Analysis

As shown in the table above, toxic compound (PCE) emissions are below the toxic trigger levels and therefore a health risk analysis is not required per Regulation 2, Rule 5.

Best Available Control Technology (BACT)

POC and NPOC emissions from the proposed project will be < 10 lbs 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.

California Environmental Quality Act (CEQA)

The project is considered 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 will be expected to comply with the requirements of Regulation 8-47-301, Emission Control Requirements.

8-47-301 Emission Control Requirement, Specific Compounds: Any air stripping and soil vapor extraction operations which emit benzene, vinyl chloride, perchloroethylene, methylene chloride and/or trichloroethylene shall be vented to a control device which reduces emissions to the atmosphere by at least 90 percent by weight.

Prevention of Significant Deterioration, New Source Performance Standards, and National Emission Standards for Hazardous Air Pollutants are not triggered.

Public Notification, Schools

The project is located within 1000 feet of the nearest K-12 school, King's Valley Christian School, and therefore is subject to the public notice requirements of Regulation 2-1-412. A public notice will be distributed to the parents and guardians of the students of the schools within ¼ mile of the project and to all addresses within 1000 feet of the project.

Permit Conditions

S-1 Sub-Slab Depressurization System (1 blower & ancillary), AIRTECH, 3BA1330, 50 cfm (or equivalent), abated by A-1.

A-1 Activated Carbon Adsorption Vessels (2 nos. arranged in series) – Baker Tanks (or equivalent), 100 lb carbon (each vessel).

1. The owner/operator shall abate the Volatile Organic Compound (VOC) emissions from Source S-1 by A-1, two Activated Carbon Adsorption Vessels (at least 100 lb carbon each) arranged in series, during all periods of operation. Influent vapor flow shall not exceed 50 cfm. In no event shall VOC emissions to the atmosphere exceed 6.23 pound per year 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 monitor on a daily basis and 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. 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 VOC 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. Detection level or higher (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 of VOC at its outlet (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 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]

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 will comply with all applicable requirements of the District, State, and federal air-quality related regulations. Since the source will be located within 1000 feet of K-12 schools, the public notification requirements of the District Regulation 2-1-412 are triggered. After receiving and reviewing the public comments, the District will make a final determination on the permit for the following source.

- S-1 Sub-Slab Depressurization System (1 blower & ancillary), AIRTECH, 3BA1330, 50 cfm (or equivalent), abated by A-1.**
- A-1 Activated Carbon Adsorption Vessels (2 nos. arranged in series) – Baker Tanks (or equivalent), 100 lb carbon (each vessel).**

By: _____
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