

ANANIA GEOLOGIC ENGINEERING

90 FEB 29 AM 11:10

February 28, 1990

Mr. Slamovich
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

RE: Vapor Recovery System Permit Report

AGE Project Number: 004-88-059
Application Number: 4173


Dear Mr. Slamovich:

Enclosed are the laboratory results for the vapor recovery system operation started on February 14, 1990 as per written notification from the Bay Area Air Quality Management District. The samples were collected on February 14-16, 1990 and were analyzed by Superior Analytical Laboratories and Chromalab Incorporated. Sample numbers 12201, 5748, 4414 refer to vapor recovery system 2 emission and sample numbers 12202, 4415, 5779 refer to vapor recovery system 3 emission. Enclosed is also the calculations for the emission rates for both systems in pounds per day.

If you have any questions concerning this data please feel free to contact Jim Wallace or Todd Galati at (916) 631-0154.

Sincerely,

ANANIA GEOLOGIC ENGINEERING


Todd M. Galati
Project Manager


Jim Wallace
Senior Project Manager

Enclosures

cc: Merle Wood, Carnation Company
James Person, Carnation Company
✓ Katherine Chesick, Regional Water Quality Control Board

SUPERIOR ANALYTICAL LABORATORY, INC.

1555 BURKE, UNIT 1 • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 51704
CLIENT: ANANIA GEOLOGIC ENGR.
CLIENT JOB NO.: 004-88-059

DATE RECEIVED: 02/15/90
DATE ANALYSED: 02/18/90

**ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 5030 and 8015**

LAB #	Sample Identification	Concentration Gasoline Range
1	12201 1430 HRS	ND < 30 ppm
2	12220 1440 HRS	ND < 30 ppm

Minimum Detection Limit for Gasoline in Air : 30 ppm
Concentration is expressed for standard temperature and pressure and assuming an average molecular weight for hexane.
Samples were analysed after thermal desorption concentration.

QAQC Summary:

Daily Standard RPD Gasoline = <15%
MS/MSD Average Recovery =89 %: Duplicate RPD < 3 %

Richard Srna, Ph.D.

Laboratory Director

SUPERIOR ANALYTICAL LABORATORY, INC.

1555 BURKE, UNIT 1 • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 51704
 CLIENT: ANANIA GEOLOGIC ENGR.
 CLIENT JOB NO.: 004-88-059

DATE RECEIVED: 2/15/90
 DATE ANALYSED: 2/18/90

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
 by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Benzene	Toluene	Ethyl Benzene	Xylenes
		Concentrations in ppb in air			
1	12201 1430 HRS	ND< 85	ND< 250	ND< 65	ND< 250
2	12202 1440 HRS	ND<85	ND< 250	ND< 65	ND< 250

Minimum Detection Limits in air:

Benzene: 85 ppb Ethyl Benzene: 65 ppb

Toluene: 250 ppb; Xylenes: 250ppb

Concentrations assume standard temperature and pressure.

QAQC Summary:

Daily Standards RPD = <15%

MS/MSD Average Recovery = 90 % : Duplicate RPD = < 3 %

Richard Srna, Ph.D.

 Laboratory Director

OUTSTANDING QUALITY AND SERVICE

PROJECT NO. 004-88-059		LAB REPORT NO.		NO. OF CON- TAINERS	ANALYSES										REMARKS	
P.O. NO.		SAMPLERS: (signature) Robyn McKinney			SAMPLE TYPE			TPH	BOD/BTEX							
LAB LOG NO.	DATE	TIME	SAMPLE I.D.		SOIL		AIR WATER									
					COMP	GRAB										
	2/15/90	1430	12201				X	X	X							
	2/15/90	1400	12202				X	X	X							
RELINQUISHED BY: (signature) Robyn McKinney		DATE/TIME 2/15/90 1930		RECEIVED BY: (signature)			REMARKS: 24 hour TAT					SEND RESULTS TO:				
RELINQUISHED BY: (signature)		DATE/TIME		RECEIVED BY: (signature)								ATTN:				
RELINQUISHED BY: (signature)		DATE/TIME		RECEIVED BY: (signature) <i>[Signature]</i> 2/15/90								PHONE NO. (916) 451-0921				

CHAIN OF CUSTODY

SUPERIOR ANALYTICAL LABORATORY, INC.

1385 FAIRFAX ST., STE. D. • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 51698
 CLIENT: ANANIA GEOLOGIC ENGR.
 CLIENT JOB NO.: 004-88-059

DATE RECEIVED: 02/14/90
 DATE ANALYSED: 02/15/90

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
 by Modified EPA SW-846 Method 5030 and 8015


LAB #	Sample Identification	Concentration Gasoline Range
1	5748 1515 HRS	ND < 30 ppm
2	5779 1530 HRS	ND < 30 ppm

Minimum Detection Limit for Gasoline in Air : 30 ppm
 Concentration is expressed for standard temperature and pressure and assuming an average molecular weight for hexane.
 Samples were analysed after thermal desorption concentration.

QAQC Summary:

Daily Standard RPD Gasoline = <15%
 MS/MSD Average Recovery =93 %: Duplicate RPD < 11 %

Richard Srna, Ph.D.



Laboratory Director

OUTSTANDING QUALITY AND SERVICE

SUPERIOR ANALYTICAL LABORATORY, INC.

1385 FAIRFAX ST., STE. D. • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 51698
 CLIENT: ANANIA GEOLOGIC ENGR.
 CLIENT JOB NO.: 004-88-059

DATE RECEIVED: 2/14/90
 DATE ANALYSED: 2/15/90

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
 by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Benzene	Toluene	Ethyl Benzene	Xylenes
		Concentrations in ppb in air			
1	5748 1515 HRS	ND< 85	425	ND< 65	830
2	5779 1539 HRS	275	340	ND< 65	ND< 250

Minimum Detection Limits in air:

Benzene: 85 ppb Ethyl Benzene: 65 ppb

Toluene: 250 ppb; Xylenes: 250ppb

Concentrations assume standard temperature and pressure.

QAQC Summary:

Daily Standards RPD = <15%

MS/MSD Average Recovery = 97 % : Duplicate RPD = < 4 %

Richard Srna, Ph.D.


 Laboratory Director

OUTSTANDING QUALITY AND SERVICE

PROJECT NO.		LAB REPORT NO.		NO. OF CONTAINERS	ANALYSES							REMARKS		
P.O. NO.		SAMPLERS: (signature)			SAMPLE TYPE			1/PH	BT/E					
LAB LOG NO.	DATE	TIME	SAMPLE I.D.		SOIL		air WATER							
					COMP	GRAB								
	2-11-90	1515	5748	1 bag			X	X	X					
	2-14-90	1530	5779 5749	1 bag			X	X	X					
RELINQUISHED BY: (signature)		DATE/TIME		RECEIVED BY: (signature)		REMARKS:						SEND RESULTS TO: AGE ATTN: Todd Galati 11300 Sunrize Park Dr Suite C Rancho Cordova Ca PHONE NO. (916) 455-0021 95742		
RELINQUISHED BY: (signature)		DATE/TIME		RECEIVED BY: (signature)										
RELINQUISHED BY: (signature)		DATE/TIME		RECEIVED BY: (signature)										

CHAIN OF CUSTODY

White- AGE Yellow- LAB Copy Pink- File

631-0134

CHROMALAB, INC.

Analytical Laboratory
Specializing In GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

February 22, 1990

ChromaLab File No.: 0290087

ANANIA GEOLOGIC ENGINEERING, INC.

Attn: Todd Galati

RE: Two rush air samples for Gasoline/BTEX analysis


Project Number: 004-88-059

Duration of Analysis: February 22, 1990

RESULTS:

Sample No.	Gasoline (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl Benzene (µg/L)	Total Xylenes (µg/L)
4414 UNIT 2	N.D.	N.D.	N.D.	N.D.	N.D.
4415 UNIT 3	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	101.5%	98.4%	96.1%	97.8%	97.6%
DETECTION LIMIT	30	85	250	65	250
METHOD OF ANALYSIS	MOD.8015	602	602	602	602

CHROMALAB, INC.


David Duong
Senior Chemist


Eric Tam
Laboratory Director

PROJECT NO. 004-78-059		LAB REPORT NO.		NO. OF CONTAINERS	ANALYSES										REMARKS			
P.O. NO.	SAMPLERS: (signature) <i>Joe R. Sambath</i>				SAMPLE TYPE			80.20		80.5-								
LAB LOG NO.	DATE	TIME	SAMPLE I.D.		SOIL	GRAV	WATER											
	2-21-90	14:57	716 4414 unit 2 1983	1				X	X									
	2-21-90	15:20	716 4415 unit 3 1983	1				X	X									24 hrs TRT
RELINQUISHED BY: (signature) <i>Joe R. Sambath</i>		DATE/TIME 2-21-90 14:57		RECEIVED BY: (signature) <i>Maddie N...</i>			REMARKS: 24 HRS TRT VERBAL RESULTS PLEASE				SEND RESULTS TO: TODD GALATI ATTN: 11330 SUNRISE PK DRIVE RANCHO CORDOVA SUITE C CAL 95742 PHONE NO. (916) 451-0921							
RELINQUISHED BY: (signature) <i>Maddie N...</i>		DATE/TIME 02/22/90/0945		RECEIVED BY: (signature) <i>Maddie N...</i>														
RELINQUISHED BY: (signature)		DATE/TIME		RECEIVED BY: (signature)														

CHAIN OF CUSTODY

White- AGE Yellow - LAB Copy Pink- File

916 - 631 - 0154

PROJECT NO. 004-88-059

PROJECT OAKLAND REVIEWED BY _____ DATE _____

SUBJECT VAPOR RECOVERY SYSTEM #2 EMISSION CALCULATIONS BY TMG DATE 2/20/90

FLOW RATE : 125 FT³/MIN @ 2000 RPM
 MOLECULAR WEIGHT OF BENZENE : 78 g/mol
 OPERATION OF SYSTEM : 10 HR/DAY

SAMPLE # 12201 :
 BENZENE CONCENTRATION < 85 PPB ⇒ ASSUME 85 PPB

CALCULATION SEQUENCE:

$PV = nRT$ ⇒ IDEAL GAS LAW
 $P = 1 \text{ ATM}$
 $R = 0.0821 \frac{\text{L} \cdot \text{ATM}}{\text{mol} \cdot ^\circ\text{K}}$ = IDEAL LAW GAS CONSTANT
 $T = 20^\circ\text{C} = 293^\circ\text{K}$
 $n = \frac{m}{\text{MW}} = \frac{g}{78 \text{ g/mol}}$

REARRANGING IDEAL GAS LAW:

$V = \left(\frac{g}{\text{MW}}\right)(R)(T)$

$V(\#12201 - \text{BENZENE}) = \frac{85 \text{ PPB}}{1 \times 10^9 \frac{\text{PPB}}{\text{L}}} = 8.5 \times 10^{-8} \text{ L}$

SUBSTITUTING:

$8.5 \times 10^{-8} \text{ L} = \left(\frac{g}{78 \text{ g/mol}}\right) \left(0.0821 \frac{\text{L}}{\text{mol} \cdot ^\circ\text{K}}\right) (293^\circ\text{K})$
 $g = 2.76 \times 10^{-7} \frac{g}{\text{L}}$

EMISSION RATE (#12201) = $2.76 \times 10^{-7} \frac{g}{\text{L}} (28.31 \frac{\text{L}}{\text{ft}^3}) (125 \frac{\text{ft}^3}{\text{MIN}}) (60 \frac{\text{MIN}}{\text{HR}}) (10 \frac{\text{HR}}{\text{DAY}}) (0.0022 \frac{\text{kg}}{g})$
= 0.0013 lb/DAY

PROJECT NO. 004-88-059PROJECT OAKLAND REVIEWED BY _____ DATE _____SUBJECT VAPOR RECOVERY SYSTEM #2 EMISSION BY JMG DATE 2/20/90
CALCULATIONS

FOLLOWING THE SAME CALCULATION SEQUENCE:

SAMPLE # 5748 :

$$\text{EMISSION RATE} = \underline{0.0013 \text{ lb/DAY}}$$

(#5748)

SAMPLE # 4414 :

$$\text{EMISSION RATE} = \underline{0.0013 \text{ lb/DAY}}$$

(#4414)

PROJECT NO. 004-88-059

PROJECT OAKLAND REVIEWED BY _____ DATE _____

SUBJECT VAPOR RECOVERY SYSTEM #3 EMISSION BY TMG DATE 2/20/90
CALCULATIONS

FLOW RATE : 125 ft³/MIN @ 2000 RPM

MOLECULAR WEIGHT OF BENZENE : 78 g/mol

OPERATION OF SYSTEM : 10 HR/DAY

SAMPLE # 12202 :

BENZENE CONCENTRATION < 85 PPB ⇒ ASSUME 85 PPB

CALCULATION SEQUENCE :

$$PV = nRT \Rightarrow \text{IDEAL GAS LAW}$$

$$P = 1 \text{ ATM}$$

$$R = 0.0821 \frac{\text{L-ATM}}{\text{mol-}^\circ\text{K}} \Rightarrow \text{IDEAL GAS CONSTANT}$$

$$T = 20^\circ\text{C} = 293^\circ\text{K}$$

$$n = \text{mol} = \frac{g}{\text{MW}} = \frac{g}{78 \text{ g/mol}}$$

REARRANGING IDEAL GAS LAW :

$$V = \left(\frac{g}{\text{MW}} \right) (R)(T)$$

$$V (\#12202 - \text{BENZENE}) = \frac{85 \text{ PPB}}{1 \times 10^9 \frac{\text{PPB}}{\text{L}}} = 8.5 \times 10^{-8} \text{ L}$$

SUBSTITUTING :

$$8.5 \times 10^{-8} \text{ L} = \left(\frac{g}{78 \text{ g/mol}} \right) (0.0821 \frac{\text{L}}{\text{mol-}^\circ\text{K}}) (293^\circ\text{K})$$

$$g = 2.76 \times 10^{-7} \text{ g}$$

$$\text{EMISSION RATE} (\#12202) = 2.76 \times 10^{-7} \text{ g} (28.31 \frac{\text{g}}{\text{ft}^3}) (125 \text{ ft}^3/\text{MIN}) (60 \text{ MIN}/\text{HR}) (10 \text{ HR}/\text{DAY}) (0.0022 \text{ lb/g})$$

$$= \underline{0.0013 \text{ lb/DAY}}$$

PROJECT NO. 004-88-059PROJECT OAKLAND REVIEWED BY _____ DATE _____SUBJECT VAPOR RECOVERY SYSTEM #3 EMISSION CALCULATIONS BY TMG DATE 2/20/90

FOLLOWING THE SAME CALCULATION SEQUENCE:

SAMPLE # 4415

EMISSION RATE = 0.0013 lb/DAY

SAMPLE # 5779

EMISSION RATE = 0.004 lb/DAY