EVALUATION FOR PERMIT TO CONSTRUCT/OPERATE

APPLICANT'S NAME: LA COUNTY SANITATION DISTRICTS (SPADRA)

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EQUIPMENT DESCRIPTION:

Fuel Storage and Dispensing Facility Consisting of:

1) 1 - GASOLINE ABOVEGROUND STORAGE TANK, CONVAULT AST (VR-302-E), RECTANGULAR, 11' - 0" L. X 5' - 8" W. X 4' - 0" H., 1,000 GALLON CAPACITY, EQUIPPED WITH A HUSKY 5885 PRESSURE/VACUUM RELIEF VALVE, AND AN OPW PHASE I ENHANCED VAPOR RECOVERY (EVR) SYSTEM (VR-401-C).
2) 1 - GASOLINE NOZZLE DISPENSING 1 PRODUCT, EQUIPPED WITH PHASE II VAPOR RECOVERY SYSTEM, BALANCE RETRACTOR (G-70-52-AM).

BACKGROUND HISTORY:

This application was submitted for an alteration on 1/10/2014. The planned installation date will be as soon as the permit is granted. The alteration involves the removal of the existing Phase I vapor recovery system and replacing it with an OPW Phase I EVR system. The facility's proposed normal operating schedule is as follows: 9 hours/day, 6 days/week, 30 days/month and 52 weeks/year. This is a governmental gasoline storage and dispensing facility. The facility has received 11 Notices to Comply (A10763, A10764, A10767, A10784, A26969, C57117, C57119, C57120, C57149, C60838, and D24103) from the District. No record of Notice of Violation was found in the Inspector Report files. This application was not submitted as a result of a notice. The applicant has since remedied these notices. An application, A/N 220689 was previously filed with the District for this equipment.

PROCESS DESCRIPTION:

The gasoline storage and dispensing facility is used to store and dispense one grade of gasoline. This facility is equipped with CARB certified Phase I and Phase II vapor controls, which complies with Rule 461. Furthermore, these vapor controls are considered to be T-BACT, which complies with Rule 1401. Finally, the project will not result in a net emission increase and thus will comply with Reg. XIII.

EMISSION CALCULATIONS:

The hydrocarbon and benzene emissions from storage tank filling and motor vehicle refueling operations are estimated by using appropriate emission factors summarized in the following table. These emission factors were developed by the Districts Planning Division.

I. Emission Factors and Control Efficiencies

The following table summarizes the uncontrolled ROG emission factors in pounds per 1,000 gallons of gasoline throughput, benzene, ethylbenzene and naphthalene content of gasoline, and control effiencies:

Emission Factors and Control Efficiencies for Aboveground Tanks

	Loading (a)	Breathing	Refueling (b)	Spillage
ROG				
Uncontrolled ROG Emission Factors (lbs/1000 gal)	8.40	0.21	3.95	0.24 (c)
Control Efficiency	95.000%	75.000%	94.732%	0%
controlled ROG Emission Factors (lbs/1000 gal)	0.420	0.053	0.208	0.240
Toxic Air Contaminants (TACs) wt% (d)				
Benzene	0.300%	0.300%	0.300%	1.000%
Naphthalene	0%	0%	0%	0.140%

(a) Revised from 90% assumed by CAPCOA to 95% based on SCAQMD's finding
(b) Revised from 99% assumed by CAPCOA to ~95% based on SCAQMD's finding.
(c) Spillage emission factor was revised from 0.42 to 0.24 based on EVR Regulation.
(d) Specification profiles for TACs are from http://www.arb.ca.gov/ei/speciate/speciate.htm

II. MICR Calculations

The following equations are used for calculating ROG emissions and MICR from gasoline dispensing operations.

Net Increased Throughput = Proposed throughput - Total permitted throughput prior to the modification or average throughput for the last two years

ROG, uncontrolled = EF (lbs-ROG/1,000 gals gas) x Proposed gas throughput (1,000 gals/month)
ROG, controlled = ROG, uncontrolled x Control Efficiency

Benzene, uncontrolled = ROG, uncontrolled x Benzene Content in gasoline
Benzene, controlled = ROG, controlled x Benzene Content in gasoline

Naphthalene, uncontrolled = ROG, uncontrolled x Naphthalene Content in gasoline
Naphthalene, controlled = ROG, controlled x Naphthalene Content in gasoline

Total Emission Increase - Aboveground Tanks

Proposed GA Throughput (Gals/Month)	2000
Average GA Throughput (Gals/Month)	2000
Net GA Throughput (Gals/Month)	0

The Total Emissions are as follows:

Emission (lbs/month)		Process Type				Total ROG
		Loading	Breathing	Refueling	Spillage	
ROG	R1	16.800	0.424	7.896	0.480	25.600
	R2	0.840	0.106	0.416	0.480	1.842
Benzene	R1	0.050	0.000	0.024	0.005	0.079
	R2	0.000	0.000	0.000	0.005	0.005
Naphthalene	R1	0.000	0.000	0.000	0.000	0.000
	R2	0.000	0.000	0.000	0.000	0.000

III. Summary of Emissions

	Total ROG		Total Benzene Ethyl Benzene & Naphthalene	
	R1	R2	R1	R2
Monthly (lb/mo)	25.60	1.84	0.080	0.010
30-day average (lb/day)	0.85	0.06	0.000	0.000
Hourly (lb/hr)	0.04	0.00	0.000	0.000

CANCER RISK ASSESSMENT:

From gasoline storage and dispensing operations, benzene is the only toxic emittant that has significant effect to the maximum individual cancer risk (MICR). Using the CAPCOA provided risk values, the staff in the District's Planning Division prepared reference MICR's for different scenarios, i.e., for underground and aboveground tanks, and for residence and workers. These MICR's are tabulated for different downwind distances from a permit unit that is located in West LA with annual gasoline throughput of one million gallons.

Once a reference MICR is determined for a given downwind distance, it has to be adjusted by using the MET factor to reflect the meteorological conditions of a permit unit's location and the actual fuel throughput of a permit unit.

The following is the parameters used for calculating the MICR for this application. The distances are from the center of emission source to the nearest receptor areas:

Tank Type	= Aboveground
GA Throughput (MMGals-GA/Year)	= 0
Facility Zone	= 10
MET Factor	= 1.14
Downwind Distance to Residence (Meters)	= 304
Downwind Distance to Workers (Meters)	= 55

A reference MICR is determined for a given downwind distance in the following manner:
1. If the downwind distance is less than or equal to mimimum pre-defined distance, use the MICR at the minimum distance.
2. If the downwind distance is greater than or equal to maximum pre-defined distance, use the MICR at the maximum distance.
3. Find MICRs two distances, i.e., one for nearest higher distance and the other one for nearest lower distance, and interpolate them.

MICR, ref = MICR, low + [(MICR, high -MICR, low) / (High Distance - Low Distance)]
* (Downwind Distance - Low Distance)

where,

MICR, ref	Reference MICR at a given downwind distance
MICR, low	MICR at a lower interpolate distance
MICR, high	MICR at a higher interpolate distance
Low Distance	Lower interpolate distance
High Distance	Higher interpolate distance
Downwind Dist	Given downwind distance

MICR - Aboveground Tanks
MICR for Residences
Reference MICR [in-a-million / (1 MMGal-GA/Year)]
= 0.043

Adjusted MICR (in-a-million)
= (Reference MICR) x (MET factor) x (Annual Fuel Throughput)
= 0.043 x 1.14 x 0 = 0

MICR for Workers
Reference MICR [in-a-million / (1 MMGal-GA/Year)]
= 0.212

Adjusted MICR (in-a-million)
= (Reference MICR) x (MET factor) x (Annual Fuel Throughput)
= 0.212 x 1.14 x 0 = 0

Modeling Assumptions:
The modeling assumes the generic station operates 24 hours/day, with 80% of the emissions occurring between 6:00 AM and 8:00 PM, and the remaining 20% of the emissions occurring between 8:00 PM and 6:00 AM. In addition, the refueling and spillage emissions were modeled as volume sources and the loading and breathing emissions as point sources.

Risk Calculations:
The revised risk calculation for 1,000,000 gallons a year throughput for the different distances (20, 25, 30.....1000 meters) are based on the inhalation cancer potency factor of 0.1/(mg/kg-day) for benzene, 0.0087/(mg/kg-day) for ethyl benzene, and 0.12/(mg/kg-day) for naphthalene.

RULES EVALUATION:

Rule 212 There is no school located within 1,000-feet from this facility. The maximum individual cancer risk is less than ten-in-one million. Public notice is exempt.

Rule 461 The gasoline tank will be equipped with CARB certified Phase I vapor controls and will be installed per CARB executive order VR-4014. The tank will also be equipped with a submerged fill tube and a pressure vacuum relief valve. The nozzle serving the gasoline tank was equipped with CARB certified Phase II vapor controls and was installed per CARB executive order G-70-52. Therefore, this facility complies with Rule 461.

Rule 1170 The facility does not have any underground storage tanks. Therefore, it is exempted from the provisions of this rule.

Rule 1401 The alteration will not result in a net increase of toxic emissions and therefore is exempt from further rule evaluation per section (g)(1)(B). The facility complies with this rule.

Rule 1401.1 The rule DOES NOT apply as facility is an existing facility.

Rule REGXIII No net emission increase. BACT and Offset are not required. No modeling required for VOCs. Complies with Rule. This facility complies with Rule 1313 since the operator has installed both Phase I and Phase II vapor recovery equipment, which meets current BACT requirements. Furthermore, this facility will not have a maximum monthly gasoline throughput condition since this equipment has been in continuous operation prior to the adoption of this rule.

Reference MICR Chart - Above Ground Tanks

MICR for Residential Areas - Above Ground Tanks per One Million Gallons for Gasoline

Dist(m)	20	25	30	40	50	60	70	75	80	90
MICR	5.440	3.896	2.931	1.823	1.249	0.919	0.706	0.622	0.559	0.452

Dist(m)	100	125	150	175	200	250	300	350	400	450
MICR	0.372	0.242	0.169	0.120	0.091	0.058	0.044	0.032	0.026	0.021

Dist(m)	500	600	700	800	900	1000				
MICR	0.018	0.013	0.010	0.008	0.007	0.006				

MICR for Commercial Areas - Above Ground Tanks per One Million Gallons for Gasoline

Dist(m)	20	25	30	40	50	60	70	75	80	90
MICR	1.062	0.761	0.572	0.356	0.244	0.179	0.138	0.121	0.109	0.088

Dist(m)	100	125	150	175	200	250	300	350	400	450
MICR	0.073	0.047	0.033	0.024	0.018	0.011	0.008	0.006	0.005	0.004

Dist(m)	500	600	700	800	900	1000				
MICR	0.003	0.003	0.002	0.002	0.001	0.001				

MET Factors for Facility Zones (Aboveground Tanks)

Zone	01	02	03	04	05	06	07	08	09	10	11	12
MET	0.86	1.00	0.90	1.05	0.80	0.95	0.89	1.04	1.04	1.14	0.80	1.18

Zone	13	15	16	17	18	19	20	21	22	23	24	25
MET	0.70	0.70	0.96	0.90	1.08	0.70	1.08	0.70	0.91	0.91	0.81	0.79

Zone	26	27	28	29	30	31	32	33	34	35	36	37
MET	0.79	0.79	0.81	0.83	1.00	1.00	1.04	1.04	1.06	1.36	1.04	1.01

Zone	38	39										
MET	1.36	0.00										

CONCLUSION & RECOMMENDATIONS:

This application is expected to comply with all applicable District Rules and Regulations. A Permit to Construct/Operate is recommended subject to the conditions as outlined in the sample permit.