

ENVIRONMENTAL  
PROTECTION  
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November 18, 1995

**Chevron U.S.A. Products Company**  
6001 Bollinger Canyon Rd , Bldg L  
P.O. Box 5004  
San Ramon, CA 94583-0804

**Mark A. Miller**  
SAR Engineer  
Phone No. 510 842-8134  
Fax No 510 842-8252

Ms. Jennifer Eberle  
Alameda County Health Care Services  
Department of Environmental Health  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577

**Re: Former Chevron Service Station #9-4816  
301 14th Street, Oakland, CA**

Dear Ms. Eberle:

Enclosed is the System Startup Report dated October 20, 1995, prepared by our consultant Terra Vac Corporation for the above referenced site. The report documents the progress of the remedial system. Similar update report will be forwarded to your office on a monthly basis until remediation is completed.

If you have any questions or comments, please feel free to contact me at (510) 842-8134.

Sincerely,  
CHEVRON U.S.A. PRODUCTS COMPANY

A handwritten signature in black ink, appearing to read "Mark A. Miller".

Mark A. Miller  
Site Assessment and Remediation Engineer

Enclosure

cc: Mr. Tim Warner, Terra Vac  
Mr. J.N. Robbins, CHVPK/V1156  
Ms. B.C. Owen

Ms. Beth D. Castleberry  
Gray, Cary, Ware & Freidenrich  
400 Hamilton Avenue  
Palo Alto, CA 94301-1825



14798 WICKS BOULEVARD  
SAN LEANDRO, CALIFORNIA 94577-6718

■ TEL (510) 351-8900  
■ FAX (510) 351-0221

October 20, 1995

Mr. Mark Miller  
Chevron U.S.A. Products Company  
6001 Bollinger Canyon Road  
San Ramon, California 94583

Re: System Startup Report  
Former Chevron Station 9-4816  
301 14th Street  
Oakland, California

ENVIRONMENTAL  
PROTECTION  
95 NOV 21 PM 2:49

Dear Mr. Miller:

Enclosed please find the startup report for remediation operations at the above referenced site. This report includes operating data, duration, rates of hydrocarbon removal, cumulative pounds removed to date and air permit compliance information.

If you have any questions, please feel free to call.

Sincerely,  
Terra Vac Corporation

Jason L. Nutt  
Staff Engineer

  
Timothy M. Warner  
Project Manager

Enclosure

cc: File 30-0220.20

**SYSTEM STARTUP REPORT  
FORMER CHEVRON STATION 9-4816  
301 14TH STREET  
OAKLAND, CALIFORNIA**

## **1.0 Background**

Terra Vac has been contracted by Chevron U.S.A. Products Company (Chevron) to install and operate a soil and groundwater remediation system at the above referenced site (Figure 1). The purpose of this report is to provide data on system startup, operation, and source test data for the first week of operation.

## **2.0 Startup**

The Global 750 catalytic oxidizer was activated on Tuesday, October 3, 1995. Before operations began, all equipment and control systems were checked for proper operation. The equipment being utilized at the site is as follows:

*Vapor Abatement System:* To meet the requirements of the air pollution control district, and Global 750 catalytic oxidizer was mobilized to the site. This unit is operating on 208 volt, 3 phase service, and uses propane as supplemental fuel.

A 30 horsepower Lamson TurboTron will supply the necessary soil vacuum. The extraction equipment is integrated as part of the Global 750 and is equipped with an explosion proof motor, motor controls, and noise suppression devices.

A 150-gallon vapor-liquid separator has been integrated into the system and is mounted on the Global 750 trailer. This separator has both high and high-high water level controls that operate the water pump and shut the system down, respectively.

*Air Injection System:* A 15 horsepower oil-free blower was mobilized to the site to enhance naturally occurring biodegradation. Since no free product was encountered during startup, this system is operating in conjunction with the vapor abatement system.

## **3.0 Operations**

Initial testing and safety check out of the system took place on October 2, 1995, and actual startup occurred on October 3, 1995. A source test was conducted to verify air permit compliance and destruction efficiency. Upon successful completion of the source test, Terra Vac



was given verbal approval to operate prior to receipt of the permit to operate document. Operating data is shown in Table 1, and efficiency data is presented as Table 2.

Due to high water yield, seven of the ten extraction wells were brought on-line the first day. Initial extraction rates were approximately 34 pounds of petroleum hydrocarbons per day (lbs/day), which rapidly increased to an extraction rate of 660 lbs/day. Based on analyses of inlet vapor samples through October 17, 1995, approximately 3,854 pounds, or 640 gallons, of hydrocarbon have been removed from the subsurface. A graph showing removal rate versus time is attached as Figure 2, and a graph showing cumulative pounds of hydrocarbons removed is attached as Figure 3.

Table 3 shows the individual wellhead concentrations and Table 4 shows the vapor stream components of representative on-line wells utilizing BTEX compounds for fractional cuts. Percentages above 60 percent in the benzene and lighter range usually indicate proximity to relatively fresh product or that the well is drawing from a distant source. To monitor the progress of remediation, Terra Vac will track the decline in the percentage of vapors lighter than benzene.

The remediation system has operated for 14.1 days, with only minor shut downs caused by high liquid level in the knock-out pot (KO) and high LEL. In all cases, the problem was quickly remedied and the system restarted.

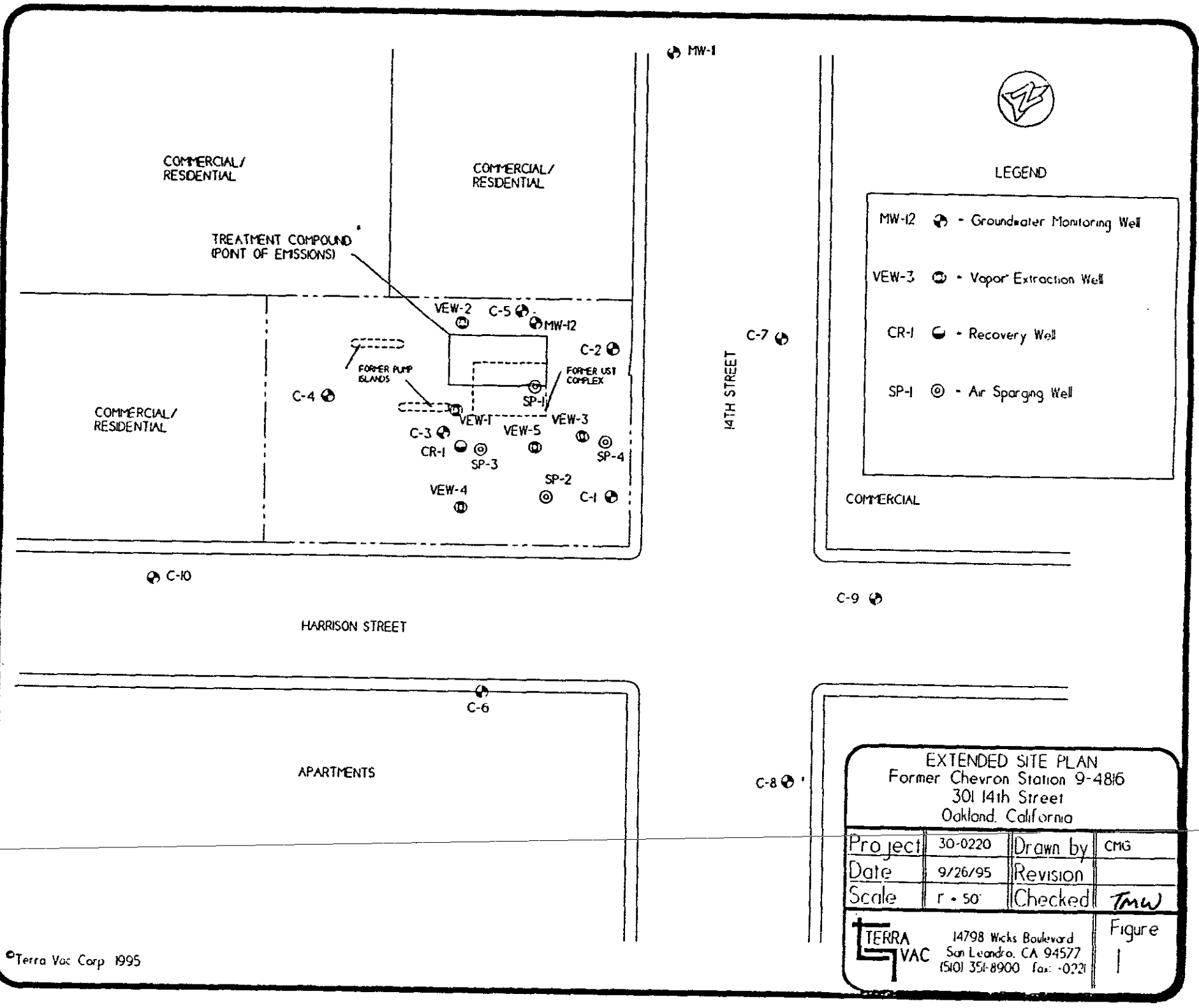
#### **4.0 Air Permit Compliance**

As per Bay Area Air Quality Management District (BAAQMD) requirements, an on-site source test was conducted between October 3, and October 10. Samples were taken from the inlet and outlet of the abatement device to determine destruction efficiencies at the documented flow rate and stack temperature. Bag samples were taken for five consecutive working days and analyzed in the Terra Vac office laboratory for TPH-g and BTEX via modified EPA methods 8015/8020.

After the first week of operation, samples will be taken and analyzed on a weekly basis for a one month period, after which Terra Vac will sample bi-monthly for the length of the project.

Destruction efficiencies for the first week are presented in Table 2, and demonstrates that the unit is maintaining a destruction efficiency of greater than 99 percent when inlet concentrations are below 2000 parts per million by volume. The resulting destruction efficiencies meet the requirements set by the BAAQMD.





COMMERCIAL/  
RESIDENTIAL

COMMERCIAL/  
RESIDENTIAL

TREATMENT COMPOUND  
(POINT OF EMISSIONS)

COMMERCIAL/  
RESIDENTIAL

FORMER PUMP  
ISLANDS

FORMER UST  
COMPLEX

C-10

HARRISON STREET

APARTMENTS

C-6


MW-1



LEGEND

MW-12  - Groundwater Monitoring Well

VEW-3  - Vapor Extraction Well

CR-1  - Recovery Well

SP-1  - Air Sparging Well

COMMERCIAL

14TH STREET

C-7

C-9

C-8

EXTENDED SITE PLAN  
Former Chevron Station 9-4816  
301 14th Street  
Oakland, California

Project	30-0220	Drawn by	cmg
Date	9/26/95	Revision	
Scale	1" = 50'	Checked	Tmw

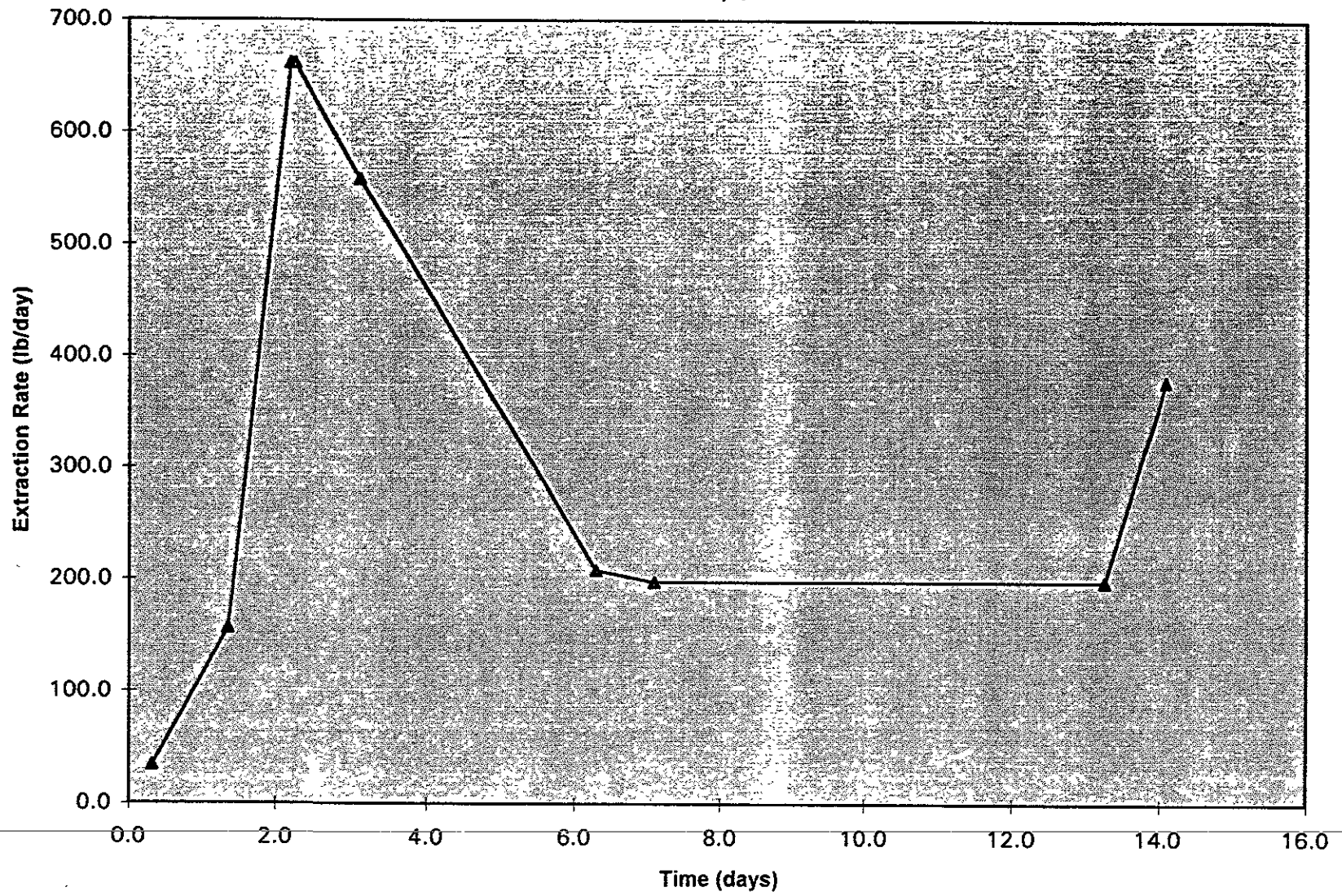
**TERRA VAC**  
14798 Wicks Boulevard  
San Leandro, CA 94577  
(510) 351-8900 Fax: -0221

Figure

1

Figure 2  
Removal Rate

Former Chevron Station 9-4816  
301 14th Street  
Oakland, CA



**FIGURE 3**  
**Cumulative Removal Rate**

Former Chevron Station 9-4816  
301 14th Street  
Oakland, CA

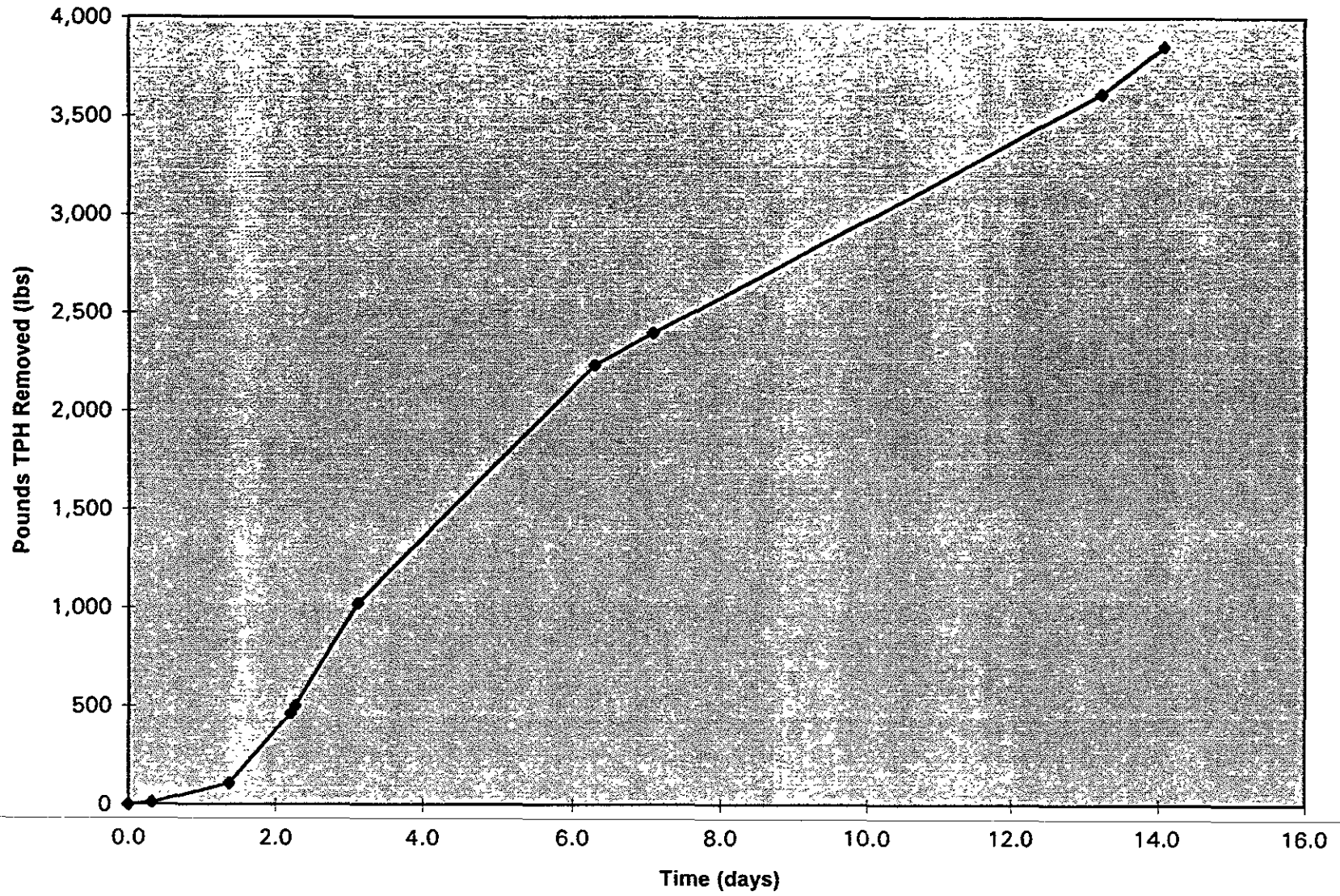


Table 1  
Operation Summary

TERRA VAC

Former Chevron Station 9-4816  
301 14th Street  
Oakland, CA

Date	Run Time (days)	Sample	Extracted			Cumulative Extraction (lb)	Cumulative Water (gal)
			Flow (scfm)	Conc. (mg/l)	Rate (lb/day)		
10/03/95	0.0	start	558			0	
10/03/95	0.3	1	558	0.68	34.1	11	0
10/04/95	1.4	3	507	3.44	156.6	109	0
10/05/95	2.2	5	596	12.36	661.5	462	4,270
10/05/95	2.3	stop	0		661.5	501	4,270
10/06/95	2.3	start	538		661.5	501	4,270
10/06/95	3.1	7	467	13.31	558.1	1,019	4,412
10/09/95	6.3	9	307	7.56	208.3	2,234	16,360
10/10/95	7.1	11	385	5.72	197.6	2,396	22,264
10/16/95	13.3	nst	447		197.6	3,612	58,340
10/17/95	14.1	23	447	9.41	377.6	3,854	65,070





Table 2  
Operation Summary

TERRA VAC

Former Chevron Station 9-4816  
301 14th Street  
Oakland, CA

Date	Run Time (days)	Outlet		Conc (mg/l)	Benzene Conc (mg/l)	Emissions Rate pounds per day		Abatement Efficiency (%)
		Temp (deg F)	Flow (scfm)			POC	Benzene	
10/03/95	0.3	598	658	0.016	0.002	0.95	0.12	97.23
10/04/95	1.4	720	607	0.100	0.002	5.45	0.11	96.52
10/05/95	2.2	1135	696	0.003	0.002	0.19	0.13	99.97
10/06/95	3.1	1186	567	0.045	0.002	2.29	0.10	99.59
10/09/95	6.3	855	397	0.012	0.002	0.43	0.07	99.79
10/10/95	7.1	868	449	0.018	0.002	0.73	0.08	99.63
10/17/95	14.1	600	511	0.188	0.002	8.63	0.09	97.72

Notes: 1.) Detection limit = 0.002 mg/l



**Table 3  
Operation Summary**

Former Chevron Station 9-4816  
301 14th Street  
Oakland, CA

Date	10/17/95
<b>CR-1</b>	
lighter than benzene	61%
benzene to toluene	24%
toluene to xylene	12%
heavier than xylene	3%
<b>C-1</b>	
lighter than benzene	34%
benzene to toluene	36%
toluene to xylene	24%
heavier than xylene	6%
<b>C-2</b>	
lighter than benzene	62%
benzene to toluene	19%
toluene to xylene	9%
heavier than xylene	10%
<b>C-5</b>	
lighter than benzene	61%
benzene to toluene	24%
toluene to xylene	11%
heavier than xylene	4%
<b>VEW-4</b>	
lighter than benzene	36%
benzene to toluene	35%
toluene to xylene	19%
heavier than xylene	10%
<b>INLET</b>	
lighter than benzene	39%
benzene to toluene	25%
toluene to xylene	25%
heavier than xylene	11%

Table 4  
Operation Summary

TERRA VAC

Former Chevron Station 9-4816  
301 14th Street  
Oakland, CA

Well	Vapor Concentrations (mg/L)											
	CR-1	C-1	C-2	C-3	C-5	VEW-1	VEW-2	VEW-3	VEW-4	VEW-5	Inlet	
Date												
10/17/95	9.93	25.17	6.24	9.93	10.01	6.19	4.47	11.89	5.36	11.95	9.41	

