TANK PROTECT ENGINEERING
Of Northern California, Inc

TANK PROTECT ENGINEERING
2821 Whipple Road
Union City, CA 94587-1233
(510) 429-8088 • (800) 523-8088
FAX (510) 429-8089

February 1, 1994

Mr. John Goldstein
Plants Unlimited, Inc.
16450 Kent Avenue
San Lorenzo, CA 94580

Re: Report of Gradient Determination and Groundwater Sampling for Fourth Quarter, 1993, Plants Unlimited, Inc., 16450 Kent Avenue, San Lorenzo, CA 94580

Dear Mr. Goldstein:

Tank Protect Engineering of Northern California, Inc. (TPE) is pleased to submit this quarterly letter report of environmental services conducted at the subject site. Previous work conducted at the site is summarized and work conducted during the subject quarter is presented in detail.

BACKGROUND

TPE understands the following work has been conducted by others:

- July 1990 - Two underground, storage fuel tanks were excavated and removed from the site. One tank was a 280-gallon, steel gasoline tank and the second tank was a 1,500-gallon, steel diesel/fuel oil tank. Because a small hole was observed in the gasoline tank and analyses of soil collected beneath the tank detected total petroleum hydrocarbons as gasoline (TPHG), the Alameda County Department of Health Services (ACDHS) required a groundwater investigation.

- November 11, 1992 - EVAX Technologies, Inc. (EVAX) installed groundwater monitoring wells MW-1 through MW-3.

- December 1, 1992 - EVAX sampled wells MW-1 through MW-3 for chemical analyses for TPHG and benzene, toluene, ethylbenzene, and xylenes (BTEX) and determined groundwater gradient.

- January 20, 1993 - EVAX drilled offset borings to each of the 3 wells and collected a soil sample from each boring for chemical analyses for TPHG and BTEX.

WORK CONDUCTED BY TPE DURING THE FOURTH QUARTER, 1993:

- December 30, 1993 - Measured depth to stabilized groundwater in each well; calculated direction and gradient of groundwater flow; sampled each well; and analyzed all groundwater samples, including a trip blank sample, for TPHG and BTEX.

Details of the work performed during the subject quarter are presented below.

Groundwater Gradient

On December 30, 1993, depth-to-groundwater was measured from top-of-casing (TOC) in wells MW-1, MW-2, and MW-3 to the nearest 0.01 foot using an electronic Solinst water level meter. A minimum of 3 repetitive measurements were made for each level determination to ensure accuracy. Depth-to-groundwater was subtracted from the TOC elevation, as determined by EVAX, to calculate the elevation of the stabilized water level for each well (see attached Table 1).

Attached Figure 1 is a groundwater gradient map constructed from the data collected on December 30, 1993. Groundwater flow direction was to the northwest with a gradient of .0024 feet per foot. Attached Table 2 presents cumulative information for

average groundwater elevations, changes in average groundwater elevations, groundwater flow directions, and groundwater gradients for the site.

Based on the above groundwater flow direction, wells MW-1 and MW-2 are downgradient and crossgradient of the former tank complex and well MW-3 is upgradient.

Groundwater Sampling and Analytical Results

On December 30, 1993, groundwater samples were collected from each of the 3 groundwater monitoring wells for chemical analysis. Before sampling, each well was checked for floating product using a dedicated, disposable, polyethylene bailer. No odor was noted in any of the wells. Each well was purged a minimum of 3 wetted well volumes with a dedicated polyethylene bailer and until the temperature, conductivity, and pH of the water in the well had stabilized. Water samples were collected in laboratory provided, sterilized, 40-milliliter glass vials and/or 1-liter bottles having Teflon-lined screw caps; measured for turbidity; and labeled with project name, date, time collected, sample number, and sampler. The samples were immediately stored in an iced-cooler for transport to California State Department of Health Services (DHS) certified Trace Analysis Laboratory, Inc., located in Hayward, California accompanied by chain-of-custody documentation.

All groundwater samples, and a trip blank sample, were analyzed for TPHG and BTEX by the DHS Method and Modified United States Environmental Protection Agency (EPA) Method 8020, respectively.

All analytical results were nondetectable.

Analytical results are summarized in attached Table 3 and documented in an attached certified analytical report and a chain-of-custody.

Purge water is stored on site in 55-gallon drums labeled to show material stored, known or suspected contaminant, date filled, expected removal date, company name, contact, and telephone number.

See attached protocols for TPE's sample handling, groundwater monitoring well sampling, and quality assurance and quality control procedures.

RECOMMENDATIONS

TPE recommends quarterly groundwater sampling and monthly gradient determinations of the 3 groundwater monitoring wells for a period of 2 additional quarters to establish a trend of groundwater quality and gradient beneath the site. TPE recommends that all groundwater samples continue to be analyzed for TPHG and BTEX.

An additional copy of this report has been included for your delivery to:

Alameda County Health Care Services Agency
Division of Hazardous Materials
Department of Environmental Health
80 Swan Way
Oakland, California, 94621

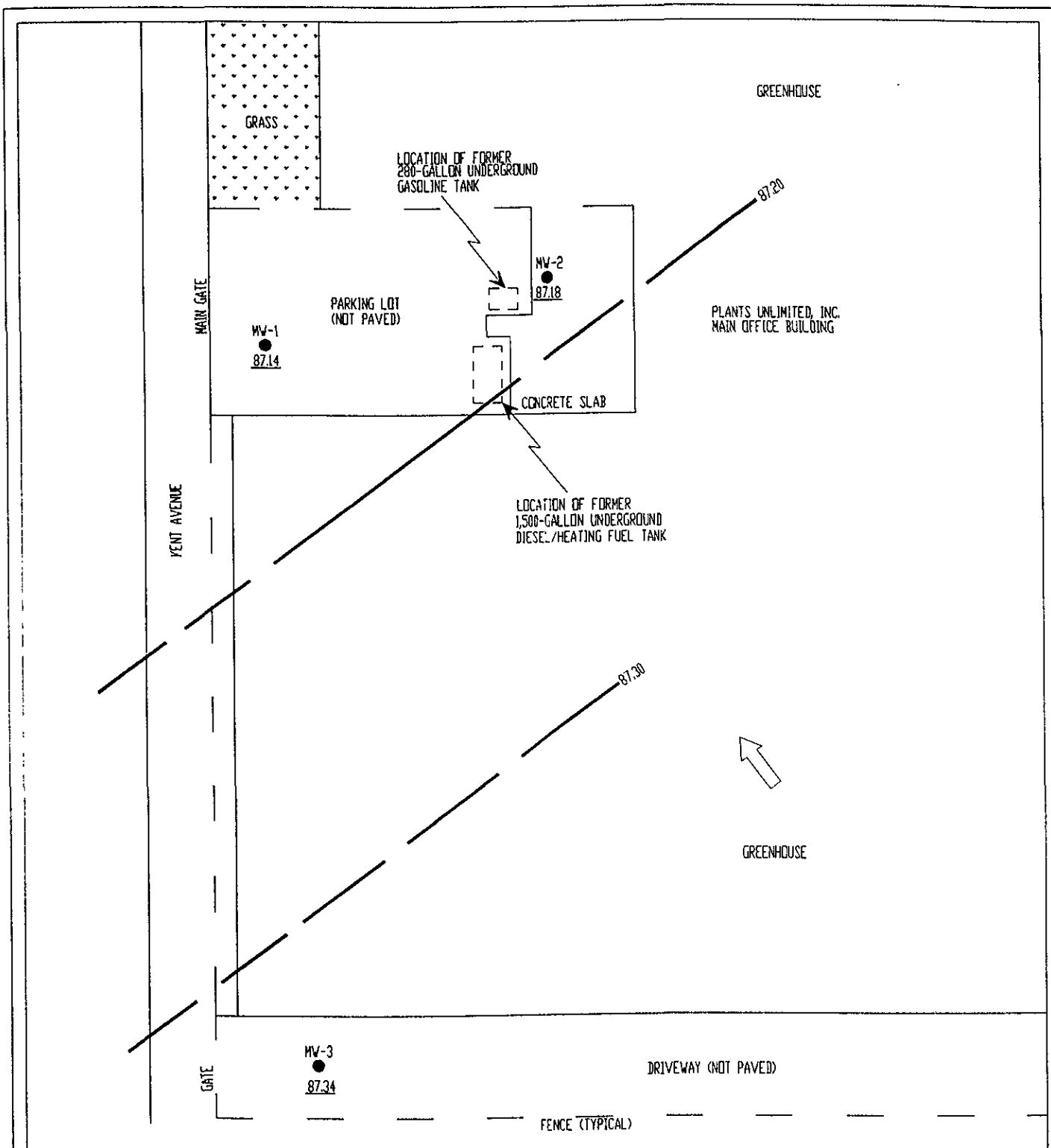
TPE recommends that this quarterly report be submitted with a cover letter from Plants Unlimited, Inc.

If you have any questions, please call TPE at (510) 429-8088.

Sincerely,

John Mrakovich, Ph.D.
Registered Geologist

Jeff Farhoomand, M.S.
Civil Engineer



LEGEND

- MW-1 ● — NAME AND LOCATION OF GROUNDWATER MONITORING WELL
- 87.18 — POTENTIOMETRIC ELEVATION (FEET)
- 87.20 — POTENTIOMETRIC CONTOUR (12/30/93)
- GROUNDWATER FLOW DIRECTION

-N-

0 20

SCALE IN FEET

TANK PROTECT ENGINEERING

GROUNDWATER GRADIENT MAP (12/30/93)

PLANTS UNLIMITED, INC.
16450 KENT AVENUE
SAN LORENZO, CA 94580

DATE	1/17/94
FIGURE	1
FILE #	297-1
DRAWN BY	VK
CHECKED BY	JVM

TABLE 1
GROUNDWATER ELEVATION

Well Name	Date	Elevation (TOC[1]) (feet[2])	Depth-to-Water from TOC	Groundwater Elevation (feet[3])
MW-1	12/30/93	100.0	12.86	87.14
MW-2	12/30/93	100.4	13.22	87.18
MW-3	12/30/93	99.6	12.26	87.34

[1] TOP OF WELL CASING

[2] EVAX TECHNOLOGIES, INC. HAS REPORTED THAT UNITED CIVIL & STRUCTURAL ENGINEERS CO. OF CAMPBELL, CALIFORNIA SURVEYED TOC RELATIVE TO MEAN SEA LEVEL (MSL). HOWEVER, AN EXAMINATION OF THE HAYWARD, CALIFORNIA 7.5 MINUTE SERIES QUADRANGLE MAP INDICATES TOPOGRAPHIC ELEVATION AT THE SITE IS ABOUT 45 FEET MSL. THEREFORE, TPE CONCLUDES THE ELEVATION IS BASED ON AN ARBITRARY SITE DATUM OF 100 FEET FOR TOC OF WELL MW-1.

[3] BASED ON AN APPARENT ARBITRARY SITE DATUM; SEE FOOTNOTE 2.

TABLE 2
GROUNDWATER GRADIENT, FLOW DIRECTION,
AND ELEVATION DATA

Date	Average Groundwater Elevation (feet)	Change in Average Groundwater Elevation	Groundwater Flow Gradient	Groundwater Direction
12/01/92[1]	84.32	-	.0025	NW
12/30/93	87.22	+2.90	.0024	NW

[1] DATA FOR THIS DATE OBTAINED FROM EVAX FEBRUARY 17, 1993 REPORT.

TABLE 3
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
(ppb[1])

Sample ID Name	Date	TPHG	Benzene	Toluene	Ethyl-Benzene	Xylenes
MW-1	12/01/92[2]	<50	<0.50	<0.50	<0.50	<0.50
	12/30/93	<50	<0.50	<0.50	<0.50	<1.5
MW-2	12/01/92[2]	<50	<0.50	<0.50	<0.50	<0.50
	12/30/93	<50	<0.50	<0.50	<0.50	<1.5
MW-3	12/01/92[2]	<50	<0.50	<0.50	<0.50	<0.50
	12/30/93	<50	<0.50	<0.50	<0.50	<1.5
MW-4[3]	12/30/93	<50	<0.50	<0.50	<0.50	<1.5

[1] PARTS PER BILLION
[2] DATA FOR THIS DATE OBTAINED FROM EVAX FEBRUARY 17, 1993 REPORT.
[3] TRIP BLANK

SAMPLE HANDLING PROCEDURES

Soil and groundwater samples will be packaged carefully to avoid breakage or contamination, and will be delivered to the laboratory in an iced-cooler. The following sample packaging requirements will be followed.

- Sample bottle/sleeve lids will not be mixed. All sample lids will stay with the original containers and have custody seals affixed to them.

- Samples will be secured in coolers to maintain custody, control temperature, and prevent breakage during transportation to the laboratory.

- A chain-of-custody form will be completed for all samples and accompany the sample cooler to the laboratory.

- Ice, blue ice, or dry ice (dry ice will be used for preserving soil samples collected for the Alameda County Water District) will be used to cool samples during transport to the laboratory.

- Each sample will be identified by affixing a pressure sensitive, gummed label, or standardized tag on the container(s). This label will contain the site identification, sample identification number, date and time of sample collection, and the collector's initials.

- Soil samples collected in brass tubes will be preserved by covering the ends with Teflon tape and capped with plastic end-caps. The tubes will be labeled, sealed in quart size bags, and placed in an iced-cooler for transport to the laboratory.

All groundwater sample containers will be precleaned and will be obtained from a State Department of Health Services certified analytical laboratory.

Sample Control/Chain-of-Custody: All field personnel will refer to this workplan to verify the methods to be employed during sample collection. All sample gathering activities will be recorded in the site file; all sample transfers will be documented in the chain-of-custody; samples are to be identified with labels and all sample bottles are to be custody-sealed. All information is to be recorded in waterproof ink. All TPE field personnel are personally responsible for sample collection and the care and custody of collected samples until the samples are transferred or properly dispatched.

The custody record will be completed by the field technician or professional who has been designated by the TPE project manager as being responsible for sample shipment to the appropriate laboratory. The custody record will include, among other things, the following information: site identification, name of person collecting the samples, date and time samples were collected, type of sampling conducted (composite/grab), location of sampling station, number and type of containers used, and signature of the TPE person relinquishing samples to a non-TPE person with the date and time of transfer noted. The relinquishing individual will also put all the specific shipping data on the custody record.

Records will be maintained by a designated TPE field employee for each sample, site identification, sampling locations, station numbers, dates, times, sampler's name, designation of the samples as a grab or composite, notation of the type of sample (e.g. groundwater, soil boring, etc.), preservatives used, on-site measurement data, and other observations or remarks.

GROUNDWATER MONITORING WELL SAMPLING PROCEDURES

Groundwater monitoring wells will not be sampled until at least 24 to 72 hours (according to local regulatory guidelines) after well development. Groundwater samples will be obtained using either a bladder pump, clear Teflon bailer, or dedicated polyethylene bailer. Prior to collecting samples, the sampling equipment will be thoroughly decontaminated to prevent introduction of contaminants into the well and to avoid cross-contamination. Monitoring wells will be sampled after 3 to 10 wetted casing volumes of groundwater have been evacuated and pH, electrical conductivity, and temperature have stabilized as measured with a Hydac Digital Tester. If the well is emptied before 3 to 10 well volumes are removed, the sample will be taken when the water level in the well recovers to 80% of its initial water level or more.

When a water sample is collected, turbidity of the water will be measured and recorded with a digital turbidimeter. Degree of turbidity will be measured and recorded in nephelometric turbidity units (NTU).

TPE will also measure the thickness of any floating product in the monitoring wells using an interface or probe clear Teflon or polyethylene bailer. The floating product will be measured after well development but prior to the collection of groundwater samples. If floating product is present in the well, TPE will recommend to the client that product removal be commenced immediately and reported to the appropriate regulatory agency.

Unless specifically waived or changed by the local, prevailing regulatory agency, water samples shall be handled and preserved according to the latest EPA methods as described in the Federal Register (Volume 44, No. 233, Page 69544, Table ll) for the type of analysis to be performed.

Development and/or purge water will be stored on site in labeled containers. The disposal of the containers and development and/or purge water is the responsibility of the client.

MEASUREMENTS

Purged Water Parameter: During purging, discharged water will be measured for the following parameters.

Parameter	Units of Measurement
pH	None
Electrical Conductivity	Micromhos
Temperature	Degrees F or C
Depth to Water	Feet/Hundredths
Volume of Water Discharged	Gallons
Turbidity	NTU

Documentation: All parameter measurements shall be documented in writing on TPE development logs.

QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

The overall objectives of the field sampling program include generation of reliable data that will support development of a remedial action plan. Sample quality will be checked by the use of proper sampling, handling, and testing methods. Additional sample quality control methods may include the use of background samples, equipment rinsate samples, and trip and field blanks. Chain-of-custody forms, use of a qualified laboratory, acceptable detection limits, and proper sample preservation and holding times also provide assurance of accurate analytical data.

TPE will follow a QA/QC program in the field to ensure that all samples collected and field measurements taken are representative of actual field and environmental conditions and that data obtained are accurate and reproducible. These activities and laboratory QA/QC procedures are described below.

Field Samples: Additional samples may be taken in the field to evaluate both sampling and analytical methods. Three basic categories of QA/QC samples that may be collected are trip samples, field blanks, and duplicate samples.

Trip blanks are a check for cross-contamination during sample collection, shipment, and in the laboratory. Analytically confirmed organic-free water shall be used for organic parameters and deionized water for metal parameters. Blanks will be prepared by the laboratory supplying the sample containers. The blank shall be numbered, packaged, and sealed in the same manner as the other samples. One trip blank will be used for each sample set of less than 20 samples. At least 5% blanks will be used for sets greater than 20 samples. The trip blank is a water sample that remains with the collected samples during transportation and is analyzed along with the field samples to check for residual contamination. The trip blank is not to be opened by either the sample collectors or the handlers.

The field blank is a water sample that is taken into the field and is opened and exposed at the sampling point to detect contamination from air exposure. The water sample is poured into appropriate containers to simulate actual sampling conditions. Contamination for air exposure can vary considerably from site to site.

The laboratory will not be informed about the presence of field and trip blanks and a false identifying number will be put on the label. Full documentation of these collection and decoy procedure will be made in the site log book.

Duplicate samples are identical sample pairs (collected in the same place and at the same time), placed in identical containers. For soils, adjacent sample liners will be analyzed. For the purpose of data reporting, one is arbitrarily designated the sample, and the other is designated as a duplicate sample. Both sets of results are reported to give an indication of the precision of sampling and analytical methods.

The laboratory's precision will be assessed without the laboratory's knowledge by labeling one of the duplicates with false identifying information. Data quality will be evaluated on the basis of the duplicate results.

Laboratory QA/QC: Execution of a strict QA/QC program is an essential ingredient in high-quality analytical results. By using accredited laboratory techniques and analytical procedures, estimates of the experimental values can be very close to the actual value of the environmental sample. The experimental value is monitored for its precision and accuracy by performing QC test designed to measure the amount of random and systematic errors and to signal when correction of these errors is needed.

The QA/QC program describes methods for performing QC tests. These methods involve analyzing method blanks, calibration standards, check standards (both independent and EPA-certified standards), duplicates, replicates, and sample spikes. Internal QC also requires adherence to written methods, procedural documentation, and record keeping, and the observance of good laboratory practices.

Trace Analysis Laboratory, Inc.
3423 Investment Boulevard, #8 • Hayward, California 94545
Telephone (510) 783-6960
Facsimile (510) 783-1512

TAL

January 14, 1994

Mr. Jeff Farhoomand
Tank Protect Engineering
2821 Whipple Road
Union City, California 94587

Dear Mr. Farhoomand:

Trace Analysis Laboratory received four water samples on December 30, 1993 for your Project No. 297-123093, Plants Unlimited, 16450 Kent (our custody log number 3981).

These samples were analyzed for Total Petroleum Hydrocarbons as Gasoline and Benzene, Toluene, Ethylbenzene, and Xylenes. Our analytical report and the completed chain of custody form are enclosed for your review.

Trace Analysis Laboratory is certified under the California Environmental Laboratory Accreditation Program. Our certification number is 1199.

If you should have any questions or require additional information, please call me.

Sincerely yours,

Scott T. Ferriman

Scott T. Ferriman
Project Specialist

Enclosures

Trace Analysis Laboratory, Inc.
3423 Investment Boulevard, #8 • Hayward, California 94545
Telephone (510) 783-6960
Facsimile (510) 783-1512

TAL

LOG NUMBER: 3981
DATE SAMPLED: 12/20/93
DATE RECEIVED: 12/30/93
DATE ANALYZED: 01/12/94
DATE REPORTED: 01/14/94

CUSTOMER: Tank Protect Engineering

REQUESTER: Jeff Farhoomand

PROJECT: No. 297-123093, Plants Unlimited, 16450 Kent

Sample Type: Water

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
DHS Method:							
Total Petroleum Hydrocarbons as Gasoline	ug/l	ND	50	ND	50	ND	50
Modified EPA Method 8020 for:							
Benzene	ug/l	ND	0.50	ND	0.50	ND	0.50
Toluene	ug/l	ND	0.50	ND	0.50	ND	0.50
Ethylbenzene	ug/l	ND	0.50	ND	0.50	ND	0.50
Xylenes	ug/l	ND	1.5	ND	1.5	ND	1.5

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 3981
DATE SAMPLED: 12/20/93
DATE RECEIVED: 12/30/93
DATE ANALYZED: 01/12/94
DATE REPORTED: 01/14/94
PAGE: Two

Sample Type: Water

Method and Constituent:	Units	MW-4 Concentration	MW-4 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
DHS Method:					
Total Petroleum Hydrocarbons as Gasoline	ug/l	ND	50	ND	50
Modified EPA Method 8020 for:					
Benzene	ug/l	ND	0.50	ND	0.50
Toluene	ug/l	ND	0.50	ND	0.50
Ethylbenzene	ug/l	ND	0.50	ND	0.50
Xylenes	ug/l	ND	1.5	ND	1.5

QC Summary:

% Recovery: 100
% RPD: 15

Concentrations reported as ND were not detected at or above the reporting limit.

Louis W. DuPuis
Quality Assurance/Quality Control Manager

TANK PROTECT ENGINEERING

2821 WHIPPLE ROAD
UNION CITY, CA 94587
(415)429-8088
(800)523-8088
FAX(415)429-8089

3981

LAB: TAL

TURNAROUND: 10 day

P.O. #: 50

PAGE 1 OF 1

CHAIN OF CUSTODY

PROJECT NO.	SITE NAME & ADDRESS
297123093	Plants Unlimited 16450 Kent

SAMPLER NAME, ADDRESS AND TELEPHONE NUMBER
Lee Hudkins
2821 WHIPPLE ROAD, UNION CITY, CA 94587 (415) 429-8088

ID NO.	DATE	TIME	SOIL	WATER	SAMPLING LOCATION	(1) TYPE OF CONTAINER	TOTAL LIGHT HC	AROMATIC HC (BTX)	TOTAL HEAVY HC	OIL & GREASE	VOC SCAN (624's)	OTHER	REMARKS
MW-1	12/30	1045		X		2-40ml	X	X					
MW-2	12/30	1115		X		2-40ml	X	X					
MW-3	12/30	1155		X		2-40ml	X	X					
MW-4	12/30	1200		X		2-40ml	X	X					

Relinquished by : (Signature)	Date / Time	Received by : (Signature)	Relinquished by : (Signature)	Date / Time	Received by : (Signature)
Lee Hudkins	12/30/93 1300	Dawn Wetmore	Dawn Wetmore	12/30/93 3:30	
Relinquished by : (Signature)	Date / Time	Received by : (Signature)	Relinquished by : (Signature)	Date / Time	Received by : (Signature)
Relinquished by : (Signature)	Date / Time	Received for Laboratory by: (Signature) Scott Furman	Date / Time 12/30/93 5:30	Remarks	

P/U, water, 8 vials, Green, 10-Day

DATE: 12/30/93