

SHALLOW GROUND WATER QUALITY  
SUNNYSIDE NURSERY  
HAYWARD, CALIFORNIA  
3/90  
PROJECT 4454/2

FOR

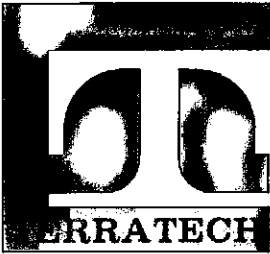
THE PLYMOUTH GROUP  
2047 OLD MIDDLEFIELD WAY  
MOUNTAIN VIEW, CALIFORNIA 94047

BY

TERRATECH, INC.  
1365 VANDER WAY  
SAN JOSE, CALIFORNIA 95112

MARCH 13, 1990





1365 VANDER WAY SAN JOSE, CALIFORNIA 95112 (408) 297-6969 FAX (408) 297-7716

March 13, 1990  
Project 4454/2

Ms. Naoko Ward  
The Plymouth Group  
2047 Old Middlefield Way  
Mountain View, California 94043

Subject: Shallow Ground Water Quality  
Area of Former Diesel Tank  
Sunnyside Nursery  
Hayward, California

Dear Ms. Ward:

This letter report describes the field work performed and the findings gained from Terratech's recent ground water quality test at the Sunnyside Nursery site in Hayward, California.

The two objectives of this testing were as follows: 1) to re-check the DH-2 findings in Terratech's Phase I property assessment (ref. Project 4454 report, dated February 8, 1989) with a standard monitoring well access and sampling technique; and 2) to establish the absence of ground water impact after a nearby underground diesel tank (and its associated backfill soil) were removed (ref. Project 4454/2 letter report dated February 26, 1990).

#### WORK PERFORMED

A permit for the subject monitoring well (MW-1) was obtained from the Zone 7 Water District prior to site operations. A copy of the permit is presented in Appendix A.

On February 15, 1990 MW-1 was constructed within ten feet of the former diesel tank, in the anticipated downgradient direction (see Figure 1). The drilling and sampling operations were performed by West Tek Drilling, a licensed drilling contractor from San Jose. Soil samples were collected from directly above and below the water table using a modified California sampler. Immediately upon extraction the soil samples were sealed with foiled and taped end caps, labeled and iced.

An environmental geologist from our staff provided professional guidance to the drilling crew during sampling and well construction, logged the soil conditions encountered, and processed the soil samples. Copies of the drill hole log and as-built well diagram are included in Appendix A.

Drilling and sampling equipment was cleaned prior to use to avoid the introduction of contamination. Spoils were drummed.

On February 21, 1990 MW-1 was purged and sampled using a pre-cleaned Teflon bailer. Approximately six well volumes of water were removed and drummed. Final pH measurements stabilized to within 0.1 pH units; final temperature, to within 0.1°F; and final conductivity, to within 20 micromhos/cm. Water samples were placed in containers supplied by the laboratory - two volatile organic analysis (VOA) vials (no headspace) and two amber-colored glass bottles.

All samples were kept iced or refrigerated from the time of collection to the time of testing. Standard chain-of-custody records were prepared to document sample collection, handling and analysis requests (see Appendix B).

The soil sample from directly above the water table was selected to be submitted to Anametrix Inc., a State certified laboratory, for analysis of total petroleum hydrocarbons (TPH) as diesel and individual fuel constituents - benzene, toluene, ethylbenzene and xylenes (BTEX). The ground water sample was submitted to the same laboratory for analysis of TPH as diesel and volatile organics (EPA Method 8240, open scan).

#### FINDINGS AND COMMENTS

The analytical results are summarized in Table 1 and reported in Appendix B. No detectable amount of diesel or volatile organics was found.

This ground water finding supports our opinion that the trace amounts of methylene chloride and 1,1,1-trichloroethane (TCA) detected in the DH-2 grab sample were somehow introduced during the sampling or analytical processes. Further, there does not appear to be a ground water impact from the former diesel fuel system.

In accordance with the present California Regional Water Quality Control Board (RWQCB) guidelines, verification sampling and analysis of ground water should be continued for three more quarters (i.e. May, August and November. If these samples also indicate nondetectable amounts of contamination we would then recommend discontinuation of ground water monitoring and well closure (subject to RWQCB approval).

Sincerely,

TERRATECH, INC.

*Geoff C. Blair*  
for Thomas C. Morin

Reviewed by:

*E. R. Lautenbach*  
Eric R. Lautenbach  
CE 42437, exp. 3/31/92

Attachments



TABLE 1

## SUMMARY OF ANALYTICAL RESULTS FOR MONITORING WELL MW-1

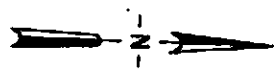
Sunnyside Nursery  
Hayward, California

SAMPLE & DATE	BENZENE (ppm)	TOLUENE (ppm)	ETHYL- BENZENE (ppm)	XYLENES (ppm)	TPH as DIESEL (ppm)	VOLATILE ORGANICS (ppm)
SOIL @ 12.5' 2/15/90	< 0.005	< 0.005	< 0.005	< 0.005	< 10	---
GROUND WATER 2/21/90	< 0.005	< 0.005	< 0.005	< 0.005	< 0.05	N.D.

## Note:

N.D. indicates that all compounds in the analysis were below the detection limits of the method (see lab report, Appendix B).



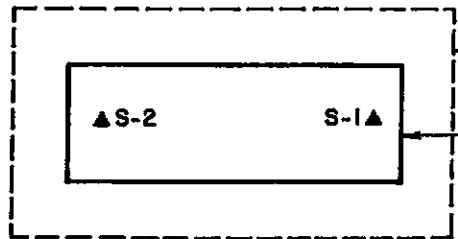


ANTICIPATED GROUND WATER  
GRADIENT DIRECTION  
(TOWARD SAN FRANCISCO BAY)



DH-2

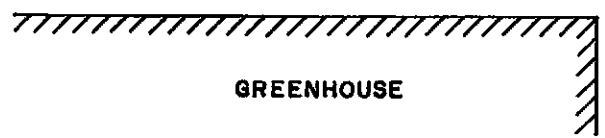
MW-1



EXCAVATION AREA

FORMER UNDERGROUND  
DIESEL TANK

FORMER FUEL PUMP



GREENHOUSE

**LEGEND**

- DRILL HOLE (PHASE I STUDY)
- MONITORING WELL
- TANK REMOVAL SOIL SAMPLE

SCALE: 1" = 10'



3-90

**TERRATECH**

SUNNYSIDE NURSERY  
HAYWARD, CALIFORNIA

LOCATION OF MONITORING WELL MW-1

FIGURE  
1

PROJECT  
4454/2

APPENDIX A  
WELL PERMIT  
DRILL HOLE LOGS  
AS-BUILT MONITORING WELL DIAGRAMS



ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94566 • (415) 484-2600  
GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FAX 415 462-391

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

(1) LOCATION OF PROJECT SUNNYSIDE NURSERIES  
MONK DR.  
HAYWARD CA

PERMIT NUMBER 90079  
LOCATION NUMBER \_\_\_\_\_

(2) CLIENT  
Name PLYMOUTH GROUP  
Address 2047 OLD MIDDLEFIELD Phone 415-691-6956  
City MT. VIEW Zip 94043

Approved Wyman Hong Date 6 Feb 90  
Wyman Hong

(3) APPLICANT  
Name TERRATECH INC  
Address 1365 VANDER WAY Phone 408 297-6969  
City SAJ JOSE Zip 95112

PERMIT CONDITIONS

Circled Permit Requirements Apply

(4) DESCRIPTION OF PROJECT  
Water Well Construction  Geotechnical \_\_\_\_\_  
Cathodic Protection \_\_\_\_\_ Well Destruction \_\_\_\_\_

(5) PROPOSED WATER WELL USE  
Domestic \_\_\_\_\_ Industrial \_\_\_\_\_ Irrigation \_\_\_\_\_  
Municipal \_\_\_\_\_ Monitoring  Other \_\_\_\_\_

(6) PROPOSED CONSTRUCTION  
Drilling Method:  
Mud Rotary \_\_\_\_\_ Air Rotary \_\_\_\_\_ Auger   
Cable \_\_\_\_\_ Other \_\_\_\_\_

A. GENERAL

1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Notify this office (484-2600) at least one day prior to starting work on permitted work and before placing well seals.
3. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Driller's Report or equivalent for well projects, or bore hole log and location sketch for geotechnical projects. Permitted work is completed when the last surface seal is placed or the last boring is completed.
4. Permit is void if project not begun within 9 days of approval date.

B. WATER WELLS, INCLUDING PIEZOMETERS

1. Minimum surface seal thickness is two inches of cement grout placed by tremie, or equivalent.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic, irrigation, and monitoring wells unless a lesser depth is specially approved.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie, or equivalent.

E. WELL DESTRUCTION. See attached.

WELL PROJECTS

Drill Hole Diameter 8" in. Depth 25' ft.  
Casing Diameter 2" in. Number 1  
Surface Seal Depth 10 ft.  
Driller's License No. 500139 C-57

12'-13' TO GROUND WATER

GEOTECHNICAL PROJECTS

Number \_\_\_\_\_  
Diameter \_\_\_\_\_ in. Maximum Depth \_\_\_\_\_ ft.

ESTIMATED STARTING DATE 2/8/90 2/7/90

ESTIMATED COMPLETION DATE 2/8/90

2/7/90

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Thomas C. Martin Date 2/6/90





# EXPLORATION DRILL HOLE LOG

**HOLE No.** MM-1

**PROJECT** Sunnyside Nursery

**DATE** 02-15-90

**LOGGED BY** TCM

**DRILL RIG** CME 55 - Hollow Stem

**HOLE DIA.**

8"

**SAMPLER**

X = Mod. Cal.

**GROUNDWATER DEPTH INITIAL**

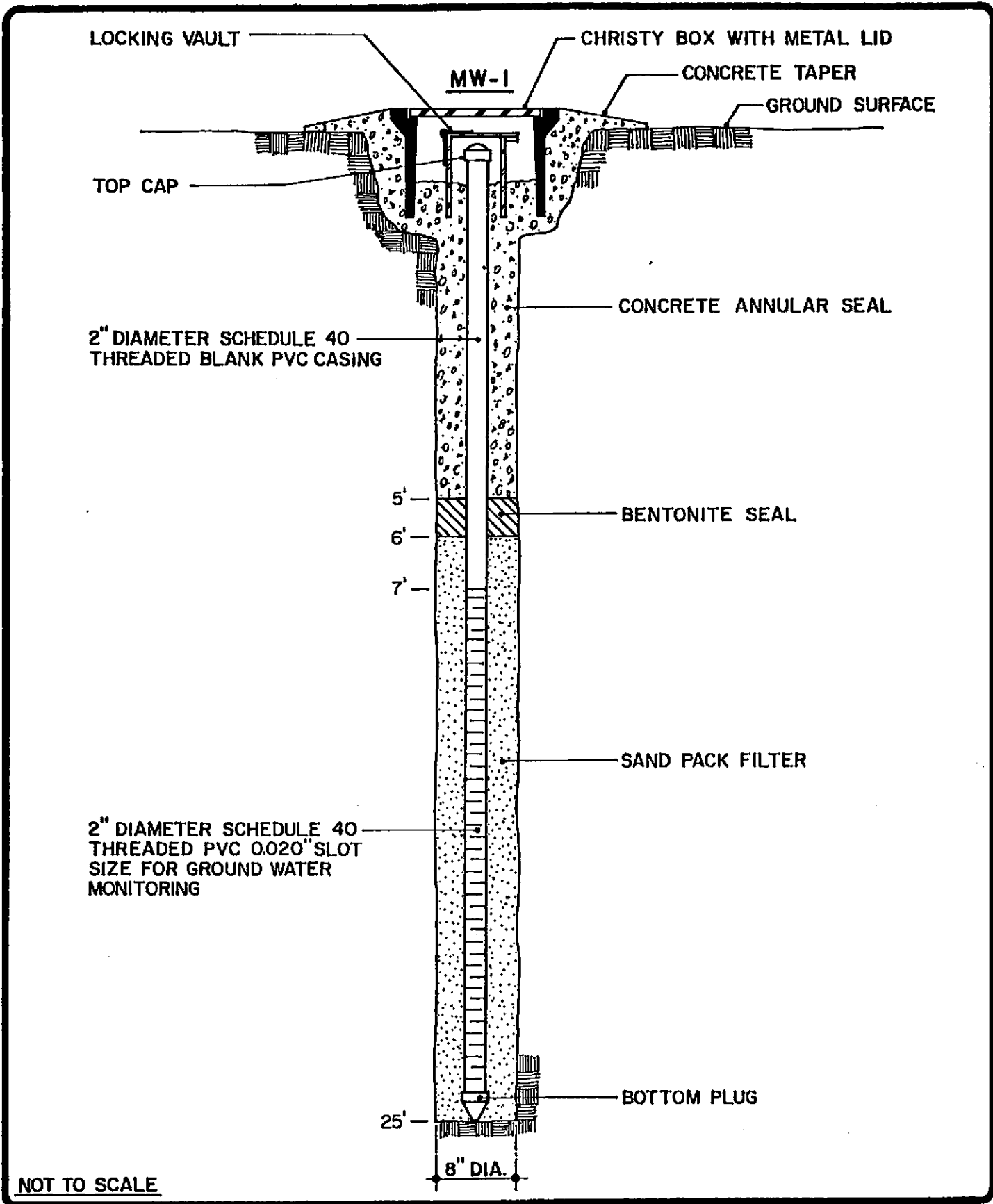
15'

**FINAL**

12.5'

**HOLE ELEV.** \_\_\_\_\_

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	POCKET PEN. (tsf)	TORVANE (tsf)	LIQUID LIMIT	WATER CONTENT	PLASTIC LIMIT	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED SHEAR STRENGTH (psf)
5" of concrete on 4" aggregate base		1										
FAT CLAY; black, moist, soft.	CH	2										
		3										
		4										
CLAY; brown, moist, firm.	CI	5										
increasing silt, becoming less plastic		6										
		7										
		8										
		9										
		10										
		11										
		12										
		13	X									
		14	X	7								
		15	X									
wet		16										
increased fractions of silt; fine sand		17	X									
		18	X	9								
		19										
		20										



NOT TO SCALE



3-90  
**TERRATECH**

SUNNYSIDE NURSERY  
HAYWARD, CALIFORNIA

---

**AS-BUILT MONITORING WELL DIAGRAM**

**FIGURE 2**

**PROJECT 4454/2**

APPENDIX B

LABORATORY RESULTS  
CHAIN OF CUSTODY

# ANAMETRIX INC

Environmental & Analytical Chemistry  
1961 Concourse Drive, Suite E, San Jose, CA 95131  
(408) 432-8192 • Fax (408) 432-8198



# REPORT

Eric Lautenbach  
Terratech, Inc.  
1365 Vander Way  
San Jose, CA 95112

March 01, 1990  
Anamatrix W.O.#: 9002170  
Date Received : 02/16/90  
Purchase Order#: 3688  
Project Number : 4454/2

Dear Mr. Lautenbach:

Your sample has been received for analysis. The REPORT SUMMARY lists your sample identifications and the analytical methods you requested. The following sections are included in this report: RESULTS.

NOTE: Amounts reported are net values, i.e. corrected for method blank contamination.

If there is any more that we can do, please give us a call. Thank you for using ANAMETRIX, INC.

Sincerely,

ANAMETRIX, INC.

A handwritten signature in cursive script that reads "Terry Cooke".

Terry Cooke  
TPH Supervisor

TC/dmt

REPORT SUMMARY  
ANAMETRIX, INC. (408) 432-8192

Client : Terratech, Inc.  
Address : 1365 Vander Way

Anamatrix W.O.#: 9002170  
Date Received : 02/16/90  
Purchase Order#: 3688  
Project No. : 4454/2  
Date Released : 03/01/90

City : San Jose, CA 95112  
Attn. : Eric Lautenbach

Anamatrix I.D.	Sample I.D.	Matrix	Date Sampled	Method	Date Extract	Date Analyzed	Inst I.D.
----------------	-------------	--------	--------------	--------	--------------	---------------	-----------

RESULTS

9002170-01	MW-1	SOIL	02/15/90	TPHd	02/27/90	02/28/90	N/A
------------	------	------	----------	------	----------	----------	-----

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 4454/2 MW-1  
 Matrix : SOIL  
 Date sampled : 02/15/90  
 Date anl.BTEX: 02/22/90  
 Date ext.TPHd: 02/27/90  
 Date anl.TPHd: 02/28/90

Anamatrix I.D. : 9002170-01  
 Analyst : *CB*  
 Supervisor : *TC*  
 Date released : 03/01/90

CAS #	Compound Name	Detection Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	5	ND
108-88-3	Toluene	5	ND
100-41-4	Ethylbenzene	5	ND
1330-20-7	Total Xylenes	5	ND
	TPH as Diesel	10000	ND

ND - Not detected at or above the practical quantitation limit for the method.

TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.

BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.



# ANAMETRIX INC

Environmental & Analytical Chemistry  
1961 Concourse Drive, Suite E, San Jose, CA 95131  
(408) 432-8192 • Fax: (408) 432-8198



# REPORT

Eric Lautenbach  
Terratech, Inc. - San Jose  
1365 Vander Way  
San Jose, CA 95112

March 08, 1990  
Anamatrix W.O.#: 9002224  
Date Received : 02/22/90  
Purchase Order#: 3697  
Project Number : 4454/2

Dear Mr. Lautenbach:

Your sample has been received for analysis. The REPORT SUMMARY lists your sample identifications and the analytical methods you requested. The following sections are included in this report: RESULTS and QUALITY ASSURANCE.

- NOTE: 1) Amounts reported are net values, i.e. corrected for method blank contamination.  
2) The following footnotes are applicable to Methods 624/8240:
- \* A Method 624 priority pollutant compound ( Federal Register, 10/26/84 )
  - \*\* A compound on the U.S. EPA CLP Hazardous Substance List (HSL)
  - # An additional compound analyzed for by Anamatrix, Inc.
- ND: Not detected at or above the practical quantitation limit for the method.

If there is any more that we can do, please give us a call. Thank you for using ANAMETRIX, INC.

Sincerely,

ANAMETRIX, INC.

Burt Sutherland  
Laboratory Director

BWS/dag



REPORT SUMMARY  
ANAMETRIX, INC. (408) 432-8192

Client	: Terratech, Inc. - San Jose	Anamatrix W.O.#: 9002224
Address	: 1365 Vander Way	Date Received : 02/22/90
		Purchase Order#: 3697
City	: San Jose, CA 95112	Project No. : 4454/2
Attn.	: Eric Lautenbach	Date Released : 03/08/90

Anamatrix I.D.	Sample I.D.	Matrix	Date Sampled	Method	Date Extract	Date Analyzed	Inst I.D.
RESULTS							
9002224-01	MW-1	WATER	02/21/90	8240		02/28/90	F3
9002226-01	MW-1	WATER	02/21/90	TPHd	02/23/90	02/26/90	N/A
QUALITY ASSURANCE (QA)							
3CB0227V02	METHOD BLANK	WATER	N/A	8240		02/27/90	F3

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 624/8240  
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 4454/2 MW-1  
Matrix : WATER  
Date sampled : 02/21/90  
Date analyzed: 02/28/90  
Dilut. factor: NONE

Anamatrix I.D. : 9002224-01  
Analyst : MGT  
Supervisor : PG  
Date released : 03/08/90  
Instrument ID : F3

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
74-87-3	* Chloromethane	10	ND
75-01-4	* Vinyl Chloride	10	ND
74-83-9	* Bromomethane	10	ND
75-00-3	* Chloroethane	10	ND
75-69-4	* Trichlorofluoromethane	5	ND
75-35-4	* 1,1-Dichloroethene	5	ND
76-13-1	# Trichlorotrifluoroethane	5	ND
67-64-1	**Acetone	20	ND
75-15-0	**Carbondisulfide	5	ND
75-09-2	* Methylene Chloride	5	ND
156-60-5	* Trans-1,2-Dichloroethene	5	ND
75-34-3	* 1,1-Dichloroethane	5	ND
78-93-3	**2-Butanone	20	ND
156-59-2	* Cis-1,2-Dichloroethene	5	ND
67-66-3	* Chloroform	5	ND
71-55-6	* 1,1,1-Trichloroethane	5	ND
56-23-5	* Carbon Tetrachloride	5	ND
71-43-2	* Benzene	5	ND
107-06-2	* 1,2-Dichloroethane	5	ND
79-01-6	* Trichloroethene	5	ND
78-87-5	* 1,2-Dichloropropane	5	ND
75-27-4	* Bromodichloromethane	5	ND
110-75-8	* 2-Chloroethylvinylether	5	ND
108-05-4	**Vinyl Acetate	10	ND
10061-02-6	* Trans-1,3-Dichloropropene	5	ND
108-10-1	**4-Methyl-2-Pentanone	10	ND
108-88-3	* Toluene	5	ND
10061-01-5	* cis-1,3-Dichloropropene	5	ND
79-00-5	* 1,1,2-Trichloroethane	5	ND
127-18-4	* Tetrachloroethene	5	ND
591-78-6	**2-Hexanone	10	ND
124-48-1	* Dibromochloromethane	5	ND
108-90-7	* Chlorobenzene	5	ND
100-41-4	* Ethylbenzene	5	ND
1330-20-7	**Total Xylenes	5	ND
100-42-5	**Styrene	5	ND
75-25-2	* Bromoform	5	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	5	ND
541-73-1	* 1,3-Dichlorobenzene	5	ND
106-46-7	* 1,4-Dichlorobenzene	5	ND
95-50-1	* 1,2-Dichlorobenzene	5	ND
CAS #	Surrogate Compounds	Limits	% Recovery
17060-07-0	1,2-Dichloroethane-d4	75-113%	98%
2037-26-5	Toluene-d8	83-110%	106%
460-00-4	p-Bromofluorobenzene	82-114%	95%

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 4454/2 MW-1  
 Matrix : WATER  
 Date sampled : 02/21/90  
 Date anl.TPHg: N/A  
 Date ext.TPHd: 02/23/90  
 Date anl.TPHd: 02/26/90

Anamatrix I.D. : 9002226-01  
 Analyst : *mb*  
 Supervisor :  
 Date released : 03/08/90  
 Date ext. TOG : N/A  
 Date anl. TOG : N/A

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
	TPH as Diesel	50	ND

ND - Below reporting limit.  
 TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 624/8240

ANAMETRIX, INC. (408) 432-8192

Sample I.D. : METHOD BLANK Anametrix I.D. : 3CB0227V02  
 Matrix : WATER Analyst : CH  
 Date sampled : N/A Supervisor : PG  
 Date analyzed: 02/27/90 Date released : 03/08/90  
 Dilut. factor: NONE Instrument ID : F3

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
74-87-3	* Chloromethane	10	ND
75-01-4	* Vinyl Chloride	10	ND
74-83-9	* Bromomethane	10	ND
75-00-3	* Chloroethane	10	ND
75-69-4	* Trichlorofluoromethane	5	ND
75-35-4	* 1,1-Dichloroethene	5	ND
76-13-1	# Trichlorotrifluoroethane	5	ND
67-64-1	**Acetone	20	ND
75-15-0	**Carbondisulfide	5	ND
75-09-2	* Methylene Chloride	5	ND
156-60-5	* Trans-1,2-Dichloroethene	5	ND
75-34-3	* 1,1-Dichloroethane	5	ND
78-93-3	**2-Butanone	20	ND
156-59-2	* Cis-1,2-Dichloroethene	5	ND
67-66-3	* Chloroform	5	ND
71-55-6	* 1,1,1-Trichloroethane	5	ND
56-23-5	* Carbon Tetrachloride	5	ND
71-43-2	* Benzene	5	ND
107-06-2	* 1,2-Dichloroethane	5	ND
79-01-6	* Trichloroethene	5	ND
78-87-5	* 1,2-Dichloropropane	5	ND
75-27-4	* Bromodichloromethane	5	ND
110-75-8	* 2-Chloroethylvinylether	5	ND
108-05-4	**Vinyl Acetate	10	ND
10061-02-6	* Trans-1,3-Dichloropropene	5	ND
108-10-1	**4-Methyl-2-Pentanone	10	ND
108-88-3	* Toluene	5	ND
10061-01-5	* cis-1,3-Dichloropropene	5	ND
79-00-5	* 1,1,2-Trichloroethane	5	ND
127-18-4	* Tetrachloroethene	5	ND
591-78-6	**2-Hexanone	10	ND
124-48-1	* Dibromochloromethane	5	ND
108-90-7	* Chlorobenzene	5	ND
100-41-4	* Ethylbenzene	5	ND
1330-20-7	**Total Xylenes	5	ND
100-42-5	**Styrene	5	ND
75-25-2	* Bromoform	5	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	5	ND
541-73-1	* 1,3-Dichlorobenzene	5	ND
106-46-7	* 1,4-Dichlorobenzene	5	ND
95-50-1	* 1,2-Dichlorobenzene	5	ND
CAS #	Surrogate Compounds	Limits	% Recovery
17060-07-0	1,2-Dichloroethane-d4	75-113%	99%
2037-26-5	Toluene-d8	83-110%	106%
460-00-4	p-Bromofluorobenzene	82-114%	97%



TERRATECH

CHAIN OF CUSTODY RECORD

P.O. NO. 3697

TURNAROUND: NORMAL

PROJECT NUMBER: <u>4454/2</u>						Number of Containers	Analysis Required TPH-DIBEL EPA 8240	REMARKS							
SAMPLERS (signature): <u>T. Marin</u>															
Station Number	Date	Time	Comp.	Grab	Station Location									SAMPLE DEPTH	
MW-1	<u>2/21/90</u>			<input checked="" type="checkbox"/>		2 GALS	<input checked="" type="checkbox"/>								
MW-1	<u>2/21/90</u>			<input checked="" type="checkbox"/>		2 LITERS	<input checked="" type="checkbox"/>								
Relinquished by(signature):		Date / Time		Received by (signature):		Relinquished by(signature):		Date / Time		Received by (signature):					
Company or Agency:				Company or Agency:		Company or Agency:				Company or Agency:					
Relinquished by(signature):		Date / Time		Received by (signature):		Relinquished by:		Date / Time		Received by (signature):					
Company or Agency:				Company or Agency:		Company or Agency:				Company or Agency:					
Relinquished by(signature):		Date / Time		Received for Laboratory by:		Date / Time		Remarks/Shipping Information							
<u>Eric Lautenbach</u>		<u>2/21/90</u>		<u>[Signature]</u>		<u>2-22-90</u>		Send reports to: Eric Lautenbach							
TERRATECH, INC.		<u>10:50</u>		<u>[Signature]</u>		<u>10:56</u>		1365 VANDER WAY, SAN JOSE 95112							