SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT *ENGINEERING AND COMPLIANCE DIVISION* APPLICATION PROCESSING AND CALCULATIONS	PAGES 16	PAGE 1
	APPL. NO. 464772	DATE 10/08/09
	PROCESSED BY SC06	CHECKED BY 164

PERMIT TO CONSTRUCT

COMPANY NAME EQUILON ENTERPRISES LLC, ID 800372

EQUIPMENT LOCATION

20945 S. WILMINGTON AVE.
CARSON, CA 90810

EQUIPMENT DESCRIPTION

Equipment	ID No.	Connected To	RECLAIM Source Type / Monitoring Unit	Emissions and Requirements	Conditions
PROCESS 8: AIR POLLUTION CONTROL SYSTEM					
SYSTEM 6 : SOIL VAPOR EXTRACTION AND TREATMENT SYSTEM					S13.4
OXIDIZER, REGENERATIVE THERMAL OXIDIZER, NATURAL GAS FIRED, 1,600,000 BTU/HR, WITH AN INTEGRAL HEAT EXCHANGER, AND AN AUTOMATIC TEMPERATURE CONTROLLER. EXHAUST STACK 30 FT, NO RAIN CAP A/N 464772	C939	D940, D941	NOX: PROCESS UNIT** SOX: PROCESS UNIT**	BENZENE 1.75 PPMV PROCESS GAS (6); CO: 2000 PPMV (5) [RULE 407, 4-2-1982]; NOX: 130 LBS/MMSCF NATURAL GAS (1); PM: 0.1 GRAINS/SCF (5)[RULE 404, 2-7-1986; RULE409, 8-7-1981]; SOX; 0.83 LBS/MMSCF NATURAL GAS (1) SOX: 0.506 LBS/MMSCF PROCESS GAS(1); VOC: 25 PPMV (4) [RULE;1303(a)(1)-BACT,5-10-1996]; RULE 1303(b)(2)-Offset, 5-10-1996;RULE 1303(b)(2)-Offset,12-6-2002	A229.2 , A229.4, B163.1, C1.49, D90.7, D90.8, E71.10 E71.11 E193.5, E193.6, E193.7, E193.8, E193.9, E336.5

BLOWER 3 EXTRACTION BLOWERS (ONE AS A SPARE), MAXIMUM FLOW RATED AT 3000 SCFM EACH A/N 464772	D940	C939			
VAPOR EXTRACTION WELLS A/N 464772	D941	C939			E336.5

* (1) Denotes RECLAIM emission factor (2) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit
(5)(5A)(5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit (8)(8A)(8B) Denotes 40 CFR limit(e.g. NSPS, NESHAPS,etc.)
(9) See App B for Emission Limits (10) See Section J for NESHAP/MACT requirements

** Refer to Section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

Conditions

S13.4 All devices under this system are subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
HAPs	40CFR63 SUBPART	GGGGG

[40CFR63 SUBPART GGGGG; 11-29-2006]
[Systems subject to this condition : Process 6, System1 , 2 , 3 , 4; Process 8, System 6]

A229.4

The 1.75 ppmv emission limit is measured by a grab sample from the outlet of the vapor control system for benzene [RULE 1303(a)-BACT, 5-10-1996 RULE 1401]; [Devices subject to this condition : C939]

A229.5

The 25 PPM emission limit is measured as methane at the outlet of the vapor control system for VOC. [RULE 1303(a)-BACT, 5-10-1996]; [Devices subject to this condition : C939]

B163.2

The operator shall only use this equipment subject to restrictions containing the following:

All vapor extraction wells and ducts shall be capped when not in use to prevent venting of vapors to the atmosphere. Vapors shall not be extracted from the soil unless they are vented to this equipment.

An identification tag or nameplate shall be displayed on the equipment to show manufacturer model and/or serial numbers. The tag(s) or plate(s) shall be issued by the manufacturer, and shall be adhered to the equipment in a permanent and conspicuous position.

Volatile organic compound (VOC) concentration shall be measured and recorded in parts per million by volume (ppmv) at the inlet and the outlet of the equipment once each week that this equipment is in operation. The operator shall use a flame ionization detector or other organic vapor analyzer (OVA) approved by the AQMD to measure the VOC concentration. The instrument shall be calibrated to methane in ppmv.

If calibration gas other than methane is used for calibrating the instrument used for VOC measurements, the concentration measured shall be correlated to and reported as methane.

The operator shall maintain records in a manner approved by the District, to demonstrate compliance with the requirements specified under this condition.
[RULE 1303(b)(1)-BACT, 5-10-1996] [Devices subject to this condition : C939]

C1.49

The operator shall limit the load to no more than 6000 cubic feet per minute.
For the purpose of this condition, the load shall be defined as the extracted gas stream entering the oxidizer measured in standard cubic feet per minute.
The operator shall install and maintain a flowmeter and a recorder to measure the total load rate. In case a pressure sensor device is used in place of the flow indicator, a conversion chart shall be available to indicate the correspondent flow rate, in scfm, to the pressure reading.
The operator shall maintain records in a manner approved by the District, to demonstrate compliance with this condition.
[RULE 1303(b)(2)-Offset, 5-10-1996]; [Devices subject to this condition : C939]

C8.5

The operator shall use this equipment in such a manner that the temperature being monitored, as indicated below, is not less than 1600 Deg F.
This condition shall only apply whenever the regenerative thermal oxidizer is operating.
The operator shall install and maintain a temperature measurement and recording device at the outlet of the combustion chamber. The measuring device shall be accurate of minus or plus 20 degrees Fahrenheit. [RULE 1303(a)-BACT, 5-10-1996; RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997]; [Devices subject to this condition : C939]

D90.7

The operator shall monitor/test equipment as follows:
Influent and effluent concentration of volatile organic compound (VOC) concentration shall be monitored and recorded once each week using an organic vapor analyzer calibrated in accordance with EPA Method 21. All results shall be recorded in ppmv "as methane." Results from the OVA readings shall be used only as a screening tool, not as a definitive evaluation for compliance with the 25 ppmv as methane effluent limit. Should effluent OVA readings exceed the 25 ppmv screening value, operations must be modified (within 24 hours of a screening value measurement >25 ppmv) in such a way to lower effluent VOC concentration to <=25 ppmv as methane.
The operator shall maintain records of all VOC measurements specified by this condition. [RULE 1303(a)(1)-BACT, 5-10-1996;][RULE 1303(b)(2)-Offset, 5-10-1996]]; [Devices subject to this condition : C939]

D90.8

The operator shall sample and analyze the equipment at the inlet and outlet of the equipment according to the following specifications.

The operator must collect and analyze influent samples for total sulfur. Initial sampling must be performed within 90 days of initial startup and once each quarter thereafter. Samples must be analyzed in accordance with SCAQMD Method 307-91 and compared to the permitted SOx factor using the following equation: Extract Gas SOx EF = Tested Sulfur Concentration (as CS2 PPMV) / (379.4 ft^3 CS2/lbmol CS2) x (2 lbmol CS2/lbmol CS2) x (64 lbs SOx/lbmol SOx).
The operator shall maintain records of all analytical measurements as specified under this condition. [RULE 1303(a)(1)-BACT, 5-10-1996, RULE 2004 and 2011]; [Devices subject to this condition : C939][RULE 1303(b)(2)-Offset, 5-10-1996]; [Devices subject to this condition : C939]

E71.10

The operator shall not operate this equipment unless the operator demonstrates to the Executive Officer that the facility holds sufficient NOx RTCs (31,390 lbs/year) to offset the annual emission increase for the first compliance year of operation. In addition, this equipment shall not be operated unless the operator demonstrates to the Executive Officer that, at the commencement of each compliance year after the first compliance year of operation, the facility holds sufficient NOx RTCs (31,390 lbs/year). [RULE 2005, 5-06-2005] [Devices subject to this condition : C939]

E71.11

The operator shall not operate this equipment unless the operator demonstrates to the Executive Officer that the facility holds sufficient SOx RTCs (1,606 lbs/year) to offset the annual emission increase for the first compliance year of operation. In addition, this equipment shall not be operated unless the operator demonstrates to the Executive Officer that, at the commencement of each compliance year after the first compliance year of operation, the facility holds sufficient SOx RTCs (1,606 lbs/year).
[RULE 2005, 5-06-2005]; [Devices subject to this condition : C939]

The operator shall monitor/test equipment as follows:
The operator must collect and analyze grab samples at the inlet and outlet of this equipment. Initial sampling must be performed within two weeks of start up of this unit, and once each quarter thereafter. Samples shall be speciated for benzene, toluene, ethylbenzene, and xylenes in accordance with EPA Method TO-15.
Additionally, the operator must collect and analyze influent samples for total sulfur. Initial sampling must be performed within 90 days of initial startup and once each quarter thereafter. Samples must be analyzed in accordance with SCAQMD Method 307-91 and compared to the permitted SOx factor using the following equation: Extract Gas SOx EF = Tested Sulfur Concentration (as CS2) / (379.4 ft^3 CS2/lbmol CS2) x (2 lbmol CS2/lbmol CS2) x (64 lbs SOx/lbmol SOx).
The operator shall maintain records of all analytical measurements as specified under this condition. [RULE 1303(a)(1)-BACT, 5-10-1996, RULE 2004 and 2011]; [Devices subject to this condition : C939]

E193.7

The operator shall operate and maintain this equipment as follows:

The operator shall submit to the SCAQMD, in writing, the results of the first 3 months of operation under this permit, including but not limited to, source test data, monitoring data, lab analyses, flow and temperature readings, sufficient to prove compliance with each condition of this permit. Submittal shall be within 60 days of completion of the source testing and shall be addressed to:

SCAQMD, Refinery and Waste Management Team, Engineering and Compliance Division, 21865 Copley Drive, Diamond Bar, CA 91765

[RULE 204]; [Devices subject to this condition : C939]

E193.8

The operator shall operate and maintain this equipment as follows:

Equipment interlocks shall be installed and operated to prevent vapor processing during periods when the minimum operating temperature of the regenerative thermal oxidizer is not met.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]; [Devices subject to this condition : C939]

E193.9

The operator shall operate and maintain this equipment as follows:

Exit to the exhaust stack shall have a minimum height of 30 feet measured from grade.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]; [Devices subject to this condition : C939]

E193.10

The operator shall operate this equipment according to the following restrictions:

All vapor extraction wells and ducts shall be capped when not in use to prevent uncontrolled venting of vapors to the atmosphere.

Vapors shall not be extracted from the soil unless they are vented to this equipment.

An identification tag or nameplate shall be displayed on the equipment to show manufacturer model and/or serial numbers. The tag(s) or plate(s) shall be issued by the manufacturer, and shall be adhered to the equipment in a permanent and conspicuous position.

The operator shall maintain records to demonstrate compliance with the requirements specified under this condition. [RULE

1303(a)(1)-BACT, 5-10-1996]; [Devices subject to this condition : C939]

E193.11

The operator shall source test this equipment as follows:

Samples shall be collected and analyzed once during the first 90 days of operation for total volatile organic compounds and speciated for benzene, MTBE [and other toxics as required in (F)] as follows:

A. Samples shall be collected at the inlet and outlet of the regenerative thermal oxidizer.

B. Sampling and analysis shall be conducted by an independent laboratory per Rule 304.

C. Analysis for total VOC shall be performed in accordance with SCAQMD Method 25.1, 25.3, or other methods approved by the SCAQMD.

D. Analysis for toxics shall be conducted using SCAQMD Method TO-15 or other methods approved by SCAQMD.

E. The inlet sample shall also be analyzed for all volatile organic compounds that were both detected by the Phase II site assessment (soil and groundwater characterization studies) and found on the Rule 1401 compound list. If no assessments of soil or groundwater exist, the inlet sample shall be analyzed for all volatile organic compounds listed in SCAQMD Rule 1401, unless otherwise approved in writing by the SCAQMD.

F. The tests indicated above shall be conducted after SCAQMD approval of the source test protocol submitted in accordance with Section E – Administrative Conditions.

G. Follow up source tests must be conducted at least once every 3 years.

[
RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1401, 3-7-2008, RULE 3004(A)(4)-Periodic Monitoring];
[Devices subject to this condition : C939]

E336.5

The operator shall vent the vent gases from this equipment as follows:
All vent gases shall be vented to the regenerative thermal oxidizer C939, which shall be in full use and have a valid permit to receive vent gases from this equipment.
[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1401, 6-15-2001; RULE 462, 5-14-1999]
[Devices subject to this condition : c939]

BACKGROUND & PROCESS DESCRIPTION

This facility is a NOx and SOx RECLAIM and Title V facility. This facility is primarily a tank storage farm and truck loading racks consisting of various size tanks used to store various refinery products and a loading rack. This application is for new regenerative thermal oxidizer soil vapor extraction system is.

The amendment application for the RECLAIM/Title V facility permit is under application no. 464771.

The Shell Carson facility will extract vapors from contaminated soil at the facility. Extracted vapors are sent to the regenerative thermal oxidizer for thermal destruction. Typical organic compounds found in the extracted vapors include, but are not limited to methane, carbon monoxide, ethane, ethane, benzene, toluene, ethylbenzene, xylenes, 1,3,5 trimethylbenzene, 1,2,4 trimethylbenzene, hexane, cyclohexane, heptane, cumene, propylbenzene, acetone, carbon disulfide, isopropanol, methyl ethyl ketone, tetrahydrofuran, 4 ethyltoluene, ethanol, tert-butyl alcohol, isopropylether, 2,2,4 trimethylpentene, and MTBE (see Attachment C for extraction composition and emissions.)

OPERATING HOURS:

The vapor extraction system will operate continuously, 24 hours per day, 365 days per year, excluding periods of maintenance or breakdown.

EMISSIONS CALCULATIONS

The applicant submitted data regarding the composition and concentrations of the gas that will be extracted. (See additional information submitted by the applicant in this file. The total THC submitted by the applicant is approximately 14,000 ppmv (13,854 ppmv), however the majority of the composition gas is methane which is not considered a VOC per Rule 102. Therefore the methane is exempt from offsetting.

The applicant submitted a letter stating that this equipment will achieve a destruction greater than 99.8percent and will accept a limit of 25 ppmv, measured as methane. This limit of 25 ppmv, measured as will be used as the maximum allowable limit, and will also be used for the emission calculations for this equipment.

Alliance Corporation, the regenerative thermal oxidizer manufacturer, submitted a letter dated October 8, 2007, (included in the file) explaining why in this case a low-NOx burner would not be feasible. To summarize their reasoning, A low NOx burner was used in a conventional thermal oxidizer, 10 times more fuel would be required to have the same destruction efficiency. Low NOx burners also require increased excess air and again more gas would be required. By using a Regenerative Thermal Oxidizer, the applicant has indicated that the btu demand is reduced by 95% because of the specialized ceramic heat exchange media used in this system. Because of the reasons mentioned above, the burner used in this system will be deemed acceptable.

Emissions from the Regenerative Thermal Oxidizer Combustion*:**

The combustion emissions will be from as follows.

Given:
24 hours/day
7 days/week
52 weeks/year

1,600,000 btu/hr burner rating
14,000 ppmv inlet measured as methane
99.8% control

Criteria pollutants	Emission Factors	Units	Hourly Emissions (lb/hr)	Daily Emissions (lb/day)	30 day Emissions (lb/day)	Yearly Emissions Lbs/year
VOC*	7	lb/mmscf	0.011	0.26	0	93
NOX**	130	lb/mmscf	0.198	4.75	5	1735
SOX*	0.83	lb/mmscf	0.001	0.03	0	11

CO**	35	lb/mmscf	0.053	1.28	1	467
PM-10*	7.5	lb/mmscf	0.011	0.27	0	100

*EF based on 2003-2004 AER default emission factors for natural gas combustion
** EF provided by the burner vendor.
Gas heating value:1050 btu/scf
Additional VOC emissions result from incomplete combustion of soil VOC vapors. These are quantified below using a control efficiency of 99.8%.
***The regenerative thermal oxidizer is exempt from air quality modeling and offset requirements since it is being installed and operated for the sole purpose of controlling pollutant emissions. Under Rule 1304(a)(5) an exemption from air quality modeling and emissions offsets is granted for sources solely modified to reduce the issuance of air contaminants.

Emissions from Extracted gas:

VOC concentration at the exhaust stack

The exhaust emissions for VOC shall not exceed 25 ppmv measured as methane based on data submitted by the applicant.

lb/hr = $ppm_0 \times 10^{-6}$ x scfm x (1 lb mole/379 ft3) x MW x 60 min

	pollutant	ppmv	scfm	MW	lbs/hr	lbs/day	lbs/year	tons/year
VOC	R1, Thermal	14000.0	6000	16.04	213.302	5119.26	1863410	931.70
	R2, Thermal	25.00	6000	16.04	0.381	9.14	3328	1.66

Total HC	Hourly R1	Hourly R2	Daily R1	Daily R2	30 day av R2	30 day NSR R2	Annual R2
	lbs/hr	lbs/hr	lbs/day	lbs/day	Lbs/day	lbs/day	Lbs/yr
Combustion	0.011	0.011	0.26	0.26	0.26	0.26	93
Extraction	213.302	0.381	5119.26	9.14	9.14	9.14	3337
Total:	213.313	0.392	5119.51	9.40	9.40	9.40	3430

SOX RECLAIM

This facility is a SOx RECLAIM facility and based on information provided by the applicant. Carbon disulfide which is a precursor is in the inlet exhaust gas stream and the exhaust gas stream will have a percentage of SOx. SOx RTCs will be required and to determine the SOx emissions, a SOx emissions factor determined below will be used.

SOX EMISSION FACTOR

Sulfur concentration of the extract gas vapors is variable and can only be estimated. Analytical data collected prior to permitting detected small amounts of carbon disulfide (a weighted average of ~1.2 ppmv). This concentration is only an estimate and may vary depending on process conditions. With this in mind, Shell proposes the following:

1. Apply a 25% buffer to the CS2 concentration data provided with the permit application (i.e., 1.2 * 1.25 = 1.5 ppmv).
2. Accept a calculated SOx emissions factor of 0.506 lbs SOx/mmscf of processed extract gases (calculated as indicated in the equation below):

$$\frac{1.5\text{ft}^3\text{ CS2}}{\text{mmft}^3\text{ Extract Gas}} \cdot \frac{\text{lbmole CS2}}{379.4\text{ ft}^3\text{ CS2}} \cdot \frac{2\text{ lbmol SOx}}{\text{lbmol CS2}} \cdot \frac{64\text{ lb SOx}}{\text{lbmol SOx}} = 0.506\text{ lbs SOx/mmft}^3\text{ Extract Gas}$$

Emission Factor used for SOx from process gas
6000 scfm
36,000 cu.. ft./hr
0.506 lbs/mmcu.ft. (supplied by applicant)

Hourly Emissions
SOx = 0.506 lbs/mmscf x 360000 cu. ft./hr = 0.182 lbs/hr

Daily

SOx = 0.182 lbs/hr x 24 hrs/day = 4.37 lbs/day

Total SOx	Hourly	Hourly	Daily	Daily	30 day av	30 day NSR	Annual
	R1	R2	R1	R2	R2	R2	R2
	lbs/hr	lbs/hr	lbs/day	lbs/day	Lbs/day	lbs/day	Lbs/yr
Combustion	0.001	0.001	0.03	0.03	0.03	0.03	11
Extraction	0.182	0.182	4.37	4.37	4.37	4.37	1595
Total:	0.183	0.183	4.40	4.40	4.40	4.40	1606

CURRENT FACILITY TOTALS

The summary of the previous and current emissions are shown below. Also if and type of offsets are required is explained.

Criteria pollutants	Current RECLAIM Allocation lbs/year *1	PTE lbs/day	Increase lbs/day	New Totals lb/day	New Total lbs/year	RTCs Required	Offset Comments
VOC		1791	9*	1800	657,000		Offsets are required and the facility currently has 58 lbs of ERC's and 11 lbs will be used for this application ERC AQ006212 *1
NOX	28052	81	5	86	31,390	3338	RTCs have been provided in this amount.
SOX	300	0	4.4	4.4	1606	1306	RTCs have been provided in this amount.
CO		17	1	18	6570		No because CO is attainment
PM-10		3	0	3	1095		No

*** 1 -** This number is based on the RECLAIM annual emission allocations from 7/2009-6/2010
*** 2 -** A 1.2 factor was used to determine the ERC amount.

Fugitive Emissions

~~Based~~ Fugitive components operate under negative pressure and as such will not release contaminants into the atmosphere

AIR TOXIC RISK ASSESSMENT

Emissions of Toxics Air Contaminants(TAC) also result from two sources , combustion of natural gas and incomplete combustion of TACs in the soil vapor. These are summarized below
Several representative samples were taken from the Carson facility extraction wells and analyzed in a laboratory to estimate toxic air pollutant (TAC) and hazardous air pollutant (HAP) content of the extracted vapors. Based on the flowrate of the extracted vapors and an overall control efficiency of ≥99.8%, emissions from the operation of this unit have been calculated (See Attachment D) and are summarized in the table below.

Tier 1

This equipment did not pass a tier I and II therefore a tier III was performed.

From applicant data.

SCREENING INPUT

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Table A

modeling emissions rate	1.00	lb/hr
modeling emissions rate	4.38	tons/yr
Max hr/dy	24	hr/day
day per week	7	dy/wk
wk/yr	52	wk/yr
MODELING RESULTS -MAX ONE HOUR		
Distance residence	300.00	meter
Max. 1-hour Conc. Residence	5.15	ug/m3
Annualized Conc. Residence	0.41	ug/m3
Distance Commerical	100.00	meter
Max. 1-hour Conc. Commerical	8.87	ug/m3
Annualized Conc. Commercial	0.71	ug/m3

A/N:	464772
Fac:	Equilon

1. Stack Data		**Units**
Hour/Day	24	hr/day
Day/Week	7	day/wk
Week/Year	52	wk/yr
Emission Units	PPMv	
Exhaust Flow Rate	6000	scfm
Control Efficiency	1.00	fraction range 0-1
Does source have TBACT?	YES	
Point or Volume Source ?	P	p or v
Stack Height or Building Height	30	feet
Area (For Volume Source Only)		ft^2
Distance-Residential	300	meters
Distance-Commercial	100	meters
Meteorological Station	Long Beach	

Source Type:	O - Other
Screening Mode	YES

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Emission Units	PPMv	
Source output capacity	n/a	n/a

Compound	PPMv	Molecular Weight	R1 - uncontrolled lbs/hr	Efficiency Factor fraction range 0-1	R2 - controlled lbs/hr
Benzene (including benzene from gasoline)	175	78.11	12.98398		0.12984
Toluene (methyl benzene)	12.8	92.13	1.120145		0.01120
Ethyl benzene	5.5	106.16	0.554609		0.00555
Xylenes (isomers and mixtures)	7.8	106.2	0.786833		0.00787
Hexane (n-)	0.8	86.18	0.065488		0.00065
Carbon disulfide	0.13	76.14	0.009402		0.00009
Isopropyl alcohol	3.15	60.09	0.179794		0.00180
Methyl ethyl ketone	0.075	72.12	0.005138		0.00005
Methyl tertiary-butyl ether	0.091	88.15	0.00762		0.00008

Emission Calculations

Compound	uncontrolled R1-lb/hr	controlled R2-lb/hr	R2-lb/yr	R2-ton/yr
Benzene (including benzene from gasoline)	1.30E+01	1.30E-01	1134.281	0.56714
Toluene (methyl benzene)	1.12E+00	1.12E-02	97.85589	0.048928
Ethyl benzene	5.55E-01	5.55E-03	48.45064	0.024225
Xylenes (isomers and mixtures)	7.87E-01	7.87E-03	68.73771	0.034369
Hexane (n-)	6.55E-02	6.55E-04	5.721006	0.002861
Carbon disulfide	9.40E-03	9.40E-05	0.821357	0.000411
Isopropyl alcohol	1.80E-01	1.80E-03	15.70683	0.007853
Methyl ethyl ketone	5.14E-03	5.14E-05	0.448841	0.000224
Methyl tertiary-butyl ether	7.62E-03	7.62E-05	0.66564	0.000333

MICR

MICR = CP (mg/(kg-day))^-1 * Q (ton/yr) * (X/Q) * Afann * Met * DBR * EVF * 1.E-6 * MP

Compound	Residential	Commercial
Benzene (including benzene from gasoline)	1.55E-06	5.20E-07
Toluene (methyl benzene)		
Ethyl benzene		
Xylenes (isomers and mixtures)		
Hexane (n-)		
Carbon disulfide		
Isopropyl alcohol		
Methyl ethyl ketone		
Methyl tertiary-butyl ether	1.63E-11	5.50E-12
Total	**1.55E-06**	**5.20E-07**
	Pass	**Pass**

Hazard Index

HIA = [Q(lb/hr) * (X/Q)max] * AF / Acute REL

HIC = [Q(ton/yr) * (X/Q) * MET * MP] / Chronic REL

Target Organs	**Acute**	**Chronic**
Alimentary system (liver) - AL		9.85E-07
Bones and teeth - BN		
Cardiovascular system - CV		
Developmental - DEV	3.87E-04	7.80E-04
Endocrine system - END		9.82E-07
Eye	5.44E-06	3.37E-09
Hematopoietic system - HEM	3.85E-04	7.66E-04
Immune system - IMM	3.85E-04	
Kidney - KID		1.08E-06
Nervous system - NS	1.40E-06	7.83E-04
Reproductive system - REP	3.87E-04	4.16E-08
Respiratory system - RES	5.44E-06	1.72E-05
Skin		

This equipment has a MICR of less than 10 in a million, meets the requirement of the Cancer burden, and the HIC and HIA is less than one for all systems.

RULES EVALUATION

Regulation II- PERMITS

Rule 212: Standards for approving

The proposed construction meet all criteria in Rule 212 for permit approval. The equipment is designed so it can be expected to operate without emitting air contaminants in violation of sections 41700, 41701 and 44300 of the State Health and Safety Code or in violation of AQMD's Rules and Regulations. The proposed soil vapor extraction and treatment system does not constitute a significant project because 1) the new and modified permit unit is not located within 1000 feet of a school. 2) The project will result in ROG emissions increase of 9 lb/day, therefore it does not exceed the daily maximum specified in subdivision (g) of Rule 212 (30 lbs/day); and 3) The new and modified permit unit does not have an increased cancer risk greater than, or equal to, one in a million (1x 10-6) during a lifetime of 70 years or pose a risk of nuisance. Therefore, public notice is not required for this project and the requirements of Rule 212 are met.

Regulation IV PROHIBITIONS

Rule 401: ***Visible Emissions***

Visible emissions are not expected under normal operating conditions of the soil vapor extraction and treatment system and the regenerative thermal oxidizer.

Rule 402: ***Nuisance***

No Nuisance complaints are expected provided that the operation is conducted according to design. Compliance with Rule 402 is expected.

Rule 404: ***Particulate Matter-Concentration***

Based evaluating similar equipment, this equipment will comply with this rule.

Rule 407: ***Liquid and Gaseous Air Contaminants***

Compliance with Rule 407 is expected, as the emissions of CO are less than 2000 ppm and the Sox emissions are less than 500 ppm as stated in the rule. Compliance with this rule is expected.

Regulation X -NATIONAL EMISSION STANDARD FOR HAZARDOUS AIR POLLUTANTS (NESHAPS)

40CFR Part 63:National Emissions Standards for Hazardous air Pollutants for Site Remediation

The soil vapor extraction system is a remediation material management unit (transfer system) and a process vent (VES/thermal oxidizer) as defined in 40 CFR Part 63 Subpart GGGGG- National Emissions Standards for Hazardous air Pollutants for Site Remediation. Compliance for each of these affected sources is discussed as follows:

Process Vent (VES and thermal oxidizer): The proposed soil vapor extraction system will meet the required 95% HAP reduction efficiency requirements of this regulation. The facility will follow all monitoring recordkeeping and reporting requirements as described in this regulation.
Remediation material management Unit (transfer system): The facility will follow all monitoring recordkeeping and reporting requirements as described in this regulation.

Regulation XI - SOURCE SPECIFIC STANDARDS

Rule 1166: VOC Emissions from decontamination of soil

This Rule sets forth requirements for the control of VOC from excavating, grading, handling, and treatment of VOC contaminated soil. The rule requires that a person treating VOC contaminated soil obtain a permit to construct and operate such equipment, utilize BACT in all segments of treatment, and one of the following: installation and operation of an underground VOC from excavated soil on-site, any other approved VOC contaminated soil control measure. The Thermal oxidizer is used to control VOC laden soil vapor in compliance with requirements of this rule.

Rule 1173: Fugitive Emissions of volatile Organic Compounds

This Rule specifies leak control, identification, operator inspection, maintenance, and recordkeeping requirements for valves pumps, compressors, pressure relief valves, and other components from which fugitive VOC emissions may emanate. Since this project soil vapor extraction and treatment system and associated fugitive components will not contain VOC in excess of 10% by weight, the fugitive components are exempt from the requirements of this Rule under rule 1173 (l) (1) (D)

Regulation XIII: NEW SOURCE REVIEW
RULE1303: REQUIREMENTS

This rule contains requirements including the application of BACT, conducting air quality modeling and assessing emissions offsets. Regenerative thermal oxidizer achieving an estimated VOC destruction of 99.8% is considered BACT for this application. The regenerative thermal oxidizer is exempt from air quality modeling and offset requirements since it is being installed and operated for the sole purpose of controlling pollutant emissions. Under Rule 1304(a)(5) an exemption from air quality modeling and emissions offsets is granted for sources solely modified to reduce the issuance of air contaminants.

A low NOx burner was considered for BACT but based on information provided by the applicant, the burner would have to be 10 times larger to have the same efficiency, therefore the burner used for this application will be considered BACT.

The combined emissions from the destructed vapors of the soil extraction system and the fugitive emissions are 9 lbs/day of VOC emissions. Offsets are required for VOC emissions and the applicant has provided 11 lbs/day (including the 1.2 factor) of offsets for this equipment by using ERC AQ006212 which is currently for 58 lbs/day of VOC emissions.

Regulation XIV - TOXICS AND OTHER NON-CRITERIA POLLUTANTS

Rule 1401: New Source Review of Carcinogenic Air Contaminants

This rule requires permit applicants to assess the cancer risks due to the cumulative emission impacts of new/modified sources in their facility. . This emission increase from the Bioreactors contains toxic compounds, which are subject to Rule 1401 analysis. A Tier 1 health risk analysis results in hazard indices of less than 1: therefore, this project complies with Rule 1401.

Reg XX: REGIONAL CLEAN AIR INCENTIVES MARKET (RECLAIM)

Equilon/ Shell Distribution facility is a RECLAIM facility. Because this equipment emits RECLAIM NOx and SOx pollutants, it is subject to Reg XX. NOX and SOX RECLAIM Emissions apply for this equipment. Based on the RECLAIM annual emission allocation for NOx of 28,052 lbs/year and the above evaluation, an additional amount of 3338 lbs/year of NOx RTCs are required for a total of 31,390 lbs/year. The applicant has provided these RTCs for this equipment.

OR

The facility allocation for 2009 is 28,052 lbs/yr and their historic yearly emissions has been less than 3000 lb/year. They have enough Existing RTC to cover the new Unit.

Based on the RECLAIM annual emission allocation for SOx of 300 lbs/year and the above evaluation, an additional amount of 1306 lbs/year of SOx RTCs are required for a total of 1,606 lbs/year. The applicant has provided these RTCs for this equipment.

Reg XXX: Title V Permits

The Title V permit has been issued for this facility, and the necessary sections will be amended with the necessary revisions under application 464771.

CEQA California Environmental Quality ACT

CEQA requires that the environmental impacts of proposed projects be evaluated and that feasible methods to reduce, avoid or eliminate identified significant adverse impacts of these projects be considered. The CEQA Applicability Form (400-CEQA) submitted indicates that

the project does not have any impacts which trigger the preparation of a CEQA document. The expected impacts of the project on the environment are not significant: therefore a CEQA analysis is not required.

RECOMMENDATIONS

This equipment is expected to comply with all applicable District Rules and Regulations. Therefore, a Permit to Construct is recommended subject to the conditions in RECLAIM permit.