Draft Engineering Evaluation Report

Edgewater Holding Corporation, Plant #23786
901 Edgewater Blvd, Foster City, CA
Application #28433

Background

Edgewater Holding Corporation ("Applicant") has requested an Authority to Construct permit for a new subslab soil vapor extraction (SVE) operation at 901 Edgewater Blvd, Foster City (Plant #23786).

S-1, Subslab Soil Vapor Extraction System, 600 scfm maximum abated by A-1 consisting of four 400 pound carbon vessels with two connected in series and two in parallel

The proposed system will be installed to withdraw soil vapor from beneath the concrete floor slab of the building at a shopping center comprised of multiple tenant spaces used by various retail and commercial businesses. The proposed system will withdraw soil vapors from one extraction trench and four suction pits. Additional or alternative suction pits may be added in the future to optimize the system. Extracted vapors will be treated with four drums of granular activated carbon arranged as two parallel sets of two drums in series.

The proposed blower is a regenerative blower. The maximum rated capacity is approximately 680 scfm. It is expected the actual flow rate under operating conditions is 400 to 600 scfm. The applicant has proposed to limit the blower rating to 600 scfm.

Emission Calculations

The applicant performed initial laboratory testing at the site to determine the worst case inlet pollutant concentrations. Emissions from S-1 are abated by A-1, which will achieve at least 98.5% control of the organic compounds present at this location. Emissions of total precursor organic compounds (POC), non-precursor organic compounds (NPOC), and toxic air contaminants (TAC) are summarized in Table 1.

TABLE 1
Emissions From S-1 Soil Vapor Extraction System After Control by A-1

	Inlet (ppbv)	lbs/hour	lbs/day	lbs/year
Perchloroethylene	2770	6.43E-4	1.54E-2	5.629
Trichloroethylene	437	8.03E-5	1.93E-2	0.704
Chloroform	11	1.80E-6	4.33E-5	0.016
Toluene	4.1	5.25E-7	1.26E-5	0.005
Xylenes	2.6	3.79E-7	9.09E-6	0.003
NPOC	2782	6.45E-4	1.55E-2	5.650
POC	519	8.96E-5	2.15E-3	0.785

Cumulative Increase

The District tracks increases in emissions from each facility. These cumulative emissions were reset on April 5, 1991 for all facilities.

TABLE 2
Cumulative Emission Increases, Plant #23786 (tons per year)

Pollutant	Existing	Permitted	Post-Project
PM_{10}	0	0	0.0000
POC	0	0.0004	0.0004
NO_x	0	0	0.0000
SO_2	0	0	0.0000
CO	0	0	0.0000

Statement of Compliance

Regulation 1: General Provisions and Definitions
All sources are subject to Regulation 1, Section 301, which prohibits discharge of air contaminants resulting in public nuisance. The proposed soil vapor extraction operation is not expected to be a source of public nuisance.

Regulation 2, Rule 1: California Environmental Quality Act (CEQA) Requirements
District Regulation 2, Rule 1, Section 310 specifies that all proposed new and modified sources subject to District permit requirements must be reviewed in accordance with the California Environmental Quality Act (CEQA) requirements, except for ministerial projects or projects exempt from CEQA under Section 2-1-312. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 9.2, Soil Vapor Extraction. Therefore, this application is considered to be ministerial and is exempt from CEQA review.

Regulation 2, Rule 1: School Public Notice Requirements
The public notification requirements of Regulation 2-1-412 apply to modifications which result in any increase in toxic air contaminant or hazardous air contaminant emissions at facilities within 1,000 feet of the boundary of a K-12 school. The project is within 1,000 feet of the boundary of a K-12 school and therefore is subject to the public notification requirements of Reg. 2-1-412. Notifications will be distributed to parents or guardians of students enrolled at Foster City Elementary School and Sea Breeze School, and all residential and business neighbors within 1,000 feet of the proposed new location.

Regulation 2, Rule 2: Best Available Control Technology (BACT) Requirements
Under Regulation 2, Rule 2, any new source which results in an increase of 10 lbs/day or more of any criteria pollutant must be evaluated for adherence to BACT and TBACT control technologies. As shown in Table 1, the emissions will not exceed 10

pounds/day for any pollutant. As shown in the health risk assessment section below, the increase in emissions will not exceed the health risk assessment thresholds. Therefore, an HRA is not required and TBACT is not applicable.

Regulation 2, Rule 2: Offsets
The cumulative emission increases for this site and this application are summarized in Table 2 above.

The offset requirements for precursor organic compounds (POC) and nitrogen oxides (NOx) are found in Regulation 2-2-302. Under Regulation 2-2-302, POC and NOx emission offsets are required for new or modified sources at a facility which emits or will be permitted to emit 10 tons per year or more on a pollutant specific basis. If the facility emits or will be permitted to emit less than 35 tons of POC or NOx per year, the emission offsets may be provided by the District's Small Facility Banking Account. If the facility will be permitted to emit more than 35 tons/year of POC or NOx, the site is responsible for providing the required offsets at a ratio of 1.15 to 1.0.

Since the POC and NOx emissions from this site are less than the offset threshold of 10 tons per year for each of these pollutants, offsets are not required for this application.

Regulation 2, Rule 5: Health Risk Assessment Requirements
Toxic air contaminants will be emitted by the soil vapor extraction system. The toxic pollutant emissions will be as follows:

TABLE 4
Chronic TAC Emissions

Pollutant	S-1 (lb/year)	Chronic Trigger Level (lb/year)	Chronic EMS > Trigger Level?
Perchloroethylene	5.63E+0	1.4E+1	NO
Trichloroethylene	7.04E-1	4.1E+1	NO
Chloroform	1.58E-2	1.5E+1	NO
Toluene	4.60E-3	1.2E+4	NO
Xylenes	3.32E-3	2.7E+4	NO

Acute TAC Emissions

		Acute	Acute
		Trigger	EMS >
	S-1	Level	Trigger
Pollutant	(lb/hour)	(lb/hour)	Level?
Perchloroethylene	6.43E-4	4.4E+1	NO
Trichloroethylene	8.03E-5	NA	NO
Chloroform	1.80E-6	1.5E+1	NO
Toluene	5.25E-7	8.2E+1	NO
Xylenes	3.79E-7	4.9E+1	NO

Since the emissions do not exceed the risk screen trigger levels set in Regulation 2, Rule 5, Table 2-5-1, a health risk assessment is not required for this project.

Major Facility Review, Regulation 2, Rule 6
40 CFR Part 70, State Operating Permit Programs (Title V)
The Title V federal permitting requirements of 40 Code of Federal Regulations (CFR) Part 70 have been codified and are enforced through District Regulation 2, Rule 6. This regulation applies to major facilities, Phase II acid rain facilities, subject solid waste incinerator facilities, and other designated facilities. This facility is a not a Phase II acid rain facility, subject solid waste incinerator, or other designated source category. It is not a major facility since the potential emissions are less than the major source thresholds for regulated air pollutants and hazardous air pollutants. This facility is not subject to Regulation 2, Rule 6 or 40 CFR, Part 70.

Regulation 8, Rule 47, "Air Stripping and Soil Vapor Extraction Operations"
Regulation 8-47-301 requires any air stripping and soil vapor extraction operations which emit benzene, vinyl chloride, perchloroethylene, methylene chloride and/or trichloroethylene to be vented to a control device which reduces emissions to the atmosphere by at least 90 percent by weight. The proposed carbon adsorption system will reduce emissions by at least 90 percent by weight.

Regulation 8-47-501 requires any person subject to the requirements of this Rule shall keep records of any vapor monitoring results that have been collected to monitor the performance of a control device. Such records shall be retained for a minimum of two years from the date of entry and be made available to District staff upon request. Recordkeeping requirements will be placed on the permit to ensure compliance.

Permit Condition #26473
Condition #26473 setting out the operating and recordkeeping requirements for the operation at source S-1 shall be made a part of the source's Authority to Construct.

CONDITION #26473

1. The owner/operator shall abate the organic emissions from Source S-1 by A-1 SVE Abatement System, consisting of four (400 pounds minimum capacity) Activated Carbon Vessels arranged such that two pairs of carbon vessels are operating in parallel with each pair of carbon vessels operating in series. Start-up and subsequent operation of each abatement device shall take place only after written notification of same has been received by the District's Engineering Division. The owner/operator shall operate the sources such that the soil vapor flow rate from S-1 shall not exceed 600 scfm. In no event shall organic compound emissions to the atmosphere exceed 0.018 pounds per day from S-1 abated by A-1. [Basis: Cumulative Increase, Regulation. 8-47-301, 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 outlet from S-1, which is also the inlet to each pair of in-series carbon vessels.
   b. At the inlet to each of the last in-series carbon vessels.
   c. At the outlet of each of the last in-series carbon vessels, 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]

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 conditions number 4 and 5, and monitoring 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]

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 (measured as C1).
   [Basis: Cumulative Increase, Regulation 2-5]

5. The owner/operator shall change out the last Carbon vessel with unspent Carbon upon detection at its outlet of 10 ppmv or greater (measured as C1). [Basis: Cumulative Increase, Regulation 2-5]

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 emission test, monitor reading or analysis result for the day of operation they were taken.
   c. The date each carbon vessel was removed from service and replaced with a new carbon vessel, the amount of carbon in each replacement vessel, and the total number of carbon vessels removed from service per month and during each consecutive rolling 12-month period.
   d. Total throughput of soil vapor from Source S-1, in Standard Cubic Feet, per month and during each consecutive rolling 12-month period.

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 1-523]

7. The owner/operator shall report any non-compliance with Parts 1, 4, or 5 to the Director of the Compliance & Enforcement Division at the time that it is discovered. The submittal shall detail the corrective action taken and shall include the data showing the exceedance as well as the time of occurrence. [Basis: Cumulative Increase, Regulation 2-5]

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 permit for the equipment listed below. However, the proposed sources will be located within 1,000 feet of the boundary of a K-12 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 Authority to Construct permits for the following sources:

S-1, Subslab Soil Vapor Extraction System, 600 scfm maximum abated by A-1 consisting of four 400 pound carbon vessels with two connected in series and two in parallel

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Stanley Tom, P.E. Date
Air Quality Engineer