

 **CHEMWEST**  
ANALYTICAL LABORATORIES, INC.

January 23, 1989

RECEIVED JAN 26 1989

A.G.E.  
1447 35th Street  
Sacramento, CA 95816

Attention: Ms. Mary Scruggs

Subject: Report of Data - Case Number 3040

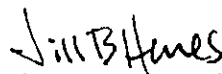
Dear Ms. Scruggs:

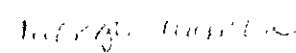
The technical staff at CHEMWEST is pleased to provide our report for the analyses you requested: Aromatic Volatile Organics - EPA Method 8020/602; TPH EXTN/GC-FID; and Total Organic Lead - DHS Method.

Ten samples (9 soils & 1 water) for Project Carnation Oakland, Project Number 004-88-059 were received January 6, 1989 in good condition. Results of the analyses along with the analytical methodology and appropriate reporting limits are presented on the following page(s).

Thank you for choosing CHEMWEST Laboratories. Should you have questions concerning this data report or the analytical methods employed, please do not hesitate to contact Toni Weeks, our Technical Service Representative or your project manager. We hope that you will consider CHEMWEST Laboratories for your future analytical support and service requirements.

Sincerely,

  
Jill B. Hehes, Ph.D.  
Vice President of Technical Services

  
and Margie Namba  
Project Manager

MN:ds

cc: Joel Bird, President  
File

## ANALYTICAL METHODOLOGY

### Aromatic Volatile Organics by Purge & Trap and GC-PID

#### WATER - Method 602 or 8020

A 5 ml sample volume, or 5 ml of a suitable dilution, is purged on a suitable purge and trap system with helium. The purged sample is analyzed on a Gas Chromatograph equipped with a Photoionization Detector (PID). A packed column is used to separate the compounds.

#### SOIL - Method 8020

A 10 gram, or other appropriate aliquot of soil, is weighed into a clean VOA vial. Soils received in brass core tubes are sampled by discarding 2-5 centimeters of soil from each end of the tubes (this is done to reduce the possibility of analyzing a portion of soil that has been exposed to sampling technique contamination). Equal aliquots of soil are then removed from each end of the tube and combined in the VOA vial. Soil in jars or bags is aliquoted using a similar technique, which discards exposed sample surfaces. A 10 ml, or other appropriate volume of methanol, is added to the soil and the soil is shaken with the solvent. 100 ul of the extract, or a reduced aliquot or volume of a suitable dilution, is injected into 5 ml of laboratory blank water and analyzed by the same technique used for water samples.

## ANALYTICAL METHODOLOGY

### Total Petroleum Hydrocarbons (TPH) Extractables by GC-FID

#### Extraction Procedure:

##### WATER -

A 1 liter sample is poured into a 2 liter separatory funnel. 3x100 ml extractions with methylene chloride (2 minute shake outs) are completed. The methylene chloride is decanted off and concentrated to a 5 ml final volume.

##### SOIL -

A 30 gram, or other appropriate aliquot of soil, is mixed with 10 grams of washed sodium sulfate. 100 mls of methylene chloride is added to the soil and placed on a mechanical shaker for 1 hour. The liquid is decanted off and the process is repeated with an additional 50 ml of methylene chloride. The combined solvent extracts are filtered through sodium sulfate and the extract is concentrated to a 5 ml final volume.

##### GC ANALYSIS -

An appropriate volume of the sample extract is injected into a Gas Chromatograph equipped with a Flame Ionization Detector (FID), a split/splitless capillary injector (operated in the splitless mode), and a fused silica capillary column. The TPH fraction is quantitated as gasoline and/or #2 diesel fuel (and/or different petroleum hydrocarbon fuel types if requested, such as JP-4 jet fuel) based on relative retention times and examination of the elution profile. The TPH fraction quantitation is based on chromatographic peak areas against a multipoint standard curve.

CHEMWEST ANALYTICAL LABORATORIES  
AROMATIC VOLATILE ORGANICS

Client I.D.: Tank 1N  
Date(s) Analyzed: 01/13/89

CHEMWEST I.D.: 3040-1  
Matrix : Soil

Compound	Amount Detected (mg/Kg)	RL (mg/Kg)
Benzene	200	25
Toluene	660	50
Ethylbenzene	130	100
Chlorobenzene	BRL	50
Total Xylenes (1)	580	50
1,4-Dichlorobenzene	BRL	300*
1,3-Dichlorobenzene	BRL	200*
1,2-Dichlorobenzene	BRL	50

Surrogate	% Recovery	Acceptance Window
Bromofluorobenzene	89%	50-150%

BRL: Below Reporting Limit.  
RL: Reporting Limit.

(1): Total of O-, M-, and P-Xylenes.  
\*: Matrix Interference.

Approved by:   *HP*  

REV3.1.89

CHEMWEST ANALYTICAL LABORATORIES  
AROMATIC VOLATILE ORGANICS

Client I.D.: Tank 1S  
Date(s) Analyzed: 01/13/89

CHEMWEST I.D.: 3040-2  
Matrix : Soil

Compound	Amount Detected (mg/Kg)	RL (mg/Kg)
Benzene	40	5
Toluene	190	10
Ethylbenzene	54	20
Chlorobenzene	BRL	100*
Total Xylenes (1)	260	10
1,4-Dichlorobenzene	BRL	150*
1,3-Dichlorobenzene	BRL	100*
1,2-Dichlorobenzene	BRL	10

Surrogate	% Recovery	Acceptance Window
Bromofluorobenzene	102%	50-150%

BRL: Below Reporting Limit.

RL: Reporting Limit.

(1): Total of O-, M-, and P-Xylenes.

\*: Matrix Interference.

Approved by:     K    

REV3.1.89

CHEMWEST ANALYTICAL LABORATORIES  
AROMATIC VOLATILE ORGANICS

Client I.D.: Tank 2N  
Date(s) Analyzed: 01/13/89

CHEMWEST I.D.: 3040-3  
Matrix : Soil

Compound	Amount Detected (mg/Kg)	RL (mg/Kg)
Benzene	50	10
Toluene	190	20
Ethylbenzene	44	40
Chlorobenzene	BRL	75*
Total Xylenes (1)	200	20
1,4-Dichlorobenzene	BRL	100*
1,3-Dichlorobenzene	BRL	100*
1,2-Dichlorobenzene	BRL	20

Surrogate	% Recovery	Acceptance Window
Bromofluorobenzene	105%	50-150%

BRL: Below Reporting Limit.

RL: Reporting Limit.

(1): Total of O-, M-, and P-Xylenes.

\*: Matrix Interference.

Approved by: NP

REV3.1.89

CHEMWEST ANALYTICAL LABORATORIES  
AROMATIC VOLATILE ORGANICS

Client I.D.: Tank 2S  
Date(s) Analyzed: 01/13/89

CHEMWEST I.D.: 3040-4  
Matrix : Soil

Compound	Amount Detected (mg/Kg)	RL (mg/Kg)
Benzene	200	50
Toluene	740	100
Ethylbenzene	BRL	200
Chlorobenzene	BRL	300*
Total Xylenes (1)	690	100
1,4-Dichlorobenzene	BRL	400*
1,3-Dichlorobenzene	BRL	300*
1,2-Dichlorobenzene	BRL	100

Surrogate	% Recovery	Acceptance Window
Bromofluorobenzene	105%	50-150%

BRL: Below Reporting Limit.  
RL: Reporting Limit.

(1): Total of O-, M-, and P-Xylenes.

\*: Matrix Interference.

Approved by: KP

REV3.1.89

CHEMWEST ANALYTICAL LABORATORIES  
AROMATIC VOLATILE ORGANICS

Client I.D.: Tank 3N  
Date(s) Analyzed: 01/13/89

CHEMWEST I.D.: 3040-5  
Matrix : Soil

Compound	Amount Detected (mg/Kg)	RL (mg/Kg)
Benzene	300	50
Toluene	940	100
Ethylbenzene	BRL	200
Chlorobenzene	BRL	300*
Total Xylenes (1)	840	100
1,4-Dichlorobenzene	BRL	400*
1,3-Dichlorobenzene	BRL	400*
1,2-Dichlorobenzene	BRL	100

Surrogate	% Recovery	Acceptance Window
Bromofluorobenzene	100%	50-150%

BRL: Below Reporting Limit.  
RL: Reporting Limit.

(1): Total of O-, M-, and P-Xylenes.

\*: Matrix Interference.

Approved by:     JK    

REV3.1.89



CHEMWEST ANALYTICAL LABORATORIES  
AROMATIC VOLATILE ORGANICS

Client I.D.: Tank 3S  
Date(s) Analyzed: 01/13/89

CHEMWEST I.D.: 3040-6  
Matrix : Soil

Compound	Amount Detected (mg/Kg)	RL (mg/Kg)
Benzene	20	5
Toluene	110	10
Ethylbenzene	36	20
Chlorobenzene	BRL	100*
Total Xylenes (1)	150	10
1,4-Dichlorobenzene	BRL	150*
1,3-Dichlorobenzene	BRL	100*
1,2-Dichlorobenzene	BRL	10

Surrogate	% Recovery	Acceptance Window
Bromofluorobenzene	87%	50-150%

BRL: Below Reporting Limit.  
RL: Reporting Limit.

(1): Total of O-, M-, and P-Xylenes.

\*: Matrix Interference.

Approved by:   N<sup>f</sup>  

REV3.1.89

CHEMWEST ANALYTICAL LABORATORIES  
AROMATIC VOLATILE ORGANICS

Client I.D.: Tank 4N  
Date(s) Analyzed: 01/13/89

CHEMWEST I.D.: 3040-7  
Matrix : Soil

Compound	Amount Detected (mg/Kg)	RL (mg/Kg)
Benzene	100	50
Toluene	520	100
Ethylbenzene	BRL	200
Chlorobenzene	BRL	200*
Total Xylenes (1)	520	100
1,4-Dichlorobenzene	BRL	300*
1,3-Dichlorobenzene	BRL	300*
1,2-Dichlorobenzene	BRL	100

Surrogate	% Recovery	Acceptance Window
Bromofluorobenzene	93%	50-150%

BRL: Below Reporting Limit.  
RL: Reporting Limit.

(1): Total of O-, M-, and P-Xylenes.  
\*: Matrix Interference.

Approved by:     *H*    

REV3.1.89

CHEMWEST ANALYTICAL LABORATORIES  
AROMATIC VOLATILE ORGANICS

Client I.D.: Tank 4S  
Date(s) Analyzed: 01/13/89

CHEMWEST I.D.: 3040-8  
Matrix : Soil

Compound	Amount Detected (mg/Kg)	RL (mg/Kg)
Benzene	200	25
Toluene	910	50
Ethylbenzene	200	100
Chlorobenzene	BRL	400*
Total Xylenes (1)	850	50
1,4-Dichlorobenzene	BRL	500*
1,3-Dichlorobenzene	BRL	400*
1,2-Dichlorobenzene	BRL	50

Surrogate	% Recovery	Acceptance Window
Bromofluorobenzene	87%	50-150%

BRL: Below Reporting Limit.  
RL: Reporting Limit.

(1): Total of O-, M-, and P-Xylenes.

\*: Matrix Interference.

Approved by: AC

REV3.1.89

CHEMWEST ANALYTICAL LABORATORIES  
AROMATIC VOLATILE ORGANICS

Client I.D.: Water 1  
Date Analyzed: 01/13/89

CHEMWEST I.D.: 3040-9  
Matrix : Water

Compound	Amount Detected (ug/L)	RL (ug/L)
Benzene	22000	250
Toluene	25000	500
Ethylbenzene	1700	1000
Chlorobenzene	BRL	3000*
1,4-Dichlorobenzene	BRL	3200*
1,3-Dichlorobenzene	BRL	1500*
1,2-Dichlorobenzene	BRL	500

Surrogate	% Recovery	Acceptance Window
Bromofluorobenzene	81%	50-150%

BRL: Below Reporting Limit.  
RL: Reporting Limit.

\*: Matrix Interference.

Approved by: XP

REV3.1.89

CHEMWEST ANALYTICAL LABORATORIES  
AROMATIC VOLATILE ORGANICS

Client I.D.: Soil Pile 1  
Date(s) Analyzed: 01/13/89

CHEMWEST I.D.: 3040-10  
Matrix : Soil

Compound	Amount Detected (mg/Kg)	RL (mg/Kg)
Benzene	1.1	0.05
Toluene	0.4	0.1
Ethylbenzene	0.5	0.2
Chlorobenzene	BRL	0.5*
Total Xylenes (1)	2.0	0.1
1,4-Dichlorobenzene	BRL	10*
1,3-Dichlorobenzene	BRL	5*
1,2-Dichlorobenzene	BRL	0.1

Surrogate	% Recovery	Acceptance Window
Bromofluorobenzene	132%	50-150%

BRL: Below Reporting Limit.

RL: Reporting Limit.

(1): Total of O-, M-, and P-Xylenes.

\*: Matrix Interference.

Approved by:     *xl*    

REV3.1.89

CHEMWEST ANALYTICAL LABORATORIES  
AROMATIC VOLATILE ORGANICS

Client I.D.: Method Blank  
Date(s) Analyzed: 01/13/89

CHEMWEST I.D.: 3040-MB  
Matrix : Soil

Compound	Amount Detected (mg/Kg)	RL (mg/Kg)
Benzene	BRL	0.05
Toluene	BRL	0.1
Ethylbenzene	BRL	0.2
Chlorobenzene	BRL	0.1
Total Xylenes (1)	BRL	0.1
1,4-Dichlorobenzene	BRL	0.1
1,3-Dichlorobenzene	BRL	0.1
1,2-Dichlorobenzene	BRL	0.1

Surrogate	% Recovery	Acceptance Window
Bromofluorobenzene	105%	50-150%

BRL: Below Reporting Limit.  
RL: Reporting Limit.

(1): Total of O-, M-, and P-Xylenes.

Approved by:     *Y*    

REV3.1.89

CHEMWEST ANALYTICAL LABORATORIES  
TOTAL PETROLEUM HYDROCARBONS - EXTRACTABLE

Date Extracted : 01/10/89  
Date(s) Analyzed: 01/13/89

Case : 3040  
Matrix: Soil

Reporting Units: mg/Kg

Client ID	CHEMWEST ID	Gasoline		Diesel		Other Hydrocarbon Mixture	
		Result	RL	Result	RL	Result	RL
Method Blank	3040-MB	BRL	10	BRL	10	BRL	10
Tank 1N	3040-1	17000	1000	280	200	BRL	1000
Tank 1S	3040-2	570	10	36	10	BRL	10
Tank 2N	3040-3	12000	1000	BRL	1000	BRL	1000
Tank 2S	3040-4	26000	1000	570	500	BRL	1000
Tank 3N	3040-5	31000	1000	BRL	1000	BRL	1000
Tank 3S	3040-6	9700	1000	BRL	1000	BRL	1000
Tank 4N	3040-7	18000	1000	BRL	1000	BRL	1000
Tank 4S	3040-8	38000	1000	BRL	1000	BRL	1000
Soil Pile 1	3040-10	BRL	5000	6500	5000	BRL	5000

BRL: Below Reporting Limit.  
RL: Reporting Limit.

Approved by:     

REV3:1.89

CHEMWEST ANALYTICAL LABORATORIES  
TOTAL PETROLEUM HYDROCARBONS - EXTRACTABLE

Date Extracted : 01/10/89  
Date(s) Analyzed: 01/10/89

Case : 3040  
Matrix: Water

Reporting Units: mg/L

Client ID	CHEMWEST ID	Gasoline		Diesel		Other Hydrocarbon Mixture	
		Result	RL	Result	RL	Result	RL
Method Blank	3040-MB	BRL	10	BRL	10	BRL	10
Water 1	3040-9	1400	10	0.93	10	BRL	10

BRL: Below Reporting Limit.  
RL: Reporting Limit.

Approved by:     *W*    

REV2:9.88



CHEMWEST ANALYTICAL LABORATORIES  
TOTAL ORGANIC LEAD

Date(s) Analyzed: 01/13/89  
thru: 01/13/89

Case : 3040  
Matrix: Soil

Client ID	CHEMWEST ID	Amount Detected (mg/Kg)
Tank 1N	3040-1	BRL
Tank 1S	3040-2	BRL
Tank 2N	3040-3	BRL
Tank 2S	3040-4	BRL
Tank 3N	3040-5	BRL
Tank 3S	3040-6	BRL
Tank 4N	3040-7	BRL
Tank 4S	3040-8	BRL
Soil Pile 1	3040-10	BRL

The reporting limit for Total Organic Lead is 10 mg/Kg.

BRL: Below Reporting Limit.

Approved by: SBH

REV3:1.89

CHEMWEST ANALYTICAL LABORATORIES  
TOTAL ORGANIC LEAD

Date(s) Analyzed: 01/13/89  
thru: 01/13/89

Case : 3040  
Matrix: Water

Client ID	CHEMWEST ID	Amount Detected (mg/L)
Water 1	3040-9	BRL

The reporting limit for Total Organic Lead is 1.0 mg/L.

BRL: Below Reporting Limit.

Approved by: JH

REV3:1.89

**CHEM WEST ANALYTICAL LABORATORIES INC**

600 West North Market Blvd.  
 Sacramento, California 95834  
 (916) 923-0840 FAX (916) 923-1938



Order No. 3040  
 Date Rec'd. 1/10/89 @ 0940  
 Compl. Date \_\_\_\_\_  
 Section Margie Ramsey

CLIENT: A. G. E.  
1447<sup>th</sup> Street 35<sup>th</sup> Street NW  
Sacramento, CA 95816

Project Name: Clonation Oakland  
 Project No. 004-88-059  
 PO. NO. May Scroggs  
 Contact Karl J. Arana  
 Phone (916) 451-0921

ANALYSIS: ten samples rec'd 1/15/89 (9 soils & 1 water) to be analyzed for PHENYL GC-FID, aromatic volatile organics (TPH, BOD, etc), structural lead and total organic lead.

\* Report due on 1/20/89

Sample ID	Date	Time	Analysis	Matrix	Containers		
3040-1 Tank 1N	1/5/89	1450	TPH, BOD, <sup>org</sup> lead	soil	1-6" cor tubes		
-2 Tank 1S	}	1525	}	}	}		
-3 Tank 2N		1459					
-4 Tank 2S		1520					
-5 Tank 3N		1504					
-6 Tank 3S		1518					
-7 Tank 4N		1507					
-8 Tank 4S		1514					
-9 Water 1		1537				water	1-16" bottle 3-40ml vials
-10 Soil 7101		1600				soil	1-6" cor tubes

PL, GC <sup>1/6</sup>  
 M / MICHELLE TOULVIER

D.T.C.

ANANIA GEOLOGIC ENGINEERING

CHAIN OF CUSTODY RECORD

PROJECT NAME: Carnation Oakland . PROJECT No. 004-88-059

REPORT RESULTS TO: Karl J. Anania / Mary L. Scruggs

SURVEY				SAMPLERS						
Tank Excavation				Karl Anania / Mary Scruggs						
LABORATORY LOG NUMBER	STATION NUMBER	DATE	TIME	SOIL		WATER	SEQ. No.	No. OF CONTAINERS	ANALYSIS REQUIRED	
				COMP	GR&B					
	TANK 1 N	1/5/89	1455		X		1	1 Brass Tube	8015 Modified (TPH) 8020 Tetraethyl lead	
	TANK 1 S	1/5/89	<del>1455</del> 1525		X		8	1 Brass Tube	8015 Modified (TPH) 8020 Tetraethyl lead	
	TANK 2 N	1/5/89	<del>1455</del> 1515		X		2	1 Brass Tube	8015 Modified (TPH) 8020 Tetraethyl lead	
	TANK 2 S	1/5/89	1520		X		7	1 Brass Tube	8015 Modified (TPH) 8020 Tetraethyl lead	
	TANK 3 N	1/5/89	1504		X		3	1 Brass Tube	8015 Modified (TPH) 8020 Tetraethyl lead	
	TANK 3 S	1/5/89	1518		X		6	1 Brass Tube	8015 Modified (TPH) 8020 Tetraethyl lead	
	TANK 4 N	1/5/89	1517		X		4	1 Brass Tube	8015 Modified (TPH) 8020 Tetraethyl lead	
	TANK 4 S	1/5/89	1514		X		5	1 Brass Tube	8015 Modified (TPH) 8020 Tetraethyl lead	
	WATER 1	1/6/89	1537			X	9	3 VOAs 1 Amber bottle (X)	802-8015M (TPH) (6) 8020 Total organic lead	
	VOA Field Blank	1/5/89	1537					VOAs preserved w/ ascorbic Acid	per conversation w/ Mary Scruggs 1/6/89 1630 hrs	
								1 VOA	sample broken	

Note: Log in tetraethyl lead as total organic lead per conversation w/ Mary Scruggs 1/6/89 1630 hrs.

RELINQUISHED BY: <u>Mary L. Scruggs</u>	RECEIVED BY: _____	DATE / TIME 1/6/89 / 9:40
RELINQUISHED BY: _____	RECEIVED BY: _____	DATE / TIME
RELINQUISHED BY: _____	RECEIVED BY: _____	DATE / TIME
RECEIVED FOR LABORATORY BY: <u>Bill McBence</u> 'BILL MCBENCE'		DATE / TIME 1/6/89 / 09:40

METHOD OF SHIPMENT: in cooler w/ dry ice by vehicle O.T.C.

**ANANIA GEOLOGIC ENGINEERING**

CHAIN OF CUSTODY RECORD

PROJECT NAME: Carnation / Dakland. PROJECT No. 004-88-059

REPORT RESULTS TO: Karl J. Anania / Mary L Scruggs

SURVEY				SAMPLERS					
Soil Pile Composite				Karl J. Anania					
LABORATORY LOG NUMBER	STATION NUMBER	DATE	TIME	SAMPLE TYPE			SEQ. No.	No. OF CONTAINERS	ANALYSIS REQUIRED
				SOIL	WATER				
				COMP	GRAB				
	Soil Pile 1	1/5/89	16:00	X				1 BRASS TUBE	8015 Mod. TPH 8020 TOTAL LEAD organic (TO3) (per conversation w/ Mary Scruggs 4/6/89 1445 hrs.)

RELINQUISHED BY: Karl J. Anania RECEIVED BY: Mary L Scruggs DATE / TIME: 1/5/89 / 16:20

RELINQUISHED BY: Mary L Scruggs RECEIVED BY: \_\_\_\_\_ DATE / TIME: 1/6/89 / 9:40

RELINQUISHED BY: \_\_\_\_\_ RECEIVED BY: \_\_\_\_\_ DATE / TIME: \_\_\_\_\_

RECEIVED FOR LABORATORY BY: Bill McRenge "BILL McRENCE" DATE / TIME: 1/6/89 / 09:40

METHOD OF SHIPMENT: in cooler w/ dry ice by vehicle O.T.C

ANANIA GEOLOGIC ENGINEERING

CHAIN OF CUSTODY RECORD

PROJECT NAME: Carnation Oakland . PROJECT No. 004-88-059

REPORT RESULTS TO: Karl J. Anania / Mary L. Scroggs

SURVEY				SAMPLERS						
Tank Excavation				Karl Anania / Mary Scroggs						
LABORATORY LOG NUMBER	STATION NUMBER	DATE	TIME	SAMPLE TYPE			SEQ. No.	No. OF CONTAINERS	ANALYSIS REQUIRED	
				SOIL COMP	SOIL GRAB	WATER				
	TANK 1 N	1/5/89	1455		X		1	1 Brass Tube	8015 Modified (TPH) 8020 Tetraethyl lead	
	TANK 1 S	1/5/89	1525		X		8	1 Brass Tube	8015 Modified (TPH) 8020 Tetraethyl lead	
	TANK 2 N	1/5/89	1500		X		2	1 Brass Tube	8015 Modified (TPH) 8020 Tetraethyl lead	
	TANK 2 S	1/5/89	1520		X		7	1 Brass Tube	8015 Modified (TPH) 8020 Tetraethyl lead	
	TANK 3 N	1/5/89	1504		X		3	1 Brass Tube	8015 Modified (TPH) 8020 Tetraethyl lead	
	TANK 3 S	1/5/89	1518		X		6	1 Brass Tube	8015 Modified (TPH) 8020 Tetraethyl lead	
	TANK 4 N	1/5/89	1507		X		4	1 Brass Tube	8015 Modified (TPH) 8020 Tetraethyl lead	
	TANK 4 S	1/5/89	1514		X		5	1 Brass Tube	8015 Modified (TPH) 8020 Tetraethyl lead	
	WATER 1	1/5/89	1537			X	9	3 VOCs 1 Amber	802 8020 Total organic lead	
	VOA Field Blank	1/5/89	1537					5:HR(1X) VOAs preserved w/ Ascorbic Acid		
								1 VOA		

RELINQUISHED BY: <u>Mary L. Scroggs</u>	RECEIVED BY: _____	DATE / TIME 1/6/89 / 9:40
RELINQUISHED BY: _____	RECEIVED BY: _____	DATE / TIME
RELINQUISHED BY: _____	RECEIVED BY: _____	DATE / TIME
RECEIVED FOR LABORATORY BY: <u>Bill McBenige</u> 'BILL MCBENIGE'		DATE / TIME 1/6/89 / 09:40

METHOD OF SHIPMENT: in cooler w/ dry ice by vehicle O.T.C.

## ANANIA GEOLOGIC ENGINEERING

### CHAIN OF CUSTODY RECORD

PROJECT NAME: Carnation / Dakland PROJECT No. 004-88-059

REPORT RESULTS TO: Karl J. Anania / Mary L Scruggs

SURVEY				SAMPLERS					
<u>Soil Pile Composite</u>				<u>Karl J. Anania</u>					
LABORATORY LOG NUMBER	STATION NUMBER	DATE	TIME	SAMPLE TYPE			SEQ. No.	No. OF CONTAINERS	ANALYSIS REQUIRED
				SOIL COMP	SOIL GRAB	WATER			
	<u>Soil Pile 1</u>	<u>1/5/89</u>	<u>16<sup>00</sup></u>	<u>X</u>				<u>1 BRASS TUBE</u>	<u>8015 Mod TPH 8020 TOTAL LEAD</u>

RELINQUISHED BY: Karl J Anania RECEIVED BY: Mary L Scruggs DATE / TIME: 1/5/89 / 16<sup>20</sup>

RELINQUISHED BY: Mary L Scruggs RECEIVED BY: \_\_\_\_\_ DATE / TIME: 1/6/89 / 17<sup>40</sup>

RELINQUISHED BY: \_\_\_\_\_ RECEIVED BY: \_\_\_\_\_ DATE / TIME: \_\_\_\_\_

RECEIVED FOR LABORATORY BY: Bill McBrance "BILL McBRANCE" DATE / TIME: 1/6/89 / 09:40

METHOD OF SHIPMENT: in cooler w/ dry ice by vehicle O.T.C

 **CHEMWEST**  
ANALYTICAL LABORATORIES, INC.

January 28, 1989

Anania Geologic Engineering  
1447 35th Street  
Sacramento, CA 95816

Attention: Ms. Mary Scruggs

Subject: Report of Data - Case Number 3096

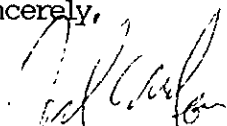
Dear Ms. Scruggs:

The technical staff at CHEMWEST is pleased to provide our report for the analyses you requested: Volatile Organics - EPA Method 8240; Semivolatile Organics - EPA Method 8270; TPH EXTN/GC-FID; ICP Metals (Cd, Cr, Pb, and Zn); and MBAS - EPA Method 425.1.

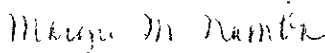
Five samples (4 soil and 1 water) for Project Carnation/Oakland, Project Number 004-88-059 were received January 13, 1989 in good condition. Results of the analyses along with the analytical methodology and appropriate reporting limits are presented on the following page(s).

Thank you for choosing CHEMWEST Laboratories. Should you have questions concerning this data report or the analytical methods employed, please do not hesitate to contact Toni Weeks, our Technical Service Representative or your project manager. We hope that you will consider CHEMWEST Laboratories for your future analytical support and service requirements.

Sincerely,

  
Jill B. Henes, Ph.D.  
Vice President of Technical Services

and

  
Margie M. Namba  
Project Manager

MMN:ds

cc: Joel Bird, President  
File



## ANALYTICAL METHODOLOGY

### Volatile Organics

The analytical techniques used for water and soil analysis are based on EPA Methods 624 and 8240 (Purgeables) and follow EPA Contract Laboratory Program (CLP) recommendations. Water and soil samples are analyzed by a purge and trap, packed column GC/MS technique. The samples are analyzed under full scan GC/MS which monitors a mass range of 35-260.

#### Water -

A 5 ml sample volume to which 3 internal standards and 3 surrogates are added and purged with helium at ambient temperature. The sample is collected on a Tenax silica gel trap and then desorbed onto a packed column.

#### Soil/Sludge: Low -

A 5 gram sample weight is added to 5 mls of reagent water containing 3 internal standards and 3 surrogates and purged with helium at 40°C.

#### Soil/Sludge: Medium -

A 5 gram sample is weighed into a QA/QC prepped VOA vial and then shaken with 10 ml methanol. A 100 ul portion of the methanolic extract is combined with 5 ml of water. Surrogates and internal standards are added, and the sample analysis then follows the water protocol.

The 5 gram samples used for analysis are a mix taken from the top, middle and bottom of the sample container. This mix was used to ensure that the analysis represented an accurate analysis of a non-homogenous soil/sludge sample.

### Tuning and Blanks

The samples are run after meeting GC/MS hardware tuning ion abundance criteria, using p-Bromofluorobenzene (BFB) for volatiles. Laboratory blanks are run each day and a trip blank is also analyzed.

Surrogates:

Surrogates were included in all samples. Surrogates are used to monitor extractions recovery efficiency.

Compounds	% EPA Allowable Recovery	
	Water	Soil
1,2-Dichloroethane-d4	76 - 114	70 - 121
Toluene-d8	88 - 110	81 - 117
4-Bromofluorobenzene	86 - 115	74 - 121

Matrix Spikes:

Matrix spikes are additional quality assurance controls. Known amounts of selected compounds are added to samples and analytical accuracy is determined by sample analysis.

Matrix Spike Compounds	% EPA Allowable Recovery	
	Water	Soil
1,1-Dichloroethane	61 - 145	59 - 172
Trichloroethene	71 - 120	62 - 137
Chlorobenzene	75 - 130	60 - 133
Toluene	76 - 125	59 - 139
Benzene	76 - 127	66 - 142

## ANALYTICAL METHODOLOGY

### Semivolatile Organics

#### Waters -

The sample techniques used for both water and soil samples are based on EPA Methods 625 and 8270, and follow EPA Contract Laboratory Program (CLP) recommendations. Waters are extracted in a separatory funnel utilizing methylene chloride as the extraction solvent. Six surrogate compounds are added prior to extraction to monitor extraction efficiency. After extraction, the solvent is concentrated to 1 mL, internal standards are added and the sample is ready for analysis.

#### Soils -

Six surrogates are added to a weighed portion of soil. Three times methylene chloride/acetone is added and the soil is shaken vigorously. The solvent is concentrated, internal standards are added and the sample is ready for analysis.

#### GC/MS -

Samples are analyzed on a GC/MS equipped with a DB-5 capillary column. Helium is the carrier gas and 1 ul of the sample extract is injected. The samples are analyzed under full scan GC/MS which monitors a mass range of 35-550.

### Tuning and Blanks

The samples are run after meeting GC/MS hardware tuning ion abundance criteria, Decafluorotriphenylphosphine (DFTPP) for semi-volatiles. Laboratory blanks are extracted with each batch of water samples and soil samples.

Surrogates:

Surrogates were included in all samples. Surrogates are used to monitor extractions recovery efficiency.

Surrogate Compounds	% EPA Allowable Recovery	
	Water	Soil
Nitrobenzene-d5	35 - 114	23 - 120
2-Fluorobiphenyl	43 - 116	30 - 115
p-Terphenyl-d14	33 - 141	18 - 147
Phenol-d5	10 - 94	24 - 113
2-Fluorophenol	21 - 100	25 - 121
2,4,6-Tribromophenol	10 - 123	19 - 122

Matrix Spikes:

Matrix spikes are additional quality assurance controls. Known amounts of selected compounds are added to samples and analytical accuracy is determined by sample analysis.

Matrix Spike Compounds	% EPA Allowable Recovery	
	Water	Soil
1,2,4-Trichlorobenzene	39 - 98	38 - 107
Acenaphthene	46 - 118	31 - 137
2,4-Dinitrotoluene	24 - 96	28 - 89
Pyrene	26 - 127	35 - 142
N-Nitroso-di-n-dipropylamine	41 - 116	41 - 126
1,4-Dichlorobenzene	36 - 97	28 - 104
Pentachlorophenol	9 - 103	17 - 109
Phenol	12 - 89	26 - 90
2-Chlorophenol	27 - 123	25 - 102
4-Chloro-3-methylphenol	23 - 97	26 - 103
4-Nitrophenol	10 - 80	11 - 114

## ANALYTICAL METHODOLOGY

### Total Petroleum Hydrocarbons (TPH) Extractables by GC-FID

#### Extraction Procedure:

##### WATER -

A 1 liter sample is poured into a 2 liter separatory funnel. 3x100 ml extractions with methylene chloride (2 minute shake outs) are completed. The methylene chloride is decanted off and concentrated to a 5 ml final volume.

##### SOIL -

A 30 gram, or other appropriate aliquot of soil, is mixed with 10 grams of washed sodium sulfate. 100 mls of methylene chloride is added to the soil and placed on a mechanical shaker for 1 hour. The liquid is decanted off and the process is repeated with an additional 50 ml of methylene chloride. The combined solvent extracts are filtered through sodium sulfate and the extract is concentrated to a 5 ml final volume.

##### GC ANALYSIS -

An appropriate volume of the sample extract is injected into a Gas Chromatograph equipped with a Flame Ionization Detector (FID), a split/splitless capillary injector (operated in the splitless mode), and a fused silica capillary column. The TPH fraction is quantitated as gasoline and/or #2 diesel fuel (and/or different petroleum hydrocarbon fuel types if requested, such as JP-4 jet fuel) based on relative retention times and examination of the elution profile. The TPH fraction quantitation is based on chromatographic peak areas against a multipoint standard curve.

CHEMWEST ANALYTICAL LABORATORIES  
VOLATILE ORGANICS

Client I.D.: Method Blank  
Date(s) Analyzed: 01/25/89

CHEMWEST I.D.: 3096 -MB  
Matrix : Soil

Compound	Amount Detected (ug/Kg)	RL (ug/Kg)
Chloromethane	BRL	10
Bromomethane	BRL	10
Vinyl Chloride	BRL	10
Chloroethane	BRL	10
Methylene Chloride	BRL	10
Acetone	BRL	20
Carbon Disulfide	BRL	5
1,1-Dichloroethene	BRL	5
1,1-Dichloroethane	BRL	5
1,2-Dichloroethene (total)	BRL	5
Chloroform	BRL	5
1,2-Dichloroethane	BRL	5
2-Butanone	BRL	20
1,1,1-Trichloroethane	BRL	5
Carbon Tetrachloride	BRL	5
Vinyl Acetate	BRL	10
Bromodichloromethane	BRL	5
1,2-Dichloropropane	BRL	5
cis-1,3-Dichloropropene	BRL	5
Trichloroethene	BRL	5
Benzene	BRL	5
Dibromochloromethane	BRL	5
1,1,2-Trichloroethane	BRL	5
trans-1,3-Dichloropropene	BRL	5
Bromoform	BRL	5
4-Methyl-2-pentanone	BRL	10
2-Hexanone	BRL	10
Tetrachloroethene	BRL	5
1,1,2,2-Tetrachloroethane	BRL	5
Toluene	BRL	5
Chlorobenzene	BRL	5
Ethylbenzene	BRL	5
Styrene	BRL	5
Xylenes (total)	BRL	5

Surrogates	% Recovery	Acceptance Window
1,2-Dichloroethane-d4	104%	70-121%
Toluene-d8	90%	81-117%
4-Bromofluorobenzene	95%	74-121%

BRL: Below Reporting Limit.  
RL: Reporting Limit.

Approved by: ew

REV4:1.89

CHEMWEST ANALYTICAL LABORATORIES  
VOLATILE ORGANICS

Client I.D.: 2E  
Date(s) Analyzed: 01/25/89

CHEMWEST I.D.: 3096-2  
Matrix : Soil

Compound	Amount Detected (ug/Kg)	RL (ug/Kg)
Chloromethane	BRL	20000
Bromomethane	BRL	20000
Vinyl Chloride	BRL	20000
Chloroethane	BRL	20000
Methylene Chloride	BRL	20000
Acetone	BRL	40000
Carbon Disulfide	BRL	10000
1,1-Dichloroethene	BRL	10000
1,1-Dichloroethane	BRL	10000
1,2-Dichloroethene (total)	BRL	10000
Chloroform	BRL	10000
1,2-Dichloroethane	BRL	10000
2-Butanone	BRL	40000
1,1,1-Trichloroethane	BRL	10000
Carbon Tetrachloride	BRL	10000
Vinyl Acetate	BRL	20000
Bromodichloromethane	BRL	10000
1,2-Dichloropropane	BRL	10000
cis-1,3-Dichloropropene	BRL	10000
Trichloroethene	BRL	10000
Benzene	BRL	10000
Dibromochloromethane	BRL	10000
1,1,2-Trichloroethane	BRL	10000
trans-1,3-Dichloropropene	BRL	10000
Bromoform	BRL	10000
4-Methyl-2-pentanone	BRL	20000
2-Hexanone	BRL	20000
Tetrachloroethene	BRL	10000
1,1,2,2-Tetrachloroethane	BRL	10000
Toluene	27000	10000
Chlorobenzene	BRL	10000
Ethylbenzene	12000	10000
Styrene	BRL	10000
Xylenes (total)	92000	10000

Surrogates	% Recovery	Acceptance Window
1,2-Dichloroethane-d4	105%	70-121%
Toluene-d8	103%	81-117%
4-Bromofluorobenzene	106%	74-121%

BRL: Below Reporting Limit.  
RL: Reporting Limit.

Approved by: ew

REV4:1.89

CHEMWEST ANALYTICAL LABORATORIES  
SEMIVOLATILE ORGANICS

Client I.D.: Method Blank  
Date Extracted : 01/09/89  
Date(s) Analyzed: 01/24/89

CHEMWEST I.D.: 3096-MB  
Matrix : Soil

Compound	Amount Detected (ug/Kg)	RL (ug/Kg)
Phenol	BRL	200
2-Chlorophenol	BRL	200
bis(2-Chloroethyl) ether	BRL	200
1,3-Dichlorobenzene	BRL	200
1,4-Dichlorobenzene	BRL	200
1,2-Dichlorobenzene	BRL	200
Benzyl alcohol	BRL	200
2-Methylphenol	BRL	200
bis(2-Chloroisopropyl) ether	BRL	200
Hexachloroethane	BRL	200
N-Nitroso-di-n-propylamine	BRL	200
4-Methylphenol	BRL	200
Nitrobenzene	BRL	200
Isophorone	BRL	200
2-Nitrophenol	BRL	200
2,4-Dimethylphenol	BRL	200
bis(2-Chloroethoxy) methane	BRL	200
2,4-Dichlorophenol	BRL	200
1,2,4-Trichlorobenzene	BRL	200
Benzoic acid	BRL	400
Naphthalene	BRL	200
4-Chloroaniline	BRL	200
Hexachlorobutadiene	BRL	200
4-Chloro-3-methylphenol	BRL	200
2-Methylnaphthalene	BRL	200
Hexachlorocyclopentadiene	BRL	200
2,4,6-Trichlorophenol	BRL	200
2,4,5-Trichlorophenol	BRL	400
2-Chloronaphthalene	BRL	200
2-Nitroaniline	BRL	400
Acenaphthylene	BRL	200
Dimethylphthalate	BRL	200
2,6-Dinitrotoluene	BRL	200
3-Nitroaniline	BRL	400
Acenaphthene	BRL	200
2,4-Dinitrophenol	BRL	400
Dibenzofuran	BRL	200
4-Nitrophenol	BRL	400
2,4-Dinitrotoluene	BRL	200
Fluorene	BRL	200
4-Chlorophenyl-phenylether	BRL	200
Diethylphthalate	BRL	200
4-Nitroaniline	BRL	400
4,6-Dinitro-2-methylphenol	BRL	400



CHEMWEST ANALYTICAL LABORATORIES  
SEMIVOLATILE ORGANICS

Client I.D.: Method Blank

CHEMWEST I.D.: 3096-MB  
Matrix : Soil

Compound	Amount Detected (ug/Kg)	RL (ug/Kg)
N-Nitrosodiphenylamine	BRL	200
4-Bromophenyl-phenylether	BRL	200
Hexachlorobenzene	BRL	200
Pentachlorophenol	BRL	400
Phenanthrene	BRL	200
Anthracene	BRL	200
Di-n-butylphthalate	BRL	200
Fluoranthene	BRL	200
Pyrene	BRL	200
Butylbenzylphthalate	BRL	200
Benzo(a)anthracene	BRL	200
3,3'-Dichlorobenzidine	BRL	400
Chrysene	BRL	200
bis(2-Ethylhexyl)phthalate	BRL	200
Di-n-octylphthalate	BRL	200
Benzo(b)fluoranthene	BRL	200
Benzo(k)fluoranthene	BRL	200
Benzo(a)pyrene	BRL	200
Indeno(1,2,3-cd)pyrene	BRL	200
Dibenz(a,h)anthracene	BRL	200
Benzo(g,h,i)perylene	BRL	200

Surrogates	% Recovery	Acceptance Window
2-Fluorophenol	83%	25-121%
Phenol-d5	82%	24-113%
Nitrobenzene-d5	83%	23-120%
2-Fluorobiphenyl	76%	30-115%
2,4,6-Tribromophenol	61%	19-122%
Terphenyl-d14	58%	18-137%

BRL: Below Reporting Limit.

RL: Reporting Limit.

Approved by: EW

REV4:1.89

CHEMWEST ANALYTICAL LABORATORIES  
SEMIVOLATILE ORGANICS

Client I.D.: 4W  
Date Extracted : 01/09/89  
Date(s) Analyzed: 01/24/89

CHEMWEST I.D.: 3096-4  
Matrix : Soil

Compound	Amount Detected (ug/Kg)	RL (ug/Kg)
Phenol	BRL	2000
2-Chlorophenol	BRL	2000
bis(2-Chloroethyl) ether	BRL	2000
1,3-Dichlorobenzene	BRL	2000
1,4-Dichlorobenzene	BRL	2000
1,2-Dichlorobenzene	BRL	2000
Benzyl alcohol	BRL	2000
2-Methylphenol	BRL	2000
bis(2-Chloroisopropyl) ether	BRL	2000
Hexachloroethane	BRL	2000
N-Nitroso-di-n-propylamine	BRL	2000
4-Methylphenol	BRL	2000
Nitrobenzene	BRL	2000
Isophorone	BRL	2000
2-Nitrophenol	BRL	2000
2,4-Dimethylphenol	BRL	2000
bis(2-Chloroethoxy) methane	BRL	2000
2,4-Dichlorophenol	BRL	2000
1,2,4-Trichlorobenzene	BRL	2000
Benzoic acid	BRL	4000
Naphthalene	31000	2000
4-Chloroaniline	BRL	2000
Hexachlorobutadiene	BRL	2000
4-Chloro-3-methylphenol	BRL	2000
2-Methylnaphthalene	20000	2000
Hexachlorocyclopentadiene	BRL	2000
2,4,6-Trichlorophenol	BRL	2000
2,4,5-Trichlorophenol	BRL	4000
2-Chloronaphthalene	BRL	2000
2-Nitroaniline	BRL	4000
Acenaphthylene	BRL	2000
Dimethylphthalate	BRL	2000
2,6-Dinitrotoluene	BRL	2000
3-Nitroaniline	BRL	4000
Acenaphthene	BRL	2000
2,4-Dinitrophenol	BRL	4000
Dibenzofuran	BRL	2000
4-Nitrophenol	BRL	4000
2,4-Dinitrotoluene	BRL	2000
Fluorene	BRL	2000
4-Chlorophenyl-phenylether	BRL	2000
Diethylphthalate	BRL	2000
4-Nitroaniline	BRL	4000
4,6-Dinitro-2-methylphenol	BRL	4000

CHEMWEST ANALYTICAL LABORATORIES  
SEMIVOLATILE ORGANICS

Client I.D.: 4W

CHEMWEST I.D.: 3096-4  
Matrix : Soil

Compound	Amount Detected (ug/Kg)	RL (ug/Kg)
N-Nitrosodiphenylamine	BRL	2000
4-Bromophenyl-phenylether	BRL	2000
Hexachlorobenzene	BRL	2000
Pentachlorophenol	BRL	4000
Phenanthrene	BRL	2000
Anthracene	BRL	2000
Di-n-butylphthalate	BRL	2000
Fluoranthene	BRL	2000
Pyrene	BRL	2000
Butylbenzylphthalate	BRL	2000
Benzo(a)anthracene	BRL	2000
3,3'-Dichlorobenzidine	BRL	4000
Chrysene	BRL	2000
bis(2-Ethylhexyl)phthalate	BRL	2000
Di-n-octylphthalate	BRL	2000
Benzo(b)fluoranthene	BRL	2000
Benzo(k)fluoranthene	BRL	2000
Benzo(a)pyrene	BRL	2000
Indeno(1,2,3-cd)pyrene	BRL	2000
Dibenz(a,h)anthracene	BRL	2000
Benzo(g,h,i)perylene	BRL	2000

Surrogates	% Recovery	Acceptance Window
2-Fluorophenol	90%	25-121%
Phenol-d5	91%	24-113%
Nitrobenzene-d5	108%	23-120%
2-Fluorobiphenyl	72%	30-115%
2,4,6-Tribromophenol	49%	19-122%
Terphenyl-d14	48%	18-137%

BRL: Below Reporting Limit.

RL: Reporting Limit.

Approved by: ew

REV4:1.89

CHEMWEST ANALYTICAL LABORATORIES  
 TOTAL PETROLEUM HYDROCARBONS - EXTRACTABLE

Date Extracted : 01/19/89  
 Date(s) Analyzed: 01/25/89

Case : 3096  
 Matrix: Soil

Reporting Units: mg/Kg

Client ID	CHEMWEST ID	Gasoline		Diesel		Other Hydrocarbon Mixture	
		Result	RL	Result	RL	Result	RL
Method Blank	3096-MB	BRL	10	BRL	10	BRL	10
1W	3096-1	19000	1000	BRL	1000	BRL	1000

BRL: Below Reporting Limit.  
 RL: Reporting Limit.

Approved by: KP

REV3:1.89


CHEMWEST ANALYTICAL LABORATORIES  
METALS ANALYSIS  
ICAP SCAN

Client I.D.: 3E  
Date(s) Analyzed: 01/26/89  
thru: 01/26/89

CHEMWEST I.D.: 3096-3  
Matrix : Soil

Element	Amount Detected (mg/Kg)	RL (mg/Kg)
Cadmium	BRL	1
Chromium	26	2
Lead	BRL	10
Zinc	23	5

BRL: Below Reporting Limit.  
RL: Reporting Limit.

Approved by: 

REV3:1.89

CHEMWEST ANALYTICAL LABORATORIES  
MBAS


Date(s) Analyzed: 01/23/89  
thru: 01/23/89

Case : 3096  
Matrix: Water

Client ID	CHEMWEST ID	Amount Detected (mg/L)
1A	3096-5	0.34

The reporting limit for MBAS is 0.025 mg/L.

BRL: Below Reporting Limit.

Approved by: 

REV2:1.88

CHEM WEST ANALYTICAL LABORATORIES, INC.  
 600 West North Market Blvd.  
 Sacramento, California 95834  
 (916) 923-0840 FAX (916) 923-1938

# CLIENT

Order No. 3096  
 Date Rec'd. 1/13/89 @ 1234  
 Compl. Date \_\_\_\_\_  
 Section M. Namba

CLIENT: A. G. E. (Anania Biologic Engineering)  
1447 35th Street  
Sacramento, CA 95816

Project Name: Carbocation Oreland  
 Project No. 004-88-059  
 P.O. NO. Mary Suggs  
 Contact: Tom E. Edwards  
 Phone (916) 451-0921

ANALYSIS: Five samples rec'd under chain of custody in 6" brass core tube (+) and 1st amlex glass jar (1) to be analyzed for PHEXTN GC-FID, 8240, ICAP, Cd, Cr, Pd, Zinc, 8270 and MBAS.  
(Moella and 1-water)

Sample ID	Matrix	Date	Time	Analysis	Matrix	Container
3096-1	1W	1/12	1345	PHEXTN	SOIL	1-6" core tube
-2	2E	}	1350	8240	}	}
-3	3E		1355	ICAP, Cr, Pd, Pb		
-4	4W	}	1400	8270	}	}
-5	1A		1630	MBAS		

## AMENDED

Per conversation between Karl Anania and Margie Namba on 1/16/89 at 1500 hrs, change Pd on 3096-3 to Pb.  
 3096-3 will be analyzed for Cd, Cr, Zn, and Pb by ICAP.

Tcw 1/16/89

RL  
 M.A. MICHELLE TOLVER

O.T.C.

ANANIA GEOLOGIC ENGINEERING

CHAIN OF CUSTODY RECORD

PROJECT NAME: Carnation Oakland PROJECT No. 004-88-059

REPORT RESULTS TO: Tom E. Edwards / Karl J. Anania

SURVEY				SAMPLERS				SEQ. No.	No. OF CONTAINERS	ANALYSIS REQUIRED
LABORATORY LOG NUMBER	STATION NUMBER	DATE	TIME	SAMPLE TYPE						
				SOIL		WATER				
				COMP	GRAB					
	<u>Waste Oil Tank Pull</u>									
									<u>Karl Anania / Joe S. Bohler</u>	
	<u>Waste Oil 1W</u>	<u>11/2/89</u>	<u>1345</u>		X				<u>Brass TUBE</u>	
	<u>2E</u>	<u>11/12/89</u>	<u>1350</u>		X				<u>8240</u>	
	<u>3E</u>	<u>11/12/89</u>	<u>1355</u>		X				<u>ICAP Cd, Cr Pb, Zn</u>	
	<u>4W</u>	<u>11/12/89</u>	<u>1400</u>		X				<u>8270</u>	
									<u>2 week verticals</u>	
									<u>SAMPLES REC'D IN GOOD CONDITION</u>	

RELINQUISHED BY: <u>Joe S. Bohler</u>	RECEIVED BY:	DATE / TIME
		<u>11/13/89 12:35</u>
RELINQUISHED BY: _____	RECEIVED BY: _____	DATE / TIME
RELINQUISHED BY: _____	RECEIVED BY: _____	DATE / TIME
RECEIVED FOR LABORATORY BY: <u>Michelle Tolix</u>		DATE / TIME
		<u>11/13 12:35</u>
METHOD OF SHIPMENT: <u>Ice chest in car</u>		



C.W 3096

ENVIRONMENTAL

AGE

ENERGY MINERALS

ANANIA GEOLOGIC ENGINEERING

CHAIN OF CUSTODY RECORD

PROJECT NAME: Carnation/Oakland . PROJECT No. 004-88-059 .

REPORT RESULTS TO: Tom E. Edwards / Karl J. Anania .

SURVEY				SAMPLERS				SEQ. No.	No. OF CONTAINERS	ANALYSIS REQUIRED
Groundwater from tank excavation for Soaps/Surfactants				Karl Anania / J. Sandhoff						
LABORATORY LOG NUMBER	STATION NUMBER	DATE	TIME	SAMPLE TYPE						
				SOIL COMP	SOIL GRAB	WATER				
	Sample 1A	1/12/89	16 <sup>30</sup>			X		Brown liter	Soap/Surfactants & degreasers	
	<del>Sample 1B</del>	<del>1/12/89</del>	<del>16<sup>30</sup></del>			X		"	<del>Soap/Surfactants &amp; degreasers</del>	
SAMPLES REC'D IN GOOD CONDITION										
Hold at AGE										
JAG 1/14/89										

RELINQUISHED BY: J. Sandhoff RECEIVED BY: \_\_\_\_\_ DATE / TIME: 1/13/89 / 12:34pm

RELINQUISHED BY: \_\_\_\_\_ RECEIVED BY: \_\_\_\_\_ DATE / TIME: \_\_\_\_\_

RELINQUISHED BY: \_\_\_\_\_ RECEIVED BY: \_\_\_\_\_ DATE / TIME: \_\_\_\_\_

RECEIVED FOR LABORATORY BY: Michelle Tolix DATE / TIME: 1/13/89 / 12:34

METHOD OF SHIPMENT: Ice chest in car

C.W. 3096

ENVIRONMENTAL

AGE

ENERGY MINERALS

ANANIA GEOLOGIC ENGINEERING

CHAIN OF CUSTODY RECORD

PROJECT NAME: Carnation Oakland PROJECT No. 004-88-059

REPORT RESULTS TO: Tom E. Edwards / Karl J. Anania

SURVEY				SAMPLERS					
<u>Waste Oil Tank Pull</u>				<u>Karl Anania for Sambother</u>					
LABORATORY LOG NUMBER	STATION NUMBER	DATE	TIME	SAMPLE TYPE			SEQ. No.	No. OF CONTAINERS	ANALYSIS REQUIRED
				SOIL		WATER			
				COMP	GRAB				
	<u>Waste Oil 1W</u>	<u>1/12/89</u>	<u>1345</u>		X			<u>BRASS TUBE</u>	<u>TPH (GC/FID) MOD 8015</u>
	<u>2E</u>	<u>1/12/89</u>	<u>1350</u>		X			<u>11</u>	<u>8240</u>
	<u>3E</u>	<u>1/12/89</u>	<u>1355</u>		X			<u>11</u>	<u>ICAP Cd, Cr Pb, &amp; ZN</u>
	<u>4W</u>	<u>1/12/89</u>	<u>1400</u>		X			<u>11</u>	<u>8270</u>
<u>2 more vials</u>									
<u>SAMPLES REC'D IN GOOD CONDITION</u>									

RELINQUISHED BY: <u>[Signature]</u>	RECEIVED BY:	DATE / TIME <u>1/13/89 / 12:35</u>
RELINQUISHED BY: _____	RECEIVED BY: _____	DATE / TIME
RELINQUISHED BY: _____	RECEIVED BY: _____	DATE / TIME
RECEIVED FOR LABORATORY BY: <u>Michelle Toliver</u>		DATE / TIME <u>1/13 / 12:35</u>
METHOD OF SHIPMENT: <u>Ice chest in car</u>		

C.W 30916

ENVIRONMENTAL

AGE

ENERGY MINERALS

ANANIA GEOLOGIC ENGINEERING

sent due 11/1

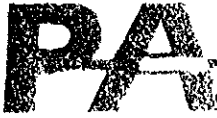
CHAIN OF CUSTODY RECORD

PROJECT NAME: Carnation/Oakland . PROJECT No. 004-88-059 .

REPORT RESULTS TO: Tom E. Edwards / Karl J. Anania .

LABORATORY LOG NUMBER	STATION NUMBER	DATE	TIME	SAMPLERS			SEQ. No.	No. OF CONTAINERS	ANALYSIS REQUIRED
				SAMPLE TYPE		WATER			
				SOIL COMP	GRAB				
	Sample 1A	1/12/89	16 <sup>30</sup>			X		Brown liter	Soap/Surfactant & degreasers
	<del>Sample 1B</del>	<del>1/12/89</del>	<del>16<sup>30</sup></del>			X		"	Soap/Surfactants & degreasers
<p>SAMPLES REC'D IN GOOD CONDITION</p> <p>Hold at AGE</p> <p>1/14/89</p>									

RELINQUISHED BY: <u>Joe Sandhoff</u>	RECEIVED BY: _____	DATE / TIME 1/13/89 / 12:34pm
RELINQUISHED BY: _____	RECEIVED BY: _____	DATE / TIME
RELINQUISHED BY: _____	RECEIVED BY: _____	DATE / TIME
RECEIVED FOR LABORATORY BY: <u>Michelle Solis</u>		DATE / TIME 1/13/89 / 12:34
METHOD OF SHIPMENT: <u>Ice chest in car</u>		



Precision Analytical Laboratory, Inc.

4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-0300 FAX (415) 222-1251

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 211

Received: 01/26/89  
Reported: 02/10/89  
Job No. #: 70645

Attn: Karl Anania / Tom Edwards  
Anania Geological Engineering  
1447 35th Street  
Sacramento, CA. 95816

Project: CARNATION

Total Petroleum Hydrocarbon Analysis; By Modified Method 8015  
Nitrogen (Ammonia) Analysis; By Standard Method 417D  
Total Dissolved Solids; By Standard Method 209B  
mg/l

Lab ID	Client ID	Diesel	Gasoline	TDS	Ammonia	pH
70645-1	Groundwater	420	2,170	0.74	20	7.5

QA/QC: Spike Recovery for Diesel: 80%  
Spike Recovery for Gasoline: 112%

Detection Limit for TPH: 20  
Detection Limit for Ammonia: 10

Jaime Chow  
Laboratory Director