100 Pine Street, 10th Floor San Francisco, CA 94111 (415) 434-9400 • FAX (415) 434-1365

6 November 1991 Project 1886.01

Mr. Hugh Murphy City of Hayward Fire Department Hazardous Materials Office 22300 Foothill Boulevard Hayward, California 94541

RECEIVED BY HAZARDOUS MATERIALS OFFICE NOV 08 1991



HAYWARD FIRE DEPARTMENT

Subject:

Soil Investigation Report

Sunnyside Nursery--Phase I Development

23934 Mohr Avenue Hayward, California

Dear Mr. Murphy:

On behalf of The Plymouth Group (Plymouth) of Mountain View, California, Geomatrix Consultants, Inc. (Geomatrix), is enclosing a soil investigation report for the subject site. This report is based on soil sampling and analysis conducted by Geomatrix and others.

The subject site is a 6.5-acre area (Phase I) of the 17-acre former Sunnyside Nursery parcel that Plymouth plans to prepare for development. This report discusses the distribution of organochlorine pesticides detected in soil in the Phase I area.

As we discussed in the 8 August 1991 meeting with you and Plymouth representatives, a remedial action work plan for the subject area will be prepared based on the conditions discussed in this report. The work plan will present the soil blending procedure proposed for remediating the Phase I area. In addition, the work plan will address the petroleum hydrocarbon-affected soil in the Phase I area of the site.

Your continued participation on this project is appreciated. If you have any questions or wish to discuss the soil investigation report, please contact either of the undersigned.

Sincerely yours,

GEOMATRIX CONSULTANTS, INC.

Chale Noisen for Elizabeth Wells

Project Engineer

**Enclosures** 

Pamela Evans, ACHCSA cc:

Scott Wolff, ERS

Curtis Peterson, Plymouth

Geomatrix Consultants, Inc.

Engineers, Geologists, and Environmental Scientists



## SOIL INVESTIGATION REPORT SUNNYSIDE NURSERY - PHASE I DEVELOPMENT

Sunnyside Nursery Hayward, California

Prepared for

The Plymouth Group 1616 N. Shoreline Boulevard Mountain View, California

6 November 1991 Project No. 1886.01

**Geomatrix Consultants** 



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## SOIL INVESTIGATION REPORT SUNNYSIDE NURSERY - PHASE I DEVELOPMENT

Hayward, California

#### 1.0 INTRODUCTION

Geomatrix Consultants, Inc. (Geomatrix), was retained by The Plymouth Group (Plymouth) to perform additional soil sampling on a portion of the former Sunnyside Nursery site parcel in Hayward, California. It is our understanding that Plymouth plans initially to prepare approximately 6.5 acres (Phase I) of the 17-acre former Sunnyside Nursery parcel for residential development (See Figure 1). Geomatrix conducted soil sampling to supplement previous information obtained by Terratech, Inc. (Terratech), of San Jose, California, concerning the extent of pesticide-affected soil, and to support development of a remedial action work plan for the Phase I area. This work was performed in accordance with the Scope of Services that Geomatrix submitted to Plymouth on 19 September 1991. This report discusses the recent soil sampling activities and analytical results of investigations performed for the Phase I portion of the site.

#### 2.0 PREVIOUS INVESTIGATIONS

In January 1989, Terratech collected 24 near-surface soil samples (HS-1 to HS-24) as part of a preliminary soil characterization study of the 17-acre Sunnyside Nursery property. Selected soil samples were analyzed for metals (U. S. Environmental Protection Agency [EPA] Method 6010); oil and grease (Standard Method 413.1); volatile organic compounds (EPA Method 8240); benzene, toluene, ethylbenzene, and xylenes [BTEX] (EPA Methods 8015 and 8020), carbamates (EPA Method 632), and organochlorine pesticides and polychlorinated biphenyls (EPA Method 8080). Organochlorine pesticides, including DDT-family, dieldrin, endrin, and endosulfan-family compounds, were detected in on-site soil. No other pesticides were reported above laboratory detection limits.



Analytical results and discussions of these sampling activities are included in Terratech's February 1989 report entitled "Phase I, Environmental/Toxics Investigation, Sunnyside Nursery, Hayward, California," prepared for Plymouth.

Based on the pesticides detected in the study cited above, Environmental Risk Sciences, Inc. (ERS) of San Francisco prepared a 22 June 1989 report entitled "Health Risk Assessment, Sunnyside Commons Project, Hayward, California." ERS assumed that the California Code of Regulations (CCR) Title 22 Total Threshold Limit Concentrations (TTLC) for DDT-family, dieldrin, and endrin, and the estimated "safe-soil" level for endosulfan would be the maximum soil concentrations or cleanup levels for soil that remained on site following excavation. ERS estimated the safe-soil level for endosulfan-family compounds by applying a safety factor of ten to the reference doses published by the EPA. The report concluded that, "based on the health risk values derived using currently accepted risk assessment methods, the levels of pesticides that will be allowed to remain in on-site surface soils following the completion of excavation activities would pose an insignificant health risk to individuals who will have continual access to the Sunnyside Commons (Nursery) property." The cleanup levels developed in the ERS report are listed in Table 1 and are used to describe the extent of pesticide-affected soil in the Phase I area of the site.

In December 1990 and February 1991, Terratech collected 58 additional near-surface soil samples (RS-1 through RS-58) from the 17-acre property. These soil samples were analyzed for organochlorine pesticides by EPA Method 8080. DDT-family, dieldrin, endrin, and endosulfan-family compounds again were detected. In addition, chlordane, not detected in Terratech's Phase I Investigation, was detected in several soil samples. Complete analytical results and discussions of these sampling activities are included in Terratech's 27 February 1991 letter report, "Status Report, Statistical Characterization of Pesticides Concentrations, Sunnyside Nursery," and the 25 March 1991 letter report, "Table Summary of Pesticide Results, Sunnyside Nursery," both submitted to Plymouth.



Of the soil samples collected by Terratech, 25 discrete soil samples and one 4:1 composite soil sample were collected from the 6.5-acre proposed Phase I development area. Of these, 22 discrete and the one composite sample were analyzed for organochlorine pesticides using EPA Method 8080. Sample locations are shown on Figure 2; analytical results for these samples are presented in Table 2. The following organochlorine pesticides were detected: DDT-family, dieldrin, endrin and endrin ketone, chlordane, and endosulfan-family compounds. DDT-family, endrin, and endosulfan-family compounds were detected at concentrations greater than the ERS risk assessment soil cleanup levels in five general areas.

The three additional samples from the Phase I area of the site, HS-18, HS-19, and HS-20, were analyzed for oil and grease by Standard Method 413.1, and were composited for volatile organic compound analysis by EPA Method 8240. These results are presented in Table 5. Oil and grease was detected at concentrations of 60, 380, and 40 milligrams per kilogram (mg/kg), in the three samples. No volatile organic compounds were detected.

### 3.0 FIELD ACTIVITIES AND ANALYTICAL RESULTS

Geomatrix's plan for soil sampling in the Phase I area was developed to: (1) further evaluate the distribution of organochlorine pesticides previously detected; (2) evaluate the presence in shallow soil of other pesticides known to have been used at the site, (3) evaluate diesel in soil near the apparent aboveground diesel tanks and piping.

Zaccor Corporation (Zaccor) of Menlo Park, California, collected soil samples under the direction of Geomatrix on 2 October 1991. Samples were collected from 26 locations (Figure 2). Samples were collected by driving a split-spoon sampler into the soil using a tractor-mounted hydraulic jack hammer. Samples for hydrocarbon analysis were collected in clean, thin-walled brass tubes placed inside split-spoon sampling tubes. Samples for arsenic, lead, and pesticide analyses were collected directly from the split-spoon sampler and placed in glass sampling jars. Samples were sealed, labeled, and placed in an ice-



cooled chest until delivery to the analytical laboratories under Geomatrix chain-of-custody procedures. Chemical analyses were performed by three state-certified analytical laboratories: Chromalab, Inc. (Chromalab), of San Ramon, California; Precision Analytical Laboratory (PAL) of Richmond, California; and North Coast Laboratories LTD (NCL) of Arcata, California. Laboratory analytical reports and chain-of-custody records are included in Appendix A.

#### 3.1 FURTHER EVALUATION OF ORGANOCHLORINE PESTICIDES

Geomatrix conducted additional near-surface soil sampling to further evaluate the distribution of previously detected organochlorine pesticides. Fifteen soil samples, or approximately two samples per acre, were collected. Near-surface soil samples were collected from two depth intervals: 6 to 12 inches and 18 to 24 inches. In addition, five soil samples were collected from depths of 30 to 36 inches. The samples from 6 to 12 inches were analyzed for organochlorine pesticides; the other samples were held for possible future analysis.

Fifteen samples (GS-1 through GS-13, GS-HC-2, and GS-HC-5) were analyzed by PAL using EPA Method 8080 for organochlorine pesticides. Analytical results are summarized in Table 3; laboratory reports are included in Appendix A. Two soil samples, GS-1 and GS-11, contained concentrations of DDT-family compounds that exceeded the 1.0 mg/kg cleanup level (1.75 and 1.20 mg/kg). DDT-family compounds were detected at concentrations ranging from 0.05 to 0.70 mg/kg, below cleanup concentrations, in samples GS-8, GS-9, GS-10, and GS-13. Sample GS-HC-2 contained 0.4 mg/kg of chlordane. Organochlorine pesticides were not detected in the remaining eight samples analyzed.

#### 3.2 EVALUATION FOR OTHER PESTICIDES

Several other classes of pesticides reportedly were used at the Sunnyside Nursery in nursery operations. These include carbamate and organophosphate compounds. Four samples were collected in the Sunnyside Commons II property during Terratech's Phase I assessment and were analyzed for carbamates by EPA Method 632. No carbamates were detected in the



soil samples. To evaluate these compounds in the Phase I area of the site, Geomatrix collected near-surface soil samples for analysis for carbamates and organophosphates. In addition, because arsenic and lead are components of pesticides commonly used in the past and are persistent, an analysis for these two elements also was conducted.

Two sample areas were selected where elevated levels of organochlorine pesticides had been detected in previous investigations (Figure 2). Surface samples (0 - 6 inches) were taken at four locations in each area. The four samples from each location were composited by Chromalab prior to analysis.

Chromalab analyzed both composited surface samples for organophosphate pesticides by EPA Method 8140 and for arsenic and lead by EPA Methods 7061 and 7420, respectively. Duplicate composite samples were forwarded to NCL, where carbamate analysis was performed by EPA Method 632. Analytical results are summarized in Table 4; laboratory reports are included in Appendix A. No organophosphates, or arsenic were detected in either composite sample. Lead was detected at concentrations of 33.1 mg/kg in sample GS-C 1,2,3,4 and 9.41 mg/kg in sample GS-C 5,6,7,8. The carbamate diuron was detected at 0.25 mg/kg in sample GS-C5,6,7,8. No other carbamates were detected in either of the composite samples.

#### 3.3 EVALUATION OF DIESEL-AFFECTED SOIL

Two aboveground tanks located in the paved area of the northeast portion of the site apparently were used for storing fuel. Soil sampling was conducted to evaluate possible effects of diesel or oil on soil near the aboveground tanks and associated piping. Five near-surface samples (GS-HC-1 through GS-HC-5) were collected near the aboveground tanks and analyzed for extractable hydrocarbons.

PAL analyzed the five samples for diesel and oil by DHS Extraction Method (EPA Method 3550). Analytical results are summarized in Table 5; laboratory reports are included in



Appendix A. Sample GS-HC-1 contained 400 mg/kg as diesel. The four other samples had diesel concentrations below or near the laboratory detection limits of 1 and 5 mg/kg.

#### 4.0 DISCUSSION AND CONCLUSIONS

Analytical results of soil samples from the Phase I area collected by Terratech and Geomatrix indicate the soil contains DDT-family compounds, dieldrin, endrin, endosulfan-family compounds, chlordane, and diuron at maximum concentrations of 1.75, 0.05, 8.8, 39.2, 0.78, 0.25 mg/kg, respectively (Tables 2, 3, and 4). A preliminary estimate of the combined area of soil that contains DDT-family, endrin, and endosulfan-family pesticides in excess of cleanup concentrations is estimated to be 75,000 square feet (Figure 3). Assuming that soil containing these pesticides in excess of cleanup concentrations does not extend below a depth of 18 inches in these areas, the preliminary estimate of the volume of pesticide-affected soil in the Phase I area that may require remediation prior to development is approximately 4500 cubic yards.

Chlordane was detected in four discrete soil samples from the 6.5-acre Phase I area at concentrations less than its TTLC of 2.5 mg/kg. Diuron was detected in one composited soil sample from the 6.5-acre Phase I area. There is no TTLC for diuron. Because these compounds were detected in soil samples at the site after the ERS Risk Assessment Report had been prepared, it did not establish cleanup concentrations for chlordane or diuron. We recommend that cleanup concentrations be established for chlordane and diuron for remedial design. If cleanup concentrations are below detected concentrations of these compounds, the volume of soil requiring remediation may increase.

Soil sampling performed by Geomatrix in the Phase I area revealed no organophosphate pesticides or arsenic. Lead detected in soil samples from the Phase I area was at background concentrations.



An oil and grease analysis performed by Terratech suggested that petroleum hydrocarbons may be present in soil in the area of aboveground tanks. Further sampling and analysis by Geomatrix indicates petroleum hydrocarbons characterized as diesel was detected in one soil sample at a concentration of 400 mg/kg. Diesel-affected soil in this area may require remediation.



#### TABLE 1

## CLEANUP CONCENTRATIONS FOR PESTICIDES IN SOIL1

Sunnyside Nursery Hayward, California

Compound	Cleanup Concentrations (mg/kg)
DDT-Family Compounds	1.0
Dieldrin	8.0
Endrin	0.2
Endosulfan-Family Compounds	$3.5^{2}$

As developed by Environmental Risk Sciences, Inc., in "Health Risk Assessment, Sunnyside Commons Project, Hayward, California"; 22 June 1989; prepared for The Plymouth Group.

<sup>&</sup>lt;sup>2</sup> Cleanup levels for endosulfan-family pesticides called "safe-soil" concentration levels and derived by Environmental Risk Sciences, Inc. All other cleanup levels equal California Title 22 TTLC values.

## TABLE 2

## ORGANOCHLORINE PESTICIDE ANALYTICAL RESULTS - PHASE I AREA¹ TERRATECH SOIL SAMPLES

Sunnyside Nursery Hayward, California

(concentrations in mg/kg)

Sample I.D.	DDT-Family Compounds	Dieldrin	Endrin	Endosulfan-Family Compounds	Chlordane
HS-17	ND	NID	ND	7.24	$ND^2$
RS-2		ND	ND	7.34	
	1.47	ND	1.38	.64	ND
RS-5	0.06	ND	0.11	0.06	ND
RS-8	0.06	ND	0.04	0.32	ND
RS-10	0.27	ND	0.11	0.14	0.46
RS-11	ND	ND	ND	39.20	ND
RS-14	0.07	ND	0.02	0.16	0.13
RS-16	ND	ND	ND	ND	ND
RS-19	ND	ND	ND	ND	ND
RS-23	0.03	ND	0.07	0.09	ND
RS-26	0.03	ND	ND	ND	ND
RS-29	0.41	0.04	0.19	0.03	ND
RS-30	0.23	ND	ND	ND	ND
RS-38	0.11	0.05	0.27	0.08	ND
RS-39	1.37	ND	8.80	10.80	ND
RS-44	ND	ND	0.92	23.7	ND
RS-46	ND	ND	0.04	2.95	0.78
RS-47	0.45	0.04	0.77	0.97	ND
RS-48	0.13	ND	ND	ND	ND
RS-51	0.03	ND	0.03	0.69	ND
RS-52	0.02	ND	ND	ND	ND
RS-53	0.46	ND	0.11	0.21	ND
RS-55	0.31	0.04	0.69	0.06	ND
Detection					Committee of the Commit
Limit	0.016	0.016	0.016	0.016	0.080

Soil samples collected by Terratech, Inc., of San Jose, California.

Sources:

Data for sample ID HS-17 from: Terratech report entitled Phase I, Environmental/Toxics Investigation, Sunnyside Nursery, Hayward, California, February, 1989.

Data for sample IDs RS-2 through RS-30 from: Terratech letter report titled: Status Report, Statistical Characterization of Pesticides Concentrations, Sunnyside Nursery, February, 1991. Data for sample IDs RS-38 through RS-55 from: Terratech letter report: Table Summary of Pesticide Results, Sunnyside Nursery, March, 1991.

Analyses performed by Sequoia Laboratory of Redwood City, California.

<sup>&</sup>lt;sup>2</sup> ND - Not detected.



## ORGANOCHLORINE PESTICIDE ANALYTICAL RESULTS - PHASE I AREA<sup>1</sup> GEOMATRIX SOIL SAMPLES

Sunnyside Nursery Hayward, California

(concentrations in mg/kg)

Sample I.D.	DDT- Family Compounds	Dieldrin	Endrin	Endosulfan- Family Compounds	Chlordane
GS-1	1.75	$ND^2$	ND	ND	ND
GS-2	0.15	ND	ND	ND	ND
GS-3	0.05	ND	ND	ND	ND
GS-4	0.70	ND	ND	ND	ND
GS-5	0.20	ND	ND	ND	ND
GS-6	0.01	ND	ND	ND	ND
GS-7	0.04	ND	ND	ND	ND
GS-8	ND	ND	ND	ND	ND
GS-9	ND	ND	ND	ND	ND
GS-10	ND	ND	ND	ND	ND
GS-11	1.20	ND	ND	ND	ND
GS-12	0.08	ND	ND	ND	ND
GS-13	ND	ND	ND	ND	ND
GS-HC-2	ND	ND	ND	ND	ND
GS-HC-5	ND	ND	ND	ND	0.50
Detection					
Limit	.011	.025	.2	.021	.1

<sup>&</sup>lt;sup>1</sup> Analyses performed by Precision Analytical Laboratory of Richmond, California by EPA Method 8080.

<sup>&</sup>lt;sup>2</sup> ND - Not detected.



# ANALYTICAL RESULTS OF EVALUATION FOR OTHER PESTICIDES PHASE I AREA GEOMATRIX SOIL SAMPLES

Sunnyside Nursery Hayward, California

Compounds	GS-C 1,2,3,4 Concentration (mg/kg)	GS-C 5,6,7,8 Concentration (mg/kg)	Detection Limit (mg/kg)
Metals <sup>1</sup>			
Arsenic	ND⁴	ND	0.005
Lead	33.1	9.41	0.05
Organophosphates <sup>2</sup>			
Meninphos	ND	ND	0.05
Disulfoton	ND	ND	0.05
Chlorpyrifos	ND	ND	0.05
Fenthion	ND	ND	0.05
Parathion Methyl	ND	ND	0.05
Dichlorvos	ND	ND	0.05
Ethoprop	ND	ND	0.05
Phorate	ND	ND	0.05
Merphos	ND	ND	0.05
Demeton-0	ND	ND	0.05
Tokuthion	ND	ND	0.05
Bolstar	ND	ND	0.05
Azinphos Methyl	ND	ND	0.05
Carbamates <sup>3</sup>			
Diuron	ND	0.25	0.20

Analysis performed at Chromalab, Inc., of San Ramon, California, by EPA Methods 7061 and 7420 respectively.

<sup>&</sup>lt;sup>2</sup> Analysis performed by Chromalab by EPA Method 8140.

Analysis performed by North Coast Laboratory of Arcata, California, by EPA Method 632. No other EPA Method 632 compounds were detected.

<sup>&</sup>lt;sup>4</sup> ND - Not detected.



## TABLE 5

# ANALYTICAL RESULTS OF HYDROCARBON ANALYSIS PHASE 1 AREA GEOMATRIX AND TERRATECH SOIL SAMPLES

Sunnyside Nursery Hayward, California

(concentrations in mg/kg)

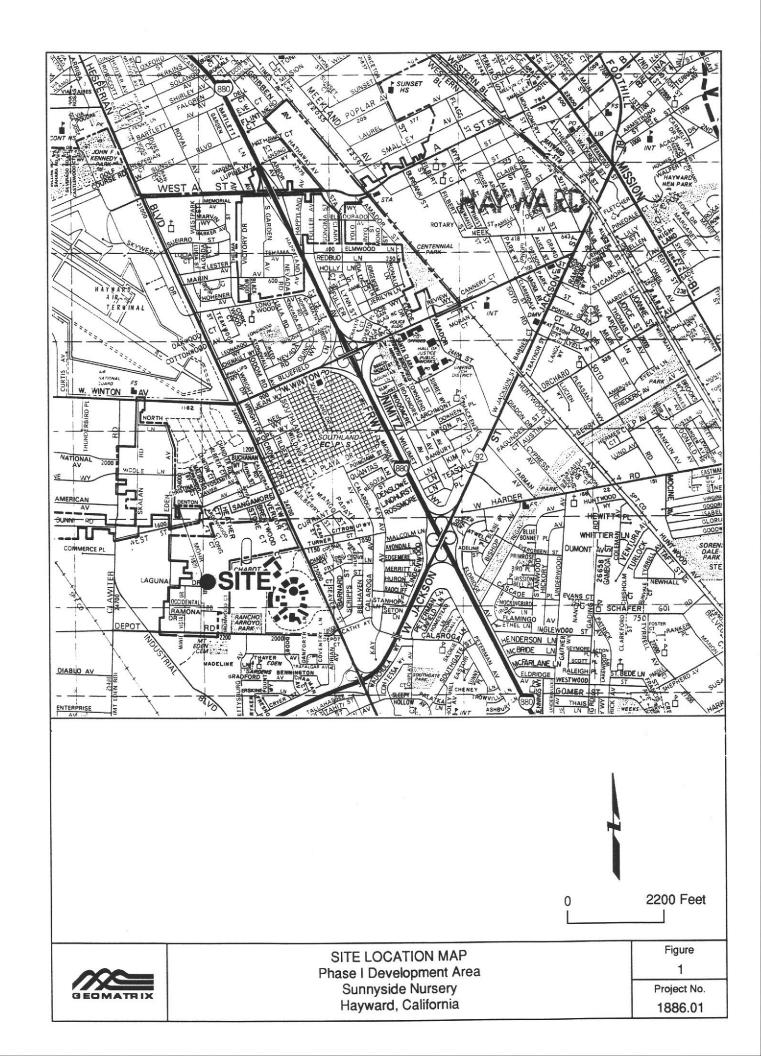
Sample I.D.	Oil & Grease	Volatile Organics	Diesel	Detection Limit
Terratech <sup>1</sup>				
HS-18 HS-19 HS-20	60 380 40	NA³ NA NA	NA NA NA	30 30 30
HS-18,19,20 Composite	NA	ND⁴	NA	0.1-0.5
Geomatrix <sup>2</sup>				
GS-HC-1 GS-HC-2 GS-HC-3 GS-HC-4 GS-HC-5	NA NA NA NA	NA NA NA NA	400 15 ND 2 ND	100 5 1 1

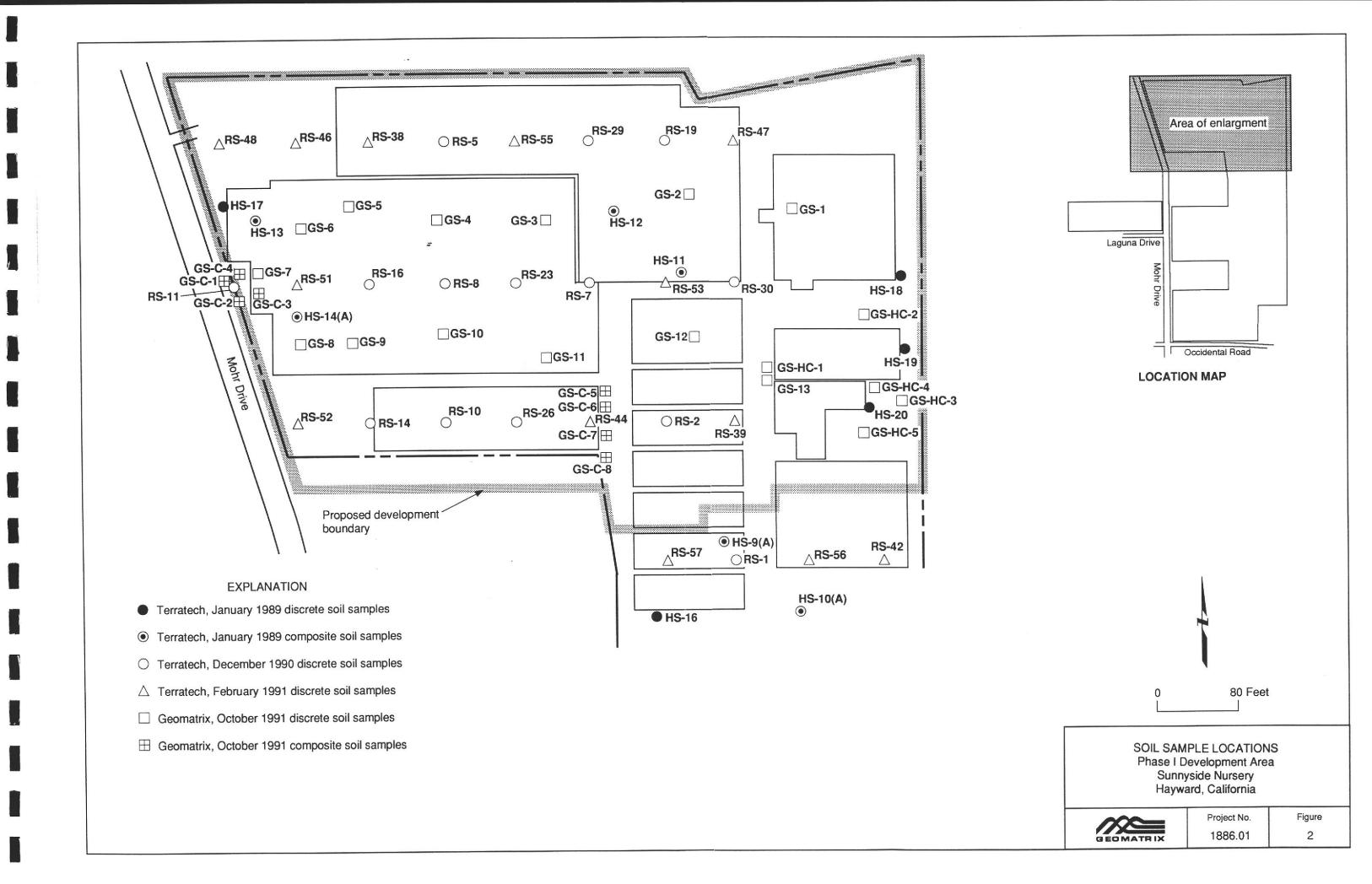
<sup>&</sup>lt;sup>1</sup> Samples analyzed by Sequoia Laboratory of Redwood City, California.

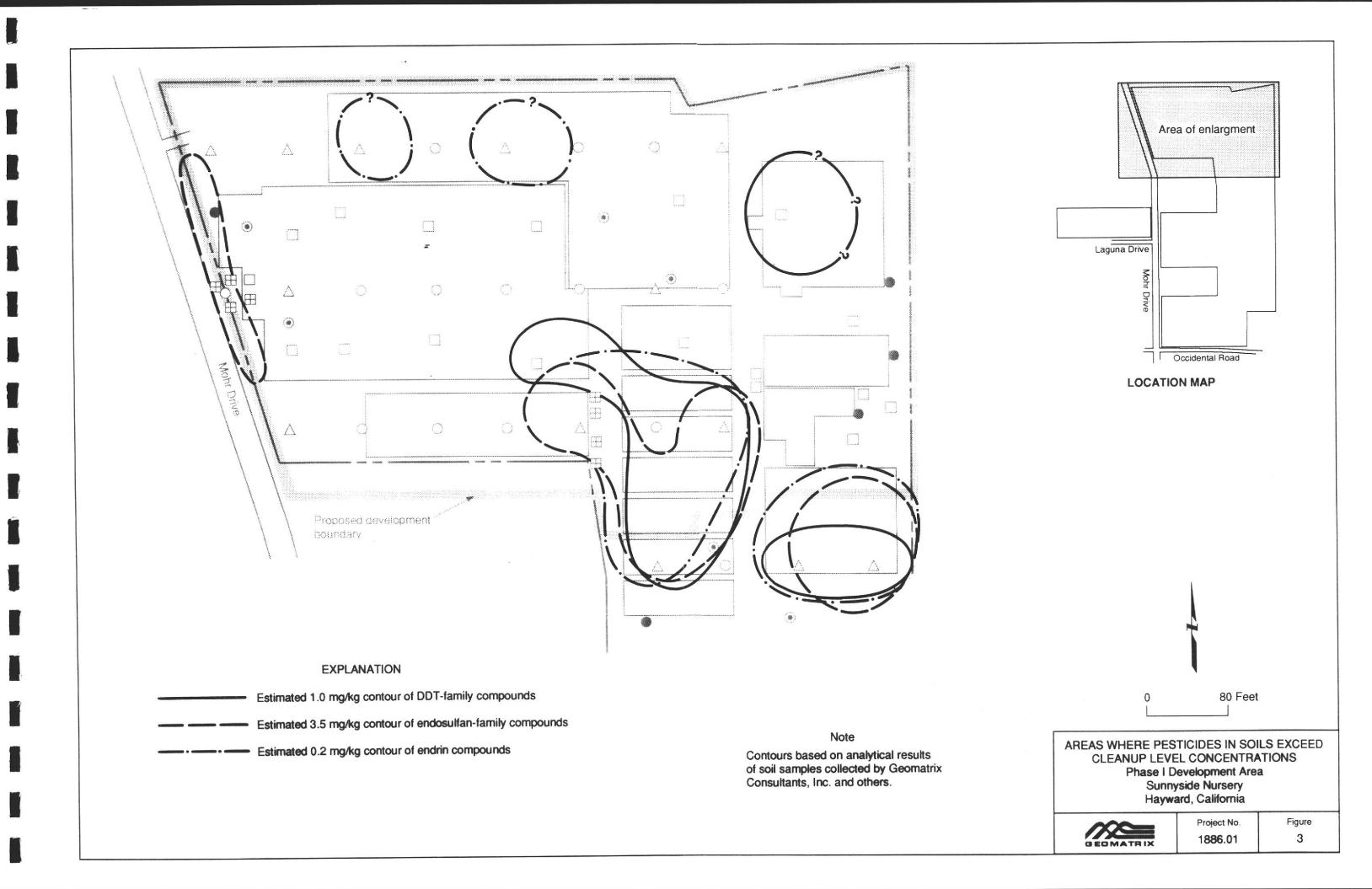
<sup>&</sup>lt;sup>2</sup> Samples analyzed by Precision Analytical Laboratory of Richmond, California.

<sup>&</sup>lt;sup>3</sup> NA - Not analyzed.

<sup>&</sup>lt;sup>4</sup> ND - Not detected.









## APPENDIX A

LABORATORY REPORTS AND CHAIN-OF-CUSTODY RECORDS

#### **5 DAYS TURNAROUND**

## CHROMALAB, INC.

Analytical Laboratory (E694)

October 10, 1991

ChromaLab File No.: 1091033

GEOMATRIX CONSULTANTS, INC.

Attn: Jeff Nelson

RE: Two composited soil samples for Arsenic and Lead analyses

Project Number: 1886.02 Date Sampled: Oct. 2, 1991 Date Extracted: Oct. 8, 1991

Date Submitted: Oct. 3, 1991 Date Analyzed: Oct. 8, 1991

## RESULTS:

Sample	Arsenic	Lead
_I.D.	(mg/kg)	(mg/kg)
GS-C 1,2,3,4	N.D.	33.1
GS-C 5,6,7,8	N.D.	9.41
BLANK	N.D.	N.D.
SPIKED RECOVERY	87.4%	101.5%
DETECTION LIMIT	0.005	0.05
METHOD OF ANALYSIS	7061	7420

ChromaLab, Inc.

David Duong

Chief Chemist

Eric Tam

#### **5 DAYS TURNAROUND**

## CHROMALAB, INC.

Analytical Laboratory (E694)

October 10, 1991

ChromaLab File No.: 1091033 A

GEOMATRIX CONSULTANTS, INC.

Attn: Jeff Nelson

RE: One composite soil sample for 8140 analysis

Project Number: 1886.02

Date Sampled: Oct. 2, 1991 Date Submitted: Oct. 3, 1991

Date Analyzed: October 7, 1991

RESULTS: Sample I.D.: GS-C 1,2,3,4

#### ORGANO PHOSPHOROUS PESTICIDES

Compounds	Concentration (μg/kg)	Detection Limit (µg/kg)	Spike Recovery
MENINPHOS	N.D.	50	
DISULFOTON	N.D.	50	
CHLORPYRIFOS	N.D.	50	93.7%
FENTHION	N.D.	50	
PARATHION METHYL	N.D.	50	
DICHLORVOS	N.D.	50	88.2%
ETHOPROP	N.D.	50	
PHORATE	N.D.	50	
MERPHOS	N.D.	50	93.5%
DEMETON-0	N.D.	50	
TOKUTHION	N.D.	50	
BOLSTAR	N.D.	50	91.4%
AZINPHOS METHYL	N.D.	50	

ChromaLab, Inc.

Chief Chemis

## CHROMALAB, INC.

Analytical Laboratory (E694)

October 10, 1991

ChromaLab File No.: 1091033 B

GEOMATRIX CONSULTANTS, INC.

Attn: Jeff Nelson

RE: One composite soil sample for 8140 analysis

Project Number: 1886.02

Date Sampled: Oct. 2, 1991

Date Submitted: Oct. 3, 1991

Date Analyzed: October 7, 1991

RESULTS:

Sample I.D.: GS-C 5,6,7,8

#### ORGANO PHOSPHOROUS PESTICIDES

Compounds	Concentration (µg/kg)	Detection Limit (μg/kg)	Spike Recovery
MENINPHOS	N.D.	50	
DISULFOTON	N.D.	50	
CHLORPYRIFOS	N.D.	50	93.7%
FENTHION	N.D.	50	
PARATHION METHYL	N.D.	50	
DICHLORVOS	N.D.	50	88.2%
ETHOPROP	N.D.	50	-
PHORATE	N.D.	50	***
MERPHOS	N.D.	50	93.5%
DEMETON-0	N.D.	50	
TOKUTHION	N.D.	50	
BOLSTAR	N.D.	50	91.4%
AZINPHOS METHYL	N.D.	50	

ChromaLab, Inc.

Chief Chemis

ic Tam

## GEOMATRIX CONSULTANTS

## Chain of

ONE MARKET PLAZA SPEAR STREET TOWER SUITE 717 SAN FRANCISCO, CALIFORNIA 94105 (415) 957-9557 434 -9 400 DATE ZUCT PROJECT NO. 1886.02 PAGE \_\_\_OF\_\_ ANALYSES METALS REMARKS SAMPLERS: (SIGNATURE) (SAMPLE PRESERVATION, HANDLING PROCEDURES. HO Wilson 625 601 602 608 OBSERVATIONS, ETC.) Car bander METHOD ANALYSIS 2 LOQUENCOUS EUM 0F COMPOSITED SAMPLES BER SAMPLE PETROL for () (2) +(3) DATE TIME NUMBER 130 Zaccy 65-C1 13-GS-CZ EMPOSITE INTO I 130 65-63 SAMPLIC 35 6'5 - C4 5 - 6 5 95-06 ALUCHEOS TO INTO 2 -= Q5- C7 9 SHALLE 2~ GS - CE Metals: arsenic or land EPA 200 Levies Carlamate pesticili-(2) E. 14 WITH 632 Origina procephote pesticials

(3) ELA METON 840

STHNOARD TAT. Deculto to Vett Wilson TOTAL NUMBER & RELINQUISHED BY: DATE RECEIVED BY: RELINQUISHED BY: DATE RECEIVED BY: (LAB) Aff Welson SIGNATURE SIGNATURE SIGNATURE SIGNATURE Trickerge Jeff Nelson TIME TIME PRINTED NAME PRINTED NAME PRINTED NAME PRINTED NAME GEOMITTICL X TIM COYLE COMPANY COMPANY COMPANY LABORATORY RELINQUISHED BY: DATE RECEIVED BY METHOD OF SHIPMENT: Lowel. LABORATORY COMMENTS / OBSERVATIONS SIGNATURE SIGNATURE/ an ach BEVERLY CRABTICE PRINTED NAME
TIM COY (F

PRINTED NAME Chrom LAB

COMPANY

COMPANY

4136 LAKESIDE DRIVE, RICHMOND, CA 94806

PHONE (415) 222-3002 FAX (415) 222-1251

## CERTIFICATE OF ANALYSIS

STATE LICENSE NO. E 750

Received: 10/02/91 Reported: 10/07/91

> Job #: 72846

Attn: Jeff Nelson Geomatrix Consultants One Market Plaza

Spear Street Tower, Suite 717

San Francisco, CA 94105

Matrix: Soil

> Total Petroleum Hydrocarbon Analysis DHS Extraction Method (LUFT) mg/Kg

Lab ID	Client ID	Diesel	MDL
72846-14 72846-15 72846-16 72846-17 72846-18	GS-HC-1-(15) GS-HC-2-(3) GS-HC-3-(6) GS-HC-4-(14) GS-HC-5-(12)	400 15 ND<1 2 ND<1	100 5 1 1

Spike Recovery for Diesel: 100%

MDL: Method Detection Limit. Compound below this level would not be detected.

Jaime Chow

Laboratory Director

4136 LAKESIDE DRIVE, RICHMOND, CA 94806

PHONE (415) 222-3002

FAX (415) 222-1251

#### CERTIFICATE OF ANALYSIS

STATE LICENSE NO. E 750

Received:

10/02/91

Reported: 10/16/91

Job #: 72846

Attn: Jeff Nelson Geomatrix Consultants One Market Plaza

Spear Street Tower, Suite 717

San Francisco, CA 94105

Matrix: Soil

Chlorinated Pesticides EPA Method 8080 mg/Kg

Lab ID: 72846-1 Client ID: GS-1-(9)

ANALYSIS	RESULT	LIMIT OF DETECTION
Aldrin	ND<0.1	0.1
alpha BHC	ND<0.025	0.025
beta BHC	ND<0.025	0.025
Lindane	ND<0.025	0.025
4,4'DDD	ND<0.020	0.020
4,4'DDE	0.45	0.01
p,p-DDT	0.90	0.25
o,p-DDT	0.40	0.1
Dieldrin	ND<0.025	0.025
PCB's	ND<0.1	0.1
Endrin	ND<0.2	0.2
Chlordane	ND<0.1	0.1
Heptachlor	ND<0.1	0.1
Toxaphene	ND<0.3	0.3
Heptachlor epoxide	ND<0.05	0.05
alpha Endosulfan	ND<0.02	0.02
beta Endosulfan	ND<0.02	0.02
Endosulfan Sulfate	ND<0.1	0.1

QA/QC: Spike recovery for p,p-DDT: 95% Spike recovery for o,p-DDT: 92.5%

ND = Not detected at or above limit of detection.

Jaime Chow

Laboratory Director

OUTSTANDING QUALITY AND SERVICE CALIFORNIA STATE CERTIFIED LABORATORY

4136 LAKESIDE DRIVE, RICHMOND, CA 94806

PHONE (415) 222-3002

FAX (415) 222-1251

## CERTIFICATE OF ANALYSIS

STATE LICENSE NO. E 750

Received:

10/02/91

Job #:

TIMITO

Reported: 10/16/91 72846

Attn: Jeff Nelson Geomatrix Consultants One Market Plaza Spear Street Tower, Suite 717 San Francisco, CA 94105

Matrix: Soil

> Chlorinated Pesticides EPA Method 8080 mg/Kg

Lab ID: 72846-2 Client ID: GS-2-(9)

ANALYSIS	RESULT	OF DETECTION
***************************************	KESOLI	OF DETECTION
Aldrin	ND<0.1	0.1
alpha BHC	ND<0.025	0.025
beta BHC	ND<0.025	0.025
Lindane	ND<0.025	0.025
4,4'DDD	ND<0.020	0.020
4,4'DDE	0.1	0.01
p,p-DDT	0.05	0.05
o,p-DDT	ND<0.05	0.05
Dieldrin	ND<0.025	0.025
PCB's	ND<0.1	0.1
Endrin	ND<0.2	0.2
Chlordane	ND<0.1	0.1
Heptachlor	ND<0.1	0.1
Toxaphene	ND<0.3	0.3
Heptachlor epoxide	ND<0.05	0.05
alpha Endosulfan	ND<0.02	0.02
beta Endosulfan	ND<0.02	0.02
Endosulfan Sulfate	ND<0.1	0.1

Spike recovery for p,p-DDT: 95%

Spike recovery for o,p-DDT:

ND = Not detected at or above limit of detection.

Jaime Chow

Laboratory Director

OUTSTANDING QUALITY AND SERVICE CALIFORNIA STATE CERTIFIED LABORATORY

4136 LAKESIDE DRIVE, RICHMOND, CA 94806

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#### CERTIFICATE OF ANALYSIS

STATE LICENSE NO. E 750

Received: 10/02/91 Reported: 10/16/91

Job #: 72846

Attn: Jeff Nelson Geomatrix Consultants One Market Plaza Spear Street Tower, Suite 717 San Francisco, CA 94105

Matrix: Soil

Chlorinated Pesticides EPA Method 8080 mg/Kg

Lab ID: 72846-3 Client ID: GS-3-(9)

		LIMIT
ANALYSIS	RESULT	OF DETECTION
Aldrin	ND<0.1	0.1
alpha BHC	ND<0.025	0.025
beta BHC	ND<0.025	0.025
Lindane	ND<0.025	0.025
4,4'DDD	0.02	0.02
4,4 DDE	0.03	0.01
p,p-DDT	ND<0.05	0.05
o,p-DDT	ND<0.05	0.05
Dieldrin	ND<0.025	0.025
PCB's	ND<0.1	0.1
Endrin	ND<0.2	0.2
Chlordane	ND<0.1	0.1
Heptachlor	ND<0.1	0.1
Toxaphene	ND<0.3	0.3
Heptachlor epoxide	ND<0.05	0.05
alpha Endosulfan	ND<0.02	0.02
beta Endosulfan	ND<0.02	0.02
Endosulfan Sulfate	ND<0.1	0.1
		11 ( Table 5 ( 1 ) )

QA/QC: Spike recovery for p,p-DDT: 95% Spike recovery for o,p-DDT: 92.5

ND = Not detected at or above limit of detection.

Jaime Chow

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#### CERTIFICATE OF ANALYSIS

STATE LICENSE NO. E 750

Received: 10/02/91 Reported: 10/16/91

Job #: 72846

Attn: Jeff Nelson Geomatrix Consultants One Market Plaza

Spear Street Tower, Suite 717

San Francisco, CA 94105

Matrix: Soil

Chlorinated Pesticides EPA Method 8080 mg/Kg

Lab ID: 72846-4 Client ID: GS-4-(9)

		LIMIT
<u>ANALYSIS</u>	RESULT	OF DETECTION
Aldrin	ND<0.1	0.1
alpha BHC	ND<0.025	0.025
beta BHC	ND<0.025	0.025
Lindane	ND<0.025	0.025
4,4'DDD	0.2	0.02
4,4'DDE	0.5	0.05
p,p-DDT	ND<0.05	0.05
o,p-DDT	ND<0.05	0.05
Dieldrin	ND<0.025	0.025
PCB's	ND<0.1	0.1
Endrin	ND<0.2	0.2
Chlordane	ND<0.1	0.1
Heptachlor	ND<0.1	0.1
Toxaphene	ND<0.3	0.3
Heptachlor epoxide	ND<0.05	0.05
alpha Endosulfan	ND<0.02	0.02
beta Endosulfan	ND<0.02	0.02
Endosulfan Sulfate	ND<0.1	0.1

QA/QC: Spike recovery for p,p-DDT: 95% Spike recovery for o,p-DDT: 92.5%

ND = Not detected at or above limit of detection.

Jaime Chow

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#### CERTIFICATE OF ANALYSIS

STATE LICENSE NO. E 750

Received: 10/02/91 Reported: 10/16/91

> Job #: 72846

Attn: Jeff Nelson Geomatrix Consultants One Market Plaza Spear Street Tower, Suite 717 San Francisco, CA 94105

Matrix: Soil

Chlorinated Pesticides EPA Method 8080 mg/Kg

Lab ID: 72846-5 Client ID: GS-5-(9)

		LIMIT
<u>ANALYSIS</u>	RESULT	OF DETECTION
Aldrin	ND<0.1	0.1
alpha BHC	ND<0.025	0.025
beta BHC	ND<0.025	0.025
Lindane	ND<0.025	0.025
4,4'DDD	0.06	0.02
4,4'DDE	0.14	0.02
p,p-DDT	ND<0.05	0.05
o,p-DDT	ND<0.05	0.05
Dieldrin	ND<0.025	0.025
PCB's	ND<0.1	0.1
Endrin	ND<0.2	0.2
Chlordane	ND<0.1	0.1
Heptachlor	ND<0.1	0.1
Toxaphene	ND<0.3	0.3
Heptachlor epoxide	ND<0.05	0.05
alpha Endosulfan	ND<0.02	0.02
beta Endosulfan	ND<0.02	0.02
Endosulfan Sulfate	ND<0.1	0.1

Spike recovery for p,p-DDT: QA/QC:

Spike recovery for o,p-DDT: 92.5%

ND = Not detected at or above limit of detection.

Jaime Chow

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#### CERTIFICATE OF ANALYSIS

STATE LICENSE NO. E 750

Received: 10/02/91 Reported: 10/16/91

Job #: 72846

Attn: Jeff Nelson Geomatrix Consultants One Market Plaza Spear Street Tower, Suite 717 San Francisco, CA 94105

Matrix: Soil

Chlorinated Pesticides EPA Method 8080 mg/Kg

Lab ID: 72846-6 Client ID: GS-6-(9)

		LIMIT
ANALYSIS	RESULT	OF DETECTION
Aldrin	ND<0.1	0.1
alpha BHC	ND<0.025	0.025
beta BHC	ND<0.025	0.025
Lindane	ND<0.025	0.025
4,4'DDD	ND<0.02	0.02
4,4'DDE	0.014	0.01
p,p-DDT	ND<0.05	0.05
o,p-DDT	ND<0.05	0.05
Dieldrin	ND<0.025	0.025
PCB's	ND<0.1	0.1
Endrin	ND<0.2	0.2
Chlordane	ND<0.1	0.1
Heptachlor	ND<0.1	0.1
Toxaphene	ND<0.3	0.3
Heptachlor epoxide	ND<0.05	0.05
alpha Endosulfan	ND<0.02	0.02
beta Endosulfan	ND<0.02	0.02
Endosulfan Sulfate	ND<0.1	0.1

QA/QC: Spike recovery for p,p-DDT: 95%

Spike recovery for o,p-DDT: 92.5%

ND = Not detected at or above limit of detection.

Jaime Chow

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### CERTIFICATE OF ANALYSIS

STATE LICENSE NO. E 750

Received: 10/02/91 Reported: 10/16/91

Job #: 72846

Attn: Jeff Nelson Geomatrix Consultants One Market Plaza

Spear Street Tower, Suite 717

San Francisco, CA 94105

Matrix: Soil

Chlorinated Pesticides EPA Method 8080 mg/Kg

Lab ID: 72846-7 Client ID: GS-7-(9)

RESULT	LIMIT OF DETECTION
ND<0.1	0.1
ND<0.025	0.025
ND<0.025	0.025
ND<0.025	0.025
0.02	0.02
0.024	0.01
ND<0.05	0.05
ND<0.05	0.05
ND<0.025	0.025
ND<0.1	0.1
ND<0.2	0.2
ND<0.1	0.1
ND<0.1	0.1
ND<0.3	0.3
ND<0.05	0.05
ND<0.02	0.02
ND<0.02	0.02
ND<0.1	0.1
	ND<0.1 ND<0.025 ND<0.025 ND<0.025 0.02 0.024 ND<0.05 ND<0.05 ND<0.025 ND<0.1 ND<0.2 ND<0.1 ND<0.1 ND<0.1 ND<0.1 ND<0.03 ND<0.05 ND<0.05

QA/QC: Spike recovery for p,p-DDT: 95% Spike recovery for o,p-DDT: 92.59

ND = Not detected at or above limit of detection.

Jaime Chow

Laboratory Director

OUTSTANDING QUALITY AND SERVICE
CALIFORNIA STATE CERTIFIED LABORATORY

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## CERTIFICATE OF ANALYSIS

STATE LICENSE NO. E 750

Received:

10/02/91 Reported: 10/16/91

Job #:

72846

Attn: Jeff Nelson Geomatrix Consultants One Market Plaza

Spear Street Tower, Suite 717 San Francisco, CA 94105

Matrix: Soil

Chlorinated Pesticides EPA Method 8080 mg/Kg

Lab ID: 72846-8 Client ID: GS-8-(9)

		LIMIT
<u>ANALYSIS</u>	RESULT	OF DETECTION
Aldrin	ND<0.1	0.1
alpha BHC	ND<0.025	0.025
beta BHC	ND<0.025	0.025
Lindane	ND<0.025	0.025
4,4'DDD	ND<0.02	0.02
4,4'DDE	ND<0.01	0.01
p,p-DDT	ND<0.05	0.05
o,p-DDT	ND<0.05	0.05
Dieldrin	ND<0.025	0.025
PCB's	ND<0.1	0.1
Endrin	ND<0.2	0.2
Chlordane	ND<0.1	0.1
Heptachlor	ND<0.1	0.1
Toxaphene	ND<0.3	0.3
Heptachlor epoxide	ND<0.05	0.05
alpha Endosulfan	ND<0.02	0.02
beta Endosulfan	ND<0.02	0.02
Endosulfan Sulfate	ND<0.1	0.1

Spike recovery for p,p-DDT: 95% QA/QC: Spike recovery for o,p-DDT:

ND = Not detected at or above limit of detection.

Jaime Chow

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#### CERTIFICATE OF ANALYSIS

STATE LICENSE NO. E 750

Received: 10/02/91 Reported: 10/16/91

Job #: 72846

Attn: Jeff Nelson Geomatrix Consultants One Market Plaza Spear Street Tower, Suite 717 San Francisco, CA 94105

Matrix: Soil

Chlorinated Pesticides EPA Method 8080 mg/Kg

Lab ID: 72846-9 Client ID: GS-9-(9)

		LIMIT
<u>ANALYSIS</u>	RESULT	OF DETECTION
Aldrin	ND<0.1	0.1
alpha BHC	ND<0.025	0.025
beta BHC	ND<0.025	0.025
Lindane	ND<0.025	0.025
4,4'DDD	ND<0.02	0.02
4,4'DDE	ND<0.01	0.01
p,p-DDT	ND<0.05	0.05
o,p-DDT	ND<0.05	0.05
Dieldrin	ND<0.025	0.025
PCB's	ND<0.1	0.1
Endrin	ND<0.2	0.2
Chlordane	ND<0.1	0.1
Heptachlor	ND<0.1	0.1
Toxaphene	ND<0.3	0.3
Heptachlor epoxide	ND<0.05	0.05
alpha Endosulfan	ND<0.02	0.02
beta Endosulfan	ND<0.02	0.02
Endosulfan Sulfate	ND<0.1	0.1

QA/QC: Spike recovery for p,p-DDT: 95%

Spike recovery for o,p-DDT: 92.5%

ND = Not detected at or above limit of detection.

Jaime Chow

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#### CERTIFICATE OF ANALYSIS

STATE LICENSE NO. E 750

TTMT

Received: 10/02/91 Reported: 10/16/91

Job #: 72846

Attn: Jeff Nelson Geomatrix Consultants One Market Plaza Spear Street Tower, Suite 717 San Francisco, CA 94105

Matrix: Soil

Chlorinated Pesticides EPA Method 8080 mg/Kg

Lab ID: 72846-10 Client ID: GS-10-(9)

		LIMIT
<u>ANALYSIS</u>	RESULT	OF DETECTION
		3-11-11-11-11-11-11-11-11-11-11-11-11-11
Aldrin	ND<0.1	0.1
alpha BHC	ND<0.025	0.025
beta BHC	ND<0.025	0.025
Lindane	ND<0.025	0.025
4,4'DDD	ND<0.02	0.02
4,4'DDE	ND<0.01	0.01
p,p-DDT	ND<0.05	0.05
o,p-DDT	ND<0.05	0.05
Dieldrin	ND<0.025	0.025
PCB's	ND<0.1	0.1
Endrin	ND<0.2	0.2
Chlordane	ND<0.1	0.1
Heptachlor	ND<0.1	0.1
Toxaphene	ND<0.3	0.3
Heptachlor epoxide	ND<0.05	0.05
alpha Endosulfan	ND<0.02	0.02
beta Endosulfan	ND<0.02	0.02
Endosulfan Sulfate	ND<0.1	0.1

QA/QC: Spike recovery for p,p-DDT: 95%

Spike recovery for o,p-DDT: 92.5%

ND = Not detected at or above limit of detection.

Jaime Chow

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### CERTIFICATE OF ANALYSIS

STATE LICENSE NO. E 750

Received:

10/02/91 Reported: 10/16/91

Job #:

72846

Attn: Jeff Nelson Geomatrix Consultants One Market Plaza

Spear Street Tower, Suite 717

San Francisco, CA 94105

Matrix: Soil

Chlorinated Pesticides EPA Method 8080 mg/Kg

Lab ID: 72846-11 Client ID: GS-11-(9)

		LIMIT
<u>ANALYSIS</u>	RESULT	OF DETECTION
272		
Aldrin	ND<0.1	0.1
alpha BHC	ND<0.025	0.025
beta BHC	ND<0.025	0.025
Lindane	ND<0.025	0.025
4,4'DDD	0.55	0.10
4,4'DDE	0.65	0.05
p,p-DDT	ND<0.05	0.05
o,p-DDT	ND<0.05	0.05
Dieldrin	ND<0.025	0.025
PCB's	ND<0.1	0.1
Endrin	ND<0.2	0.2
Chlordane	ND<0.1	0.1
Heptachlor	ND<0.1	0.1
Toxaphene	ND<0.3	0.3
Heptachlor epoxide	ND<0.05	0.05
alpha Endosulfan	ND<0.02	0.02
beta Endosulfan	ND<0.02	0.02
Endosulfan Sulfate	ND<0.1	0.1

Spike recovery for p,p-DDT: 95% QA/QC: Spike recovery for o,p-DDT:

ND = Not detected at or above limit of detection.

Jaime Chow

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## CERTIFICATE OF ANALYSIS

STATE LICENSE NO. E 750

Received:

Job #:

10/02/91 Reported: 10/16/91 72846

Attn: Jeff Nelson Geomatrix Consultants One Market Plaza Spear Street Tower, Suite 717 San Francisco, CA 94105

Matrix: Soil

Chlorinated Pesticides EPA Method 8080 mg/Kg

Lab ID: 72846-12 Client ID: GS-12-(9)

		LIMIT
<u>ANALYSIS</u>	RESULT	OF DETECTION
Aldrin	ND<0.1	0.1
alpha BHC	ND<0.025	0.025
beta BHC	ND<0.025	0.025
Lindane	ND<0.025	0.025
4,4'DDD	0.025	0.10
4,4'DDE	0.05	0.05
p,p-DDT	ND<0.05	0.05
o,p-DDT	ND<0.05	0.05
Dieldrin	ND<0.025	0.025
PCB's	ND<0.1	0.1
Endrin	ND<0.2	0.2
Chlordane	ND<0.1	0.1
Heptachlor	ND<0.1	0.1
Toxaphene	ND<0.3	0.3
Heptachlor epoxide	ND<0.05	0.05
alpha Endosulfan	ND<0.02	0.02
beta Endosulfan	ND<0.02	0.02
Endosulfan Sulfate	ND<0.1	0.1

Spike recovery for p,p-DDT: QA/QC: Spike recovery for o,p-DDT:

ND = Not detected at or above limit of detection.

Jaime Chow

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#### CERTIFICATE OF ANALYSIS

STATE LICENSE NO. E 750

Received: 10/02/91

Reported: 10/16/91

Job #: 72846

Attn: Jeff Nelson Geomatrix Consultants One Market Plaza Spear Street Tower, Suite 717 San Francisco, CA 94105

Matrix: Soil

Chlorinated Pesticides EPA Method 8080 mg/Kg

Lab ID: 72846-13 Client ID: GS-13-(9)

		LIMIT
<u>ANALYSIS</u>	RESULT	OF DETECTION
Aldrin	ND<0.1	0.1
alpha BHC	ND<0.025	0.025
beta BHC	ND<0.025	0.025
Lindane	ND<0.025	0.025
4,4'DDD	ND<0.10	0.10
4,4'DDE	ND<0.05	0.05
p,p-DDT	ND<0.05	0.05
o,p-DDT	ND<0.05	0.05
Dieldrin	ND<0.025	0.025
PCB's	ND<0.1	0.1
Endrin	ND<0.2	0.2
Chlordane	ND<0.1	0.1
Heptachlor	ND<0.1	0.1
Toxaphene	ND<0.3	0.3
Heptachlor epoxide	ND<0.05	0.05
alpha Endosulfan	ND<0.02	0.02
beta Endosulfan	ND<0.02	0.02
Endosulfan Sulfate	ND<0.1	0.1

Spike recovery for p,p-DDT: 95% QA/QC: Spike recovery for o,p-DDT:

ND = Not detected at or above limit of detection.

Jaime Chow

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4136 LAKESIDE DRIVE, RICHMOND, CA 94806

PHONE (415) 222-3002 FAX (415) 222-1251

#### CERTIFICATE OF ANALYSIS

STATE LICENSE NO. E 750

Received: 10/02/91 Reported: 10/25/91 Job #: 72846

Attn: Jeff Nelson Geomatrix Consultants One Market Plaza Spear Street Tower, Suite 717 San Francisco, CA 94105

Matrix: Soil

Chlorinated Pesticides EPA Method 8080 mg/Kg

Lab ID: 72846-15

Client ID: GS-HC-2-(3)

		LIMIT
<u>ANALYSIS</u>	RESULT	OF DETECTION
Aldrin	ND<0.1	0.1
alpha BHC	ND<0.025	0.025
beta BHC	ND<0.025	0.025
Lindane	ND<0.025	0.025
4,4'DDD	ND<0.1	0.1
4,4'DDE	ND<0.05	0.05
p,p-DDT	ND<0.01	0.01
o,p-DDT	ND<0.05	0.05
o,p-DDD	ND<0.1	0.1
Dieldrin	ND<0.025	0.025
PCB's	ND<0.1	0.1
Endrin	ND<0.2	0.2
Chlordane	0.4	0.1
Heptachlor	ND<0.1	0.1
Toxaphene	ND<0.3	0.3
Heptachlor epoxide	ND<0.05	0.05
alpha Endosulfan	ND<0.02	0.02
beta Endosulfan	ND<0.02	0.02
Endosulfan Sulfate	ND<0.1	0.1

QA/QC: Spike Recovery for Chlordane: 75%

ND = Not detected at or above limit of detection.

Jaime Chow

Laboratory Director

OUTSTANDING QUALITY AND SERVICE
CALIFORNIA STATE CERTIFIED LABORATORY

4136 LAKESIDE DRIVE, RICHMOND, CA 94806

PHONE (415) 222-3002 FAX (415) 222-1251

## CERTIFICATE OF ANALYSIS

STATE LICENSE NO. E 750

Received: 10/02/91 Reported: 10/25/91

Job #: 72846

Attn: Jeff Nelson Geomatrix Consultants One Market Plaza Spear Street Tower, Suite 717 San Francisco, CA 94105

Matrix: Soil

Chlorinated Pesticides
EPA Method 8080
mg/Kg

Lab ID: 72846-18

Client ID: GS-HC-5-(12)

ANALYSIS	<u>RESULT</u>	LIMIT OF DETECTION
Aldrin	ND<0.1	0.1
alpha BHC	ND<0.025	0.025
beta BHC	ND<0.025	0.025
Lindane	ND<0.025	0.025
4,4'DDD	ND<0.1	0.1
4,4'DDE	ND<0.05	0.05
p,p-DDT	ND<0.01	0.01
o,p-DDT	ND<0.05	0.05
o,p-DDD	ND<0.1	0.1
Dieldrin	ND<0.025	0.025
PCB's	ND<0.1	0.1
Endrin	ND<0.2	0.2
Chlordane	ND<0.1	0.1
Heptachlor	ND<0.1	0.1
Toxaphene	ND<0.3	0.3
Heptachlor epoxide	ND<0.05	0.05
alpha Endosulfan	ND<0.02	0.02
beta Endosulfan	ND<0.02	0.02
Endosulfan Sulfate	ND<0.1	0.1

QA/QC: Spike Recovery for Chlordane: 75%

ND = Not detected at or above limit of detection.

Jaime Chow

Laboratory Director

OUTSTANDING QUALITY AND SERVICE
CALIFORNIA STATE CERTIFIED LABORATORY

115	ONE MARKET PLAZA SPEAR STREET TOWER SUITE 717 SAN FRANCISCO, CALIFORNIA 94105								(	CI	ai	n	of	1	Cu	stody Record			
		15) 957-9557	<del></del>					_				٤	·- (	<u>(</u>				PAGE0	F
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REPORT

Page 1 of 4

REPORT Chromatab, Inc. TO 2239 Omega Road, #1 San Ramon, CA 94583

WORK ORDER 91-10-585

INVOICE # 60018642

Attn: David Duong

WORK ID: GS-CS-1 thru -8/1091237

Laboratory Supervisor(s)

REPORT CERTIFIED BY

مماليم عن

QA Officer

Jesse G. Chaney, Jr.

Laboratory Director

SAMPLE IDENTIFICATION

Fraction Sample Description

01 GS-CS-1,2,3,4

02 GS-CS-5,6,7,8

03 Blank

04 Check

Conments:

Tentative confirmation of diuran by second wavelength.

Suggest LCMS.

Notes and Definitions:

<u>Limit = Detection Limit</u>

ND = None Detected



Work Order: 91-10-585 Invoice #: 60018642 REPORT

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SAMPLE ID: GS-CS-1,2,3,4 FRAC.: 01A COLLECTED: 10/25/91 RECEIVED: 10/26/91

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
632 - Soil							EPA 532
j Oxemyt	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Methomyl	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Fenuron	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA_632
Monuren	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA 632
Propoxur	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Carbofuran	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Carbaryl	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Fluometuron	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA_632
Diuron	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA_632
Propham	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Methiocarb	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Siduron	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Linuron	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA_632
Swep	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA_632
Chlorprophem	מא	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
[ Barbane	ИD	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Neburon	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA_632

SAMPLE ID: <u>GS-CS-5.6.7.8</u> FRAC.: <u>02A</u> COLLECTED: <u>10/25/91</u> RECEIVED: <u>10/26/91</u>

PARAMETER	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
632 - Soil							EPA_632
Oxemyi	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Methomyl	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Fenuron	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA_632
j Monuron	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA_632
Propoxur	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Carbofuran	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Carberyl	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
] Fluometuron	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA_632
Diuron	0.25	0.20	ug/g	1.0	10/28/91	10/30/91	EPA_632
Prophem	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Methiocarb	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Siduron	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
[ Linuron	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA 632
Swep	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA_632
Chlorpropham	ND	2.0	ug/9	1.0	10/28/91	10/30/91	EPA_632



Work Order: 91-10-585 Invoice #: 60018642 REPORT

Page 3 of 4

<u>PARAMETER</u>	RESULT	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
Barbane	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
[ Neburon	ND	0.20	ца/а	1.0	10/28/91	10/30/91	EPA 632

SAMPLE ID: Blank FRAC.: 03A	COLLECTED: N/A	RECEIVED: <u>10/26/91</u>
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PARAMETER	<u>RESULT</u>	LIMIT	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
632 - Soil							EPA_632
Oxamyl	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Methomyl	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Fenuron	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA_632
Monuron	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA_632
Propoxur	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Carbofuran	ND	2,0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Carbaryl	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Fluometuron	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA_632
Diuron	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA_632
Propham	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Methiocarb	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Siduron	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Linuron	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA_632
Swep	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA_632
Chlorpropham	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Barbane	ND	2.0	ug/g	1.0	10/28/91	10/30/91	EPA_632
Neburon	ND	0.20	ug/g	1.0	10/28/91	10/30/91	EPA_632

SAMPLE ID: Check FRAC.: 04A COLLECTED: N/A RECEIVED: 10/26/91

PARAMETER	<u>result</u>	<u>LIMIT</u>	UNITS	DIL.FACTOR	<b>EXTRACTED</b>	RUN	METHOD
6 <b>32 -</b> Soil							EPA_632
Oxamyl	80.7	N/A	% Rec	1.0	10/28/91	10/30/91	EPA_632
Methomyl	87.8	N/A	% Rec	1.0	10/28/91	10/30/91	EPA_632
Fenuron	89.4	N/A	% Rec	1.0	10/28/91	10/30/91	EPA_632
Monuron	93.9	N/A	% Rec	1.0	10/28/91	10/30/91	EPA_632
Propoxur	98.8	N/A	% Rec	1.0	10/28/91	10/30/91	EPA_632
Carbofuran	99.6	N/A	% Rec	1.0	10/28/91	10/30/91	EPA_632
Carbaryi	94.5	N/A	% Rec	1.0	10/28/91	10/30/91	EPA_632
Fluometuron	103	N/A	% Rec	1.0	10/28/91	10/30/91	EPA_632
Diuron	92.8	N/A	% Rec	1.0	10/28/91	10/30/91	EPA_632
Propham	94.1	N/A	% Rec	1.0	10/28/91	10/30/91	EPA_632
Methiocarb	64.6	N/A	% Rec	1.0	10/28/91	10/30/91	EPA 632



Work Order: 91-10-585 Invoice #: 60018642 REPORT

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PARAMETER	RESULT	<u>LIMIT</u>	UNITS	DIL.FACTOR	EXTRACTED	RUN	METHOD
[ Siduron	<del>9</del> 8.4	N/A	% Rec	1.0	10/28/91	10/30/91	EPA_632
Linuron	116	N/A	% Rec	1.0	10/28/91	10/30/91	EPA_632
[ Ѕнер	104	N/A	% Rec	1.0	10/28/91	10/30/91	EPA_632
Chlorpropham	96.1	N/A	% Rec	1.0	10/28/91	10/30/91	EPA_632
Barbane	97.4	N/A	% Rec	1.0	10/28/91	10/30/91	EPA_632
Neburon	91.5	N/A	% Rec	1.0	10/28/91	10/30/91	EPA_632

CHROMALAB FILE # 1091237 ORDER # <del>3918</del> 4040 Chain of Causey, GEOMATRIX CONSULTANTS ONE MARKET PLAZA SPEAR STREET TOWER SUITE 717 SAN FRANCISCO, CALIFORNIA 94:05 0F\_\_ PAGE DATE 25 JET 'II (415) 937-9557 ANALYSES REMARKS PROJECT NO. 628 625 601 5 601 NYDROCARBONS (SAMPLE PRESERVATION, 1886,01 CONTAINERS HANDLING PROCEDURES. SAMPLERS: (SIGNATURE) OBSERVATIONS. ETC.) POLLUTANT Jeffrey (. Velor EPA METHOD EPETROLEUM M 8 PRIORITY
EPA NETH
EPA NETH
EPA NETH
EPA NETH SAMPLE NUMBER DATE TIME contiste tota 1 sample क्षा है के GS-CS-K 65-C5-Z ١ G5-C5-3 conjustite was 1 65-65-4 85 65-15-5 65-05-6 850 Gs - cs - 7 9.35 65-05-8 Please Julour Contravation Multisis M BOTH WHOSITE sauples . Results to Jeff Nelson Geometrix (413)434-9400 24 HR RUSH-THT!!! TOTAL NUMBER OF CONTAINERS B DATE RECEIVED BY: (LAB) RELINGUISHED BY: RELINQUISHED BY: BIGNATURE MATURE C. Kelon NGNATURE MONETTE. PRINTED NAME TIME Jeffry (. Nelson PRINTED HAME TIME PRINTED NAME LABURATORY PRINTED NAME COMPANY COMPANY COMPANY METHOD OF SHIPMENT: COMPANY LABORATORY COMMENTS / OBSERVATIONS DATE RECEIVED BY: RELINQUISHED BY: SIGNATURE SIGNATURE TIME PRINTED NAME PRINTED NAME COMPANY COMPANY