900 - 955

TRANSMITTAL

TO: Mr. Dick Groth
Groth Brothers Oldsmobile-GMC
59 South L Street
Livermore, California 94550
Phone No. (510) 447-3190

DATE: June 3, 1994
PROJECT #: 6136.01
SUBJECT: *Subsurface Investigation Relating to Waste Oil Hydrocarbons*

FROM:
Robert D. Campbell
Project Geologist
GeoStrategies Inc.
6747 Sierra Court, Suite G
Dublin, California 94568

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cc: **Ms. Eva Chu, ACHCSA**
Mr. Sumadhu Arigala, RWQCB

any soil samples kept for MW-1? Could analyze for Smetals collected at 6' and at 35'

7/12/94
GSI does not have contract for QMR

GeoStrategies Inc.

SUBSURFACE INVESTIGATION
RELATING TO WASTE OIL HYDROCARBONS
at
Groth Brothers Oldsmobile-GMC
59 South L Street
Livermore, California

6136.01

Report prepared for

Mr. Dick Groth
Groth Brothers Oldsmobile-GMC
59 South L Street
Livermore, California 94550

by
GeoStrategies Inc.

Robert D. Campbell
Project Geologist

Stephen J. Carter
Senior Project Geologist
R.G. 5577

REGISTERED GEOLOGIST
STEPHEN J. CARTER
No. 5577
STATE OF CALIFORNIA

May 31, 1994

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SUBSURFACE INVESTIGATION
RELATING TO WASTE OIL HYDROCARBONS
at
59 L Street
Livermore, California

For Groth Brothers Oldsmobile-GMC

INTRODUCTION

At the request of Groth Brothers Oldsmobile-GMC (Groth Bros.), GeoStrategies Inc. (GSI) has conducted a subsurface investigation in the immediate vicinity of the former 280-gallon motor oil tanks and the former waste oil tank pit at the subject site. This investigation was conducted in response to the Alameda County Health Care Services Agency (ACHCSA) *Second Notice of Violation* (September 30, 1993). This investigation was performed as outlined in the *Work Plan for a Subsurface Investigation Relating to Waste-Oil Hydrocarbons* (GSI, March 31, 1994). Amendments to the proposed sampling and laboratory analysis discussed in the *Work Plan* were discussed with Ms. Eva Chu of the ACHCSA on March 21 and April 27, 1994. The purpose of this investigation was to evaluate the lateral and vertical extents of motor oil and waste oil hydrocarbons in the soil and groundwater in the immediate vicinity of the former 280-gallon motor oil tanks and former waste oil tank pit beneath the above referenced site.

The work performed included obtaining a drilling permit from the Alameda County Flood Control and Water Conservation District, Zone 7 (ACFCWCD), preparing a site safety plan, drilling and sampling four soil borings, completing one of the soil borings as a groundwater monitoring well, developing and sampling the groundwater monitoring well, submitting selected soil and water samples for laboratory analyses, and preparing this report, which presents field procedures, results, conclusions, and recommendations from the investigation. The scope of work did not include disposal of soil and water generated during this investigation.

SITE DESCRIPTION AND BACKGROUND

General

Groth Bros is an automotive retail facility located on the north corner of South L and First Streets in Livermore, California, as shown on Figure 1, Vicinity Map. An operating BP Oil Service Station is on the northeastern corner of First and South L Streets, and two dry-cleaning facilities are within one-half mile of the site. The elevation of the site is situated at approximately 485 feet above mean sea level. In October 1990, two 280-gallon motor-oil tanks located beneath the service bay were abandoned in-place, and a 550-gallon waste oil tank located in front of the service bay was excavated and removed from the site (see Previous Environmental Work, below). The former waste oil tank location is covered by a concrete utility-pad. The locations of the former underground waste-oil tank, the former 280-gallon motor-oil tanks, and pertinent site features are shown on the Site Plan (Figure 2).

Regional Geology and Hydrogeology

The site is located in the Livermore Valley, which is an intermontane valley in the Coast Ranges Geomorphic Province. The valley is approximately 13 miles long in an northeast-southwest direction and is four miles wide. The valley is surrounded by hills of the Diablo Range (California Department of Water Resources, 1974). The valley floor slopes gently toward the west. The principal streams in the area are the Arroyo Valley and Arroyo Mocho, which flow toward the western end of the valley. Arroyo Mocho is located approximately one-half mile to the south of the site.

The groundwater system in Livermore Valley is a multilayered system with an unconfined aquifer overlying a sequence of leaky or semiconfined aquifers. Regional groundwater beneath the Livermore Valley and the

subject site flows generally to the west (Alameda County Flood Control and Water Conservation District - Zone 7, 1991).

PREVIOUS ENVIRONMENTAL WORK

On October 11, 1990, Western Environmental Science and Technology of Davis, California, excavated and removed a 550-gallon waste-oil tank, approximately 8 feet south of the service bay (see Figure 2). On March 25, 1991, Scott Company of Oakland, California, contracted Century West Engineering of Dublin, California, to drill an angled boring (TB-1) and collect soil samples from beneath the southernmost former 280-gallon motor-oil tank for laboratory analysis. This boring was drilled to evaluate the presence or absence of hydrocarbons beneath the motor-oil tanks pursuant to in-place closure of the tanks. The 280-gallon motor-oil tanks are located inside a service bay, and could not be removed without demolishing the overlying building structure. Boring TB-1 was drilled at an angle of approximately 38 degrees from horizonal to a downhole depth of approximately 18 feet (corresponds to a vertical depth of approximately 11 feet below grade [fbg]). Two soil samples (TB-1.1 and TB-1.2) were collected from boring TB-1 at downhole depths of 13 and 18 feet (approximately 8 and 11 vertical fbg), respectively. Soil sample TB-1.1 was collected approximately 1 vertical foot below the south end of the former 280-gallon south tank and TB-1.2 was collected approximately 4 feet beneath the north end of the former 280-gallon south tank.

Laboratory analytical results of the soil samples indicated nondetectable concentrations of benzene, toluene, ethylbenzene, and total xylenes (BTEX), total petroleum hydrocarbons as diesel (TPH-D), and total oil and grease (TOG). Detectable concentrations of TPH as motor oil (TPH-MO) were detected in sample TB-1.1 (88 ppm) and in sample TB-1.2 (260 ppm). The motor oil tanks were then filled with an inert substance and left in place.

FIELD WORK

Drilling

Field work was conducted in accordance with the *Site Safety Plan* (GSI, April 25, 1994). GSI field methods are included in Appendix A. A Groundwater Protection Ordinance Permit (#94257) was obtained from the ACFCWCD prior to drilling at the site. A copy of the permit is included in Appendix B.

On April 26, 1994, four onsite soil borings (B-1 through B-4) were drilled using a Mobile Drill B-61 drill rig with hollow-stem augers. A GSI field geologist was present to observe the drilling, collect soil samples for description and laboratory analysis, and prepare a log of each boring. Borings B-1 through B-3 were drilled to approximately 16 fbg and boring B-4 was drilled to approximately 46 fbg. Soil borings B-1 through B-4 were drilled in the immediate vicinity of the former waste oil tank pit and near the abandoned 280-gallon motor oil tanks beneath the service bay as shown on Site Plan, Figure 2. Boring B-4 was drilled downgradient, as inferred from regional groundwater flow, from the former waste-oil tank pit and abandoned motor oil tanks.

Soil Sampling and Description

A total of 18 soil samples were collected from the soil borings B-1 through B-4 for description and laboratory analysis. Soils encountered during the drilling were described according to the United Soil Classification System (USCS)/ASTM D 2488-85. The Logs of Borings are presented in Appendix C. Soil samples from borings B-1 through B-4 were collected at intervals of 5 feet or less from ground surface to the total depth explored.

Groundwater Monitoring Well Construction

Boring B-4 was completed as a 2-inch diameter groundwater monitoring well (MW-1) to a depth of 45 fbg. One foot of bentonite was placed in the bottom of the boring. The well was constructed using Schedule 40 polyvinyl chloride (PVC) casing with 0.020-inch wide machine slotted PVC well screen. The screened interval extended from 29½ feet to 45 fbg. Construction details are shown on Log of Boring B-4/MW-1 in Appendix C.

Groundwater Monitoring Well Development and Sampling

Groundwater monitoring well MW-1 was hand-developed on May 2, 1994, using bailing techniques until sediments were not observed in the discharge waters. The pH, conductivity, and temperature parameters appeared to stabilize after purging approximately 42 gallons of groundwater from the well. After development, the groundwater in the well had stabilized at a depth of approximately 34 fbg. The well was then sampled using a teflon bailer. Well development and sampling data are included in Appendix D.

LABORATORY METHODS

Soil and water samples collected were delivered, with Chain-of-Custody Records, to Inchcape Testing Services/Anametrix Laboratories of San Jose, California, a State-certified laboratory (Hazardous Waste Testing Laboratory Certification #1234) for analysis.

Soil and Water Samples

The bottom soil sample from borings B-1 through B-3, each collected at approximately 16 fbg, the soil sample collected within the capillary zone (approximately 35.5 fbg) from boring B-4, and the water sample collected from well MW-1 were submitted for laboratory analysis. The samples were

analyzed for total petroleum hydrocarbons as gasoline (TPH-G), TPH-D, and TPH-MO using Environmental Protection Agency (EPA) Method 8015 (modified); volatile organic compounds (VOCs) using EPA Method 8240; TOG using EPA Method 418.1; and metals cadmium (Cd), chromium (Cr), nickel (Ni), lead (Pb), and zinc (Zn) using EPA Method 6010.

FIELD WORK RESULTS

Drilling

The soil materials encountered beneath the site consisted primarily of well to poorly graded gravel with sand to silty gravel with sand. Vadose zone soils consisted primarily of silt to a depth of approximately 2 to 3 fbg. Below the silt, a well to poorly graded gravel was encountered in borings B-1 through B-3 to the total depth in each boring (approximately 16 fbg). Silty gravel with sand was encountered in boring B-4 to approximately 20 fbg. A silt unit was encountered below the gravels, and extended to approximately 23 fbg. A silty gravel with sand to a poorly graded gravel with sand was encountered at approximately 34 fbg. Groundwater was encountered at approximately 34 fbg.

Water-bearing soils consisted of silty to poorly graded gravel with sand, which extended from approximately 34 fbg to the total explored depth of approximately 46 fbg. These data are summarized in the logs of borings in Appendix C.

RESULTS OF LABORATORY ANALYSES

Soil Samples

Soil analytical results are summarized on Table 1, Results of Laboratory Analysis of Soil Samples. TPH-G, TPH-D, TPH-MO, VOCs, and Cd were reported as not detected in any of the soil samples analyzed. TOG was not detected in soil samples collected from borings B-1 or B-4. TOG was detected at a concentration of 7.8 ppm in the soil sample collected from boring B-2 and at 5.8 ppm in the soil sample collected from boring B-3. Methylene chloride and acetone were detected at or near detection limits for all four soil samples; however, the laboratory reported these constituents as "laboratory artifacts" (laboratory contaminants). Cr, Ni, Pb, and Zn were all detected in the samples analyzed at concentrations below the current standards for hazardous waste (using the total threshold limit concentrations [TTLC]), stated in California Code and Regulations (CCR) Title 26, adopted August 6, 1993 (formerly CCR Title 22, dated July 1, 1991). The Inchcape/Anametrix Analytical laboratory report for soil samples and Chain-of-Custody form is included in Appendix E.

Water Samples

Analytical results from the water samples are shown on Table 2, Results of Laboratory Analysis of Water Samples. TPH-D, TPH-MO, TOG, and Cd were not detected in the groundwater samples. TPH-G was detected at a concentration of 110 parts per billion (ppb); however, the laboratory states that "the concentration reported as gasoline for sample MW-1 is primarily due to the presence of a discrete peak not indicative of gasoline". Tetrachloroethene (PCE), trichloroethene (TCE), and methylene chloride were detected at concentrations of 400 ppb, 5 ppb and 3 ppb, respectively. All other VOCs were reported as not detected. Methylene chloride is also a "laboratory artifact", due to its presence in the trip blank. Detectable

concentrations of Cr (954 ppb), Ni (3,700 ppb), Pb (66.1 ppb), and Zn (562 ppb) were reported in the water sample collected from well MW-1. All metals were detected at concentrations below State of California maximum contaminant levels (MCLs) for drinking water (CRWQCB, 1991). The Inchcape/Anametrix Analytical laboratory report for the groundwater sample and the Chain-of-Custody form is included in Appendix E.

? No.

DISCUSSION

The soil material beneath the subject site is composed primarily of gravel and sand with minor amounts of silt, and appear to be fairly permeable. If petroleum hydrocarbons were released from the waste oil or motor oil tanks, they would have migrated vertically from the release point, through the vadose zone, to the groundwater.

Analytical data indicates that TPH-G, TPH-MO, and TPH-D, and VOCs have not impacted soils beneath the site. TOG was detected in soil samples collected from 16 fbg in borings B-2 and B-3 at concentrations below 10 ppm. These data suggest that waste oil and motor oil hydrocarbons have not significantly impacted the soil in the vicinity of the former waste oil tank pit, or near the abandoned motor-oil tanks.

These SBs outside of pit.

TOG was not detected in the groundwater sample collected from well MW-1, indicating that the TOG detected in the soil has not migrated vertically to groundwater. The absence of PCE and TCE in the vadose and capillary zone soil samples suggest that their presence in the groundwater sample are probably from an offsite source.

Sediments mostly gravel + sand, little organic matter to bind to VOCs.

	Cr	Ni	Pb	Zn
DHS MCL	50ppb		50	500 (2ndary MCL)
EPA MCL		100ppb (proposed)		8

CONCLUSIONS

Based on the results of this investigation, GSI concludes the following:

- The absence of TPH-G, TPH-D, and TPH-MO in soil samples, the absence of TPH-D, TPH-MO, and TOG in groundwater sample, and the low concentrations of TOG in soil samples suggests that waste-oil and motor-oil hydrocarbons have not impacted groundwater beneath the subject site;

- Metals Cr, Ni, Pb, and Zn detected in both soil and groundwater samples appear to be background concentrations. The concentrations of Cr, Ni, Pb, and Zn are below current Title 26 and State MCL concentrations for these metals; and

- The absence of PCE and TCE in the soil samples collected from borings B-1 through B-4 suggests that the PCE and TCE detected in the groundwater sample from well MW-1 are from a source other than the former waste oil tank.

RECOMMENDATIONS

Based on the conclusions of this investigation, GSI recommends the following:

- Perform quarterly groundwater monitoring for well MW-1 for one year.

- Conduct a records research survey to identify potential primary sources of PCE and TCE in the immediate vicinity of the subject site.

LIMITATIONS

This report was prepared in accordance with generally accepted standards of environmental and geological practice in California at the time this investigation was performed. This investigation was conducted solely for the purpose of evaluating environmental conditions of the soil and groundwater beneath the subject site with respect to motor and waste oil hydrocarbons. No soil engineering or geotechnical references are implied or should be inferred. Evaluation of the geologic conditions at the site for the purpose of this investigation is made from a limited number of observation points. Subsurface conditions may vary away from the available data points.

DISTRIBUTION

It is recommended that copies of this report be forwarded to:

Ms. Eva Chu
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Mr. Sumadhu Argala
Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

If you have any questions or comments, please call us at (510) 551-8777.

REFERENCES

Alameda County Flood Control and Water Conservation District - Zone 7, January 16, 1991. Fall 1990 Groundwater Level Report.

Alameda County Health Care Services Agency. September 30, 1993. Second Notice of Violation. StID 2935.

California Codes and Regulations Title 26, Division 22, Section 66088 - Hazardous Waste (adopted from CCR Title 22, Register 91, No. 22), pp. 755, August 6, 1993.

California Department of Water Resources. 1974. Evaluation of Ground-Water Resources, Livermore and Sunol Valleys. California Department of Water Resources Bulletin 118-2, Appendix A.

California Regional Water Quality Control Board - Central Valley Region, September 1991. Water Quality Goals.

Century West Engineering Corporation. May 1, 1991. Report on Angle Boring. Project Number 20511-001-01.

GSI, March 31, 1994. Work Plan for a Subsurface Investigation Relating to Waste-Oil Hydrocarbons. GSI Job #6136.01

Lindsay, W.L., 1979. Chemical Equilibria in Soils. John Wiley & Sons.

Scott, C.M., 1991. Background Metal Concentrations in Soil in Northern Santa Clara County, California. M.S. Thesis at the University of San Francisco, Environmental Management Program.

Western Environmental Science & Technology. October 11, 1991. "Analytical Results of Composite Soil Samples Collected During Waste-Oil Tank Excavation and Removal." Project Number 1877.

TABLE 1
RESULTS OF LABORATORY ANALYSES
OF SOIL SAMPLES
Groth Brothers Oldsmobile-GMC
Livermore, California

Sample ID	TPH-G (PPM)	TPH-D (PPM)	TPH-MO (PPM)	TOG (PPM)	VOCs (PPM)	Cd (PPM)	Cr (PPM)	Ni (PPM)	Pb (PPM)	Zn (PPM)
April 26, 1994										
B1-16	<0.5	<10	<10	<5.0	5*	<0.25	56.8	173	4.0	37.1
B2-16	<0.5	<10	<10	7.8	<5	<0.25	54.7	122	4.0	37.2
B3-16	<0.5	<10	<10	5.8	17*	<0.25	32.6	82.3	3.7	37.6
B4-35.5	<0.5	<10	<10	<5.0	8*	<0.25	83.3+	135+	4.4+	39.5++
Method Blank	<0.5	<10	<10	<5	5*	<0.25	<0.50	<2.0	<2.0	<1.0

All results shown in parts per million (PPM).
TPH-G = Total petroleum hydrocarbons as gasoline using EPA Method 8015 (modified).
TPH-D = Total petroleum hydrocarbons as diesel using EPA Method 8015 (modified).
TPH-MO = Total petroleum hydrocarbons as motor oil using EPA Method 8015 (modified).
TOG = Total oil and grease using EPA Method 418.1.
VOCs = Volatile organic compounds using EPA Method 8240.
Metals Cd (cadmium), Cr (chromium), Ni (nickel), Pb (lead), and zinc (Zn) using EPA Method 6010.
NA = Not analyzed

* = The laboratory reported values for methylene chloride and acetone that are near the method blank contamination levels are laboratory contaminants. Analyte other than methylene chloride or acetone were not detected in these samples.

Title 26 Metals (Hazardous Waste Levels-TTLC)

Cd:	100 ppm
Cr:	2,500 ppm
Ni:	2,000 ppm
Pb:	1,000 ppm
Zn:	5,000 ppm

Sample Identification:

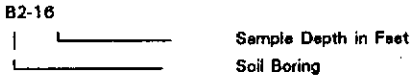


TABLE 2
RESULTS OF LABORATORY ANALYSES
OF WATER SAMPLES
Groth Brothers Oldsmobile-GMC
Livermore, California

Sample ID	TPH-G (PPB)	TPH-D (PPB)	TPH-MO (PPB)	TOG (PPM)	VOCs (PPB)	Cd (PPB)	Cr (PPB)	Ni (PPB)	Pb (PPB)	Zn (PPB)
May 2, 1994										
MW-1	110*	<50	<100	<5.0	PCE (400)** TCE (5)**	<5.0	964	3,700	66.1	562
Trip Blank	<50	<50	<100	<5.0	<5	NA	NA	NA	NA	NA

All results shown in parts per million (PPB), with the exception of TOG which is reported in parts per million (PPM).
TPH-G = Total petroleum hydrocarbons as gasoline using EPA Method 8015 (modified).
TPH-D = Total petroleum hydrocarbons as diesel using EPA Method 8015 (modified).
TPH-MO = Total petroleum hydrocarbons as motor oil using EPA Method 8015 (modified).
TOG = Total oil and grease using Standard Method 5520 B&F.
VOCs = Volatile organic compounds using EPA Method 8240.
Metals Cd (cadmium), Cr (chromium), Ni (nickel), Pb (lead), and zinc (Zn) using EPA Method 6010.
NA = Not analyzed.

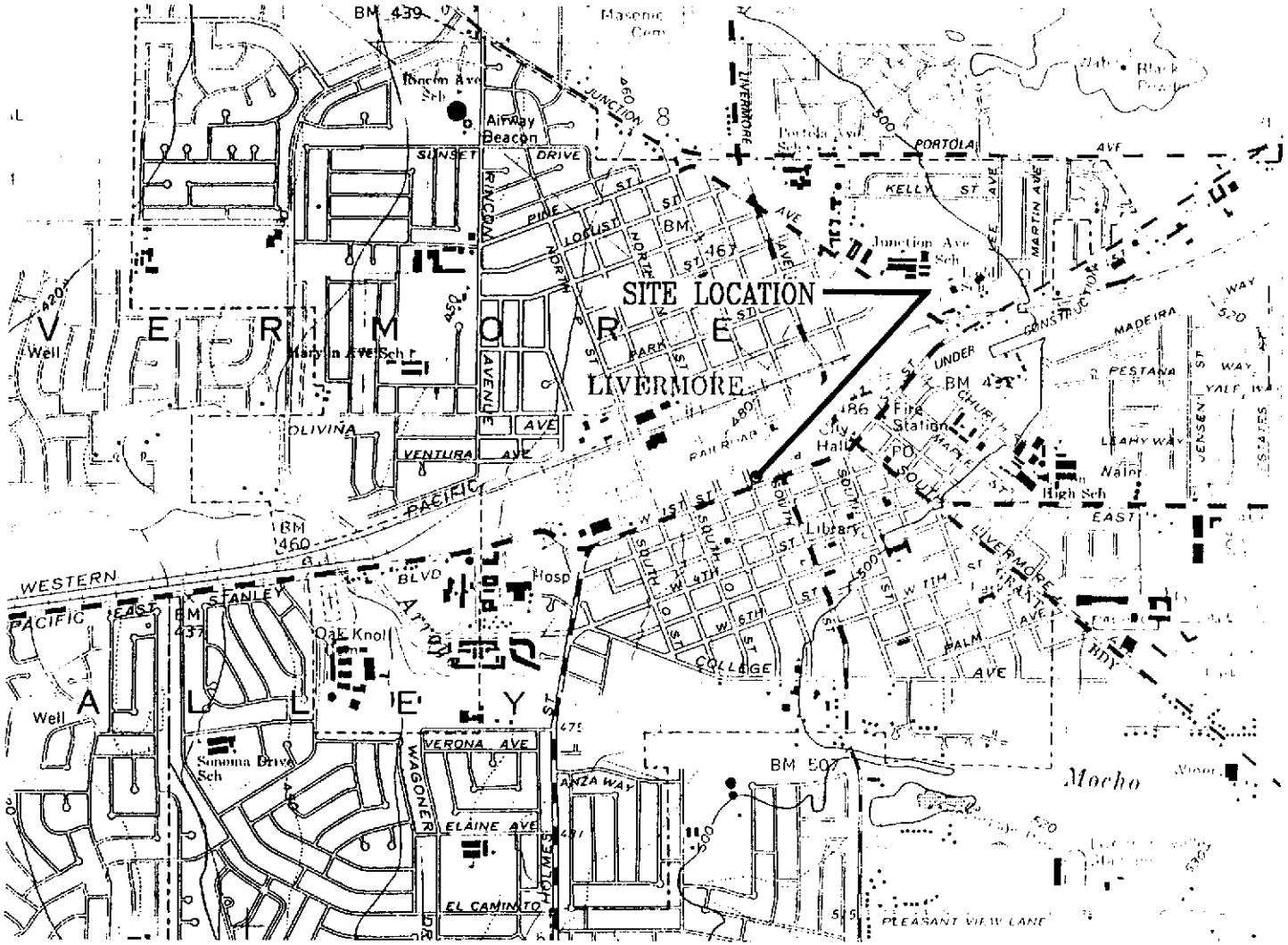
* = The concentration reported as gasoline is primarily due to the presence of a discrete peak not indicative of gasoline.
** = In addition to the PCE and TCE detected in the groundwater sample, the laboratory reported values for methylene chloride and acetone that are near the method blank contamination levels, and are laboratory contaminants.

MCLs for Drinking Water (CRWQCB, 1991) (There is no MCL for Ni)

TCE: 5 ppb
PCE: 5 ppb
Cd: 10 ppb
Cr: 50 ppb
Pb: 50 ppb
Zn: 5,000 ppb

Sample Identification:

MW-1
|
└———— Monitoring Well



N

0 2000

Scale in Feet

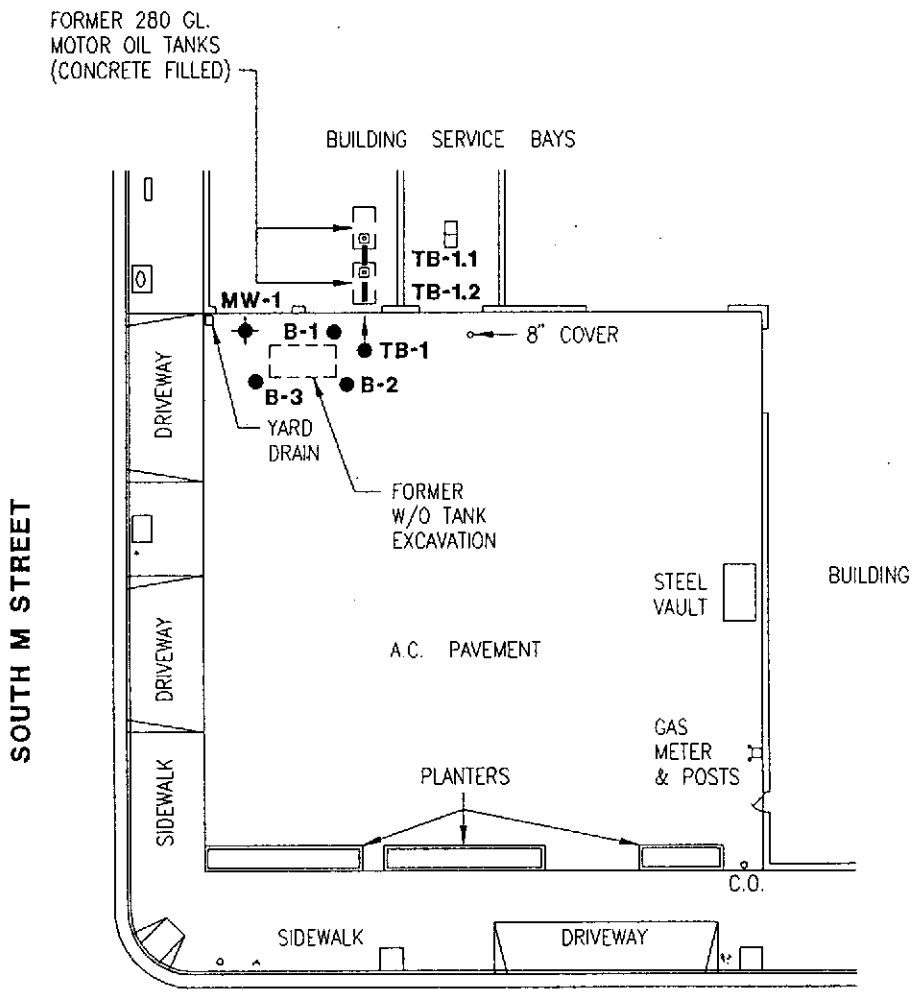
Base Map: USGS Topographic Map

GeoStrategies Inc.

VICINITY MAP
Groth Brothers Oldsmobile–GMC
59 South L Street
Livermore, California

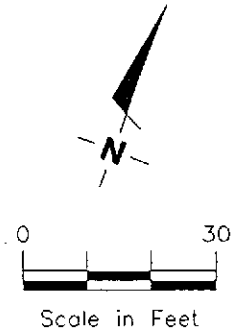
FIGURE **1**

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
6136		3/94	



EXPLANATION

- Groundwater monitoring well
- Soil boring
- Angular boring with direction arrow
- Soil sample beneath oil tanks



Base Map: Western Environmental Science & Technology
Page 1 dated 10/11/1990 and
Field Observations

GeoStrategies Inc.

SITE PLAN
Groth Brothers Oldsmobile–GMC
59 South L Street
Livermore, California

FIGURE 2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
613601-2		5/94	

APPENDIX A

FIELD METHODS

FIELD METHODS

Site Safety Plan

The Site Safety Plan describes the safety procedures to be followed during evaluation of waste and motor oil in the soil and groundwater beneath the site. GSI personnel and subcontractors were briefed on the contents of the Site Safety Plan before work began. The GSI staff geologist onsite during the investigation was Site Safety Officer for the project.

Soil Borings

Prior to the drilling of borings, permits were obtained from the appropriate regulatory agency. Prior to drilling, Underground Services Alert was notified of our intent to drill, and known underground utility lines and structures marked. The borings were drilled by a truck-mounted drill rig equipped with 7.5- and 8.5-inch diameter, hollow-stem augers. The augers were steam-cleaned prior to drilling each boring to minimize the possibility of cross contamination.

Soil Sampling in Borings

Soil samples were collected at 5-foot intervals, or less, from the ground surface to the total depth of the borings. The soil samples were collected by advancing the boring to a point immediately above the sampling depth, and then driving the sampling device ahead of the augers. The sampler was driven with a standard 140-pound hammer repeatedly dropped 30 inches. The number of blows to drive the sampler each successive six inches was counted and recorded to evaluate the relative consistency of the soil. Samples were collected using a California-modified, split-spoon sampler fitted with brass sleeves. The sleeves were laboratory-cleaned, steam-cleaned, or washed thoroughly with Alconox® and water prior to use.

The samples selected for laboratory analysis were removed from the sampler and promptly sealed in their brass sleeves with aluminum foil and plastic caps. The samples were then labeled, promptly placed in iced storage, and delivered to a laboratory certified by the State of California to perform the analyses requested.

One of the samples in brass sleeves not selected for laboratory analysis at each sampling interval was tested in the field using an OVA to screen for the presence of volatile organic compounds. The OVA was field calibrated at the beginning of each day. The samples were placed in plastic bag and temporarily sealed. The sample was allowed to site for approximately 20 minutes. The screening procedure was performed by inserting the intake probe of the OVA into the headspace created in the plastic bag containing the soil sample. The OVA readings are presented on each of appended boring logs (Appendix B).

Logging of Borings

A geologist was present to log the encountered earth materials using the United Soil Classification System (USCS) and ASTM D 2488-85. Soil samples not selected for laboratory analysis were extruded in the field for inspection. Logs include texture, color, moisture, plasticity, consistency, blow counts, and other characteristics which might affect contaminant migration (i.e. rootholes). Logs also include subjective evidence for the presence of hydrocarbons, such as soil staining, noticeable or obvious hydrocarbon odor, and OVA readings.

Groundwater Monitoring Well Construction

Groundwater monitoring well MW-1 was constructed in boring B-4 using clean 2-inch diameter, Schedule 40 PVC casing. Chemical cements, glues, or solvents were not used in well construction. The casing bottom was

sealed with a threaded end-plug, and the casing top was sealed with a locking plug. The screened portion of the groundwater monitoring well was constructed of machine-slotted PVC casing with 0.020-inch-wide slots. The screened section in the groundwater monitoring well was placed to allow monitoring during seasonal fluctuations of groundwater levels.

The annular space of the groundwater monitoring well was backfilled with No. 3 sand to approximately two feet above the top of the screened casing. A two-foot-thick bentonite seal, hydrated with clean water, was placed above the sand pack to prevent cement entering the filter pack. The bentonite was allowed to hydrate for approximately one-half hour prior to the placement of the cement. The annular space above the bentonite was backfilled with a slurry of cement grout containing approximately 5% bentonite to approximately one-half fbg.

A water-resistant Emco-Wheton vault box with a PVC apron was placed over the wellhead for protection against vandalism and the possibility of accidental disturbance.

Sampling Labeling and Handling

Sampling containers were labeled in the field with the job number, sample location and depth, and date, and then promptly placed in iced storage for transport to the laboratory. A Chain-of-Custody Record was initiated by the field geologist and updated throughout handling of the samples, and accompanies the samples to a laboratory certified by the State of California for the analyses requested.

APPENDIX B

DRILLING PERMIT

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE ♦ PLEASANTON, CALIFORNIA 94588 ♦ (510) 484-2600

26 April 1994

GeoStrategies, Inc.
6747 Sierra Court, Suite G
Dublin, CA. 94568

Gentlemen:

Enclosed is drilling permit 94257 for a monitoring well construction project at 59 South "L" Street in Livermore for Groth Brothers Oldsmobile.

Please note that permit condition A-2 requires that a well construction report be submitted after completion of the work. The report should include drilling and completion logs, location sketch and permit number.

If you have any questions, please contact Wyman Hong at extension 235 or me at extension 233.

Very truly yours,

Craig A. Mayfield

Craig A. Mayfield
Water Resources Engineer III

WH:mm
Enc.

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94566 • (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 59 South L Street
Livermore, CA 94550

CLIENT
Name Groth Brothers Oldsmobile - GMC
Address 59 South L Street Phone 447-3190
City Livermore, CA Zip 94550

APPLICANT
Name Geo Strategies Inc.
Address 6747 Sierra Court, Suite G Phone 551-8777
City Dublin, CA Zip 94568

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	
Water Supply	___	Contamination	X
Monitoring	X	Well Destruction	___

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. C57-484288

WELL PROJECTS
Drill Hole Diameter 6 in. Maximum
Casing Diameter 2 in. Depth 80 ft.
Surface Seal Depth 45 ft. Number 1

GEOTECHNICAL PROJECTS
Number of Borings 3 Maximum
Hole Diameter 6 in. Depth 15 ft.

ESTIMATED STARTING DATE 4/26/94
ESTIMATED COMPLETION DATE 4/26/94

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

APPLICANT'S SIGNATURE Robert D. Cyhell for GSI Date 4-19-94

FOR OFFICE USE

PERMIT NUMBER 94257
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

(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. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

(C.) GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

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

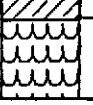
E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 25 Apr 94
Wyman Hong

121989

APPENDIX C

USCS/ASTM D 2488-85 KEY TO TEST DATA AND LOGS OF BORINGS

MAJOR DIVISIONS					TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
			GP		POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 15% FINES	GM		SILTY GRAVELS, SILTY GRAVELS WITH SAND
			GC		CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW		WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
			SP		POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 15% FINES	SM		SILTY SANDS WITH OR WITHOUT GRAVEL
			SC		CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
			OL		ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH		ORGANIC SILTS OR CLAYS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS			PT		PEAT AND OTHER HIGHLY ORGANIC SOILS

LL - Liquid Limit (%)

PI - Plastic Index (%)

PID - Volatile Vapors in ppm

MA - Particle Size Analysis

2.5 YR 6/2 - Soil Color according to Munsell Soil Color Charts (1975 Edition)

5 GY 5/2 - GSA Rock Color Chart

- No Soil Sample Recovered
- "Undisturbed" Sample
- Bulk or Classification Sample
- First Encountered Ground Water Level
- Piezometric Ground Water Level

Penetration - Sample drive hammer weight - 140 pounds falling 30 inches. Blows required to drive sampler 1 foot are indicated on the logs

GeoStrategies Inc.

Unified Soil Classification - ASTM D 2488-85 and Key to Test Data

GeoStrategies, Inc.

Log of Boring B-1

PROJECT: *Groth Brothers*	LOCATION: *59 South L Street, Livermore, CA*
GSI PROJECT NO. : *6136.01*	SURFACE ELEVATION:
DATE STARTED: *4/26/94*	WL (ft. bgs): DATE: TIME:
DATE FINISHED: *4/26/94*	WL (ft. bgs): DATE: TIME:
DRILLING METHOD: *7.5 in. Hollow Stem Auger*	TOTAL DEPTH: *16 Feet*
DRILLING COMPANY: *Exploration Geoservices*	GEOLOGIST: *RDC*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	REMARKS
						ML	2" ASPHALT	
						GW	SILT (ML) - very dark brown (10YR 2/2), damp, low plasticity, 60% silt, 35% clay, 5% coarse gravel with sand.	Boring backfilled 15 to 16 feet with bentonite, surface to 15 feet with 10 sack cement/slurry with 5% bentonite.
5	0	13	B1-6.5				WELL GRADED GRAVEL WITH SAND (GW) - very dark grayish brown (10YR 5/2), damp, medium dense, 50% medium to coarse gravel, 45% medium grained sand, 5% silt.	
10	0	40	B1-11				WELL GRADED GRAVEL WITH SAND (GW) - dark brown (10YR 3/3), moist, dense, 55% coarse gravel, 40% medium sand, 5% silt.	
15	0	34	B1-16				WELL GRADED GRAVEL WITH SAND (GW) - very grayish brown (10YR 4/2), moist, dense, 55% coarse gravel, 40% medium sand, 5% silt.	
							bottom of boring at 16.0 feet. 4/26/94	
20							(* = converted to equivalent standard penetration blows/ft.)	
25								
30								
35								

JOB NUMBER: *6136.01*

GeoStrategies, Inc.

Log of Boring B-2

PROJECT: *Groth Brothers*	LOCATION: *59 South L Street, Livermore, CA*
GSI PROJECT NO. : *6136.01*	SURFACE ELEVATION:
DATE STARTED: *4/26/94*	WL (ft. bgs): DATE: TIME:
DATE FINISHED: *4/26/94*	WL (ft. bgs): DATE: TIME:
DRILLING METHOD: *7.5 in. Hollow Stem Auger*	TOTAL DEPTH: *16 Feet*
DRILLING COMPANY: *Exploration Geoservices*	GEOLOGIST: *RDC*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	REMARKS
						ML	2" ASPHALT	
						GW	SILT (ML) – very dark brown (10YR 2/2), damp, low plasticity, 65% silt, 30% clay, 5% medium sand.	Boring backfilled 15 to 16 feet with bentonite, surface to 15 feet with 10 sack cement/slurry with 5% bentonite.
5	0	10	B2-6				WELL GRADED GRAVEL WITH SAND (GW) – very dark grayish brown (10YR 5/2), damp, loose to medium dense, 50% corase gravel, 45% medium sand, 5% silt.	
10	0	15	B2-11				WELL GRADED GRAVEL WITH SAND (GW) – dark gray (10YR 4/1), moist, medium dense, 55% coarse gravel, 40% medium to coarse sand, 5% silt.	
15	0	45	B2-16				WELL GRADED GRAVEL WITH SAND (GW) – dark brown (10YR 3/3), moist, dense, 50% coarse gravel, 40% medium to coarse sand, 10% silt.	
							bottom of boring at 16.0 feet. 4/26/94	
20							(* = converted to equivalent standard penetration blows/ft.)	
25								
30								
35								

JOB NUMBER: *6136.01*

GeoStrategies, Inc.

Log of Boring B-3

PROJECT: *Groth Brothers*	LOCATION: *59 South L Street, Livermore, CA*
GSI PROJECT NO. : *6136.01*	SURFACE ELEVATION:
DATE STARTED: *4/26/94*	WL (ft. bgs): DATE: TIME:
DATE FINISHED: *4/26/94*	WL (ft. bgs): DATE: TIME:
DRILLING METHOD: *7.5 in. Hollow Stem Auger*	TOTAL DEPTH: *16 Feet*
DRILLING COMPANY: *Exploration Geoservices*	GEOLOGIST: *RDC*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	REMARKS
						ML	2" ASPHALT	Boring backfilled 15 to 16 feet with bentonite, surface to 15 feet with 10 sack cement/sand slurry with 5% bentonite.
						GP	SILT (ML) – very dark brown (10YR 2/2), damp, low plasticity, 60% silt, 35% clay, 5% medium sand, concrete cobbles.	
5	0	8	B3-6				POORLY GRADED GRAVEL WITH SAND (GP) – very dark grayish brown (10YR 3/2), damp, loose, 50% fine to corase gravel, 45% medium to coarse sand, 5% silt.	
						GM		
10	0	20	B3-11				SILTY GRAVEL WITH SAND (GM) – dark brown (10YR 3/3), moist, medium dense, 50% fine to corase gravel, 35% medium to coarse sand, 15% silt.	
15	0	52	B3-16				SANDY GRAVEL WITH SILT (GM) – dark brown (10YR 3/3), moist, very dense, 50% fine to corase gravel, 35% medium to coarse sand, 15% silt.	
							bottom of boring at 16.0 feet. 4/26/94	
20							(* = converted to equivalent standard penetration blows/ft.)	
25								
30								
35								

JOB NUMBER: *6136.01*

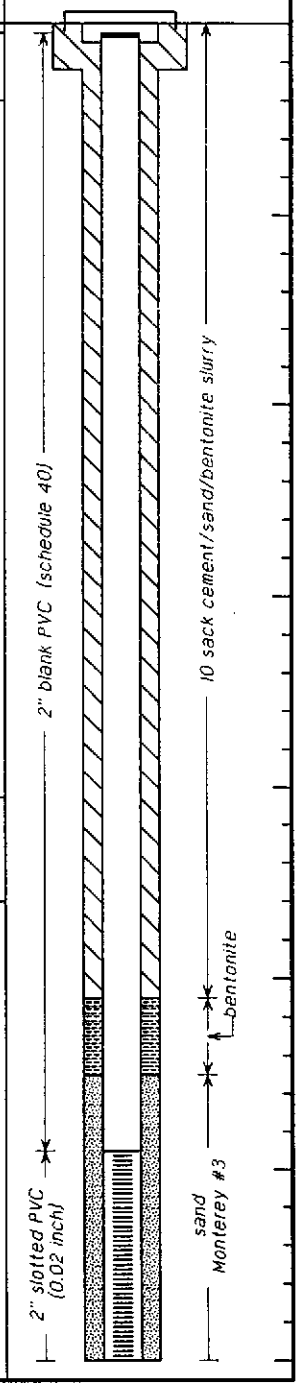
GeoStrategies, Inc.

Log of Boring B-4/MW-1

PROJECT: *Groth Brothers*	LOCATION: *59 South L Street, Livermore, CA*
GSI PROJECT NO.: *6136.01*	SURFACE ELEVATION:
DATE STARTED: *4/26/94*	WL (ft. bgs): *36* DATE: *4/26/94* TIME: *12:00*
DATE FINISHED: *4/26/94*	WL (ft. bgs): *34* DATE: *4/26/94* TIME: *12:10*
DRILLING METHOD: *8.5 in. Hollow Stem Auger*	TOTAL DEPTH: *46 Feet*
DRILLING COMPANY: *Exploration Geoservices*	GEOLOGIST: *RDC*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SOIL CLASS	GEOLOGIC DESCRIPTION
				ML	2" ASPHALT
				GM	SILT (ML) – very dark brown (10YR 2/2), damp, low plasticity, 60% silt, 35% clay, 5% corase gravel with sand.
5	0	2	B4-5.5		SILTY GRAVEL WITH SAND (GM) – dark grayish brown (10YR 3/2), damp, very loose, 45% fine to medium gravel, 40% medium to coarse sand, 10% silt, 5% clay.
10	0	7	B4-10.5		SILTY GRAVEL WITH SAND (GM) – dark brown (10YR 3/3), moist, loose, 50% fine to coarse gravel, 35% medium sand 15% silt.
15	0	19	B4-15.5		SILTY GRAVEL WITH SAND (GM) – dark brown (10YR 3/2), moist, medium dense, 50% fine to coarse gravel, 35% medium to coarse sand, 15% silt.
20	0	10	B4-20.5		SILTY GRAVEL WITH SAND (GM) – dark brown (10YR 3/3), moist, loose to medium dense, 50% fine to coarse grained gravel, 35% medium to coarse sand, 15% silt.
				ML	SILT (ML) – dark yellowish brown (10YR 5/8), moist, stiff, low plasticity, 75% silt, 25% clay.
				GM	
25	0	67	B4-25.5		SILTY GRAVEL WITH SAND (GM) – dark brown (10YR 3/3), moist, very dense, 45% fine to coarse gravel, 30% medium to coarse sand, 25% silt.
30	0	57	B4-30.5		SILTY GRAVEL WITH SAND (GM) – dark grayish brown (10YR 4/2), moist, very dense, 45% medium to coarse gravel, 35% medium to coarse sand, 20% silt.
35					

WELL DIAGRAM



GeoStrategies, Inc.

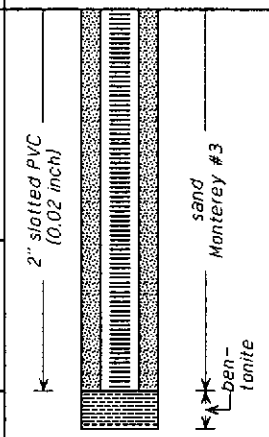
Log of Boring B-4/MW-1

PROJECT: *Groth Brothers*

LOCATION: *59 South L Street, Livermore, CA*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SOIL CLASS	GEOLOGIC DESCRIPTION
	0	32	B4-35.5	GM	SILTY GRAVEL WITH SAND (GM) – yellowish brown (10YR 5/4), saturated, dense, 50% fine to coarse gravel, 35% medium to coarse sand, 10% silt, %5 clay.
40	0	54	B4-40.5	GP	
45	0	80	B4-45		POORLY GRADED GRAVEL WITH SAND (GP) – grayish brown (10YR 3/2), saturated, dense, 65% medium to coarse gravel, 30% medium to coarse sand, 5% silt.
					bottom of boring at 46.0 feet. 4/26/94
					(* = converted to equivalent standard penetration blows/ft.)
50					
55					
60					
65					
70					
75					

WELL DIAGRAM



JOB NUMBER: *6136.01*

APPENDIX D

WELL DEVELOPMENT AND WATER SAMPLING DATA

Delli-Zotti — Ryan Inc. (415) 783-7500

General and Environmental Contractors

DAILY SAMPLING REPORT

Company: Groth Brothers | Job Number: G136.01

Location: 59 S L Street | Date: 5-2-94

City: Livermore CA

Work Performed

Monitor	✓	Clean Equipment	
Purge	✓	Transfer Water	
Sample	✓	To System	Drum
Develop	✓	To Holding ~~Tank~~	✓

Number of wells on site	1	Sampling truck	20-16
Number of wells off site		Purge water trlr.	
Number of wells monitored only	8	Traffic control	
Number of wells sampled (<40')	1	Safety Equipment	
Number of wells sampled (>40')		vest	arrow board
Total volume of purge water		cones	road signs

Purge Equipment		Sampling Equipment	
Bladder		Bladder	
Bailer	✓	Bailer	✓
Airlift			
Suction			
Grundfos			

Other Equipment

Gloves	✓	Bailer Cord	50'
Locks	✓	Caps	✓
Turbidity Meter	✓	Gas Tech	

Comments: 1 Drum used & left onsite for future Disposal

Sampler: F. Cline | Date: 5-2-94

Assistant: | Reviewed:

GETTLER–RYAN INC.

General and Environmental Contractors

WELL SAMPLING FIELD DATA SHEET

COMPANY Groth Brothers Olds GMC JOB # 6136.01

LOCATION 59 S L Street DATE 5-2-94

CITY Livermore CA TIME

Well ID. MW-1 Well Condition okay

Well Diameter 2" in. Hydrocarbon Thickness — ft.

Total Depth 44.50 ft.

Depth to Liquid- 34.03 ft.

Volume Factor (VF)			
	2" = 0.17	6" = 1.50	12" = 5.80
	3" = 0.38	8" = 2.60	
	4" = 0.66	10" = 4.10	

(# of casing volumes) 5 x 10.47 x(VF) 0.17 = (Estimated Purge Volume) 1.8 (9.0) gal.

Purging Equipment Bailer

Sampling Equipment Bailer

Starting Time 0713 Purging Flow Rate gpm.

(Estimated Purge Volume) gal. / (Purging Flow Rate) gpm. = (Anticipated Purging Time) min.

Time	pH	Conductivity	Temperature	Volume
7:15	7.59	936	64.3	1
7:20	7.52	879	66.1	4
7:27	7.47	875	64.2	6
7:29	7.46	881	63.7	10
7:33	7.43	876	66.3	14
7:36	7.43	883	66.0	18
7:43	7.42	873	66.3	22
7:48	7.39	880	66.1	26
7:52	7.40	875	66.0	30 30
7:56	7.40	856	65.9	32 32
8:00	7.37	857	65.9	34

Did well dewater? No If yes, time Volume

Sampling Time 8:15 Weather Conditions

Analysis Gas Diesel MTBE TOG VOC GC/MS. Bottles Used

1052 m.

Chain of Custody Number

COMMENTS continue on next page -

FOREMAN F. Chin ASSISTANT

GETTLER–RYAN INC.

General and Environmental Contractors

WELL SAMPLING FIELD DATA SHEET

COMPANY Covetti Brothers JOB # 6136

LOCATION 59 S. C Street DATE 5-2-94

CITY Livermore CA TIME

Well ID. _____ Well Condition _____

Well Diameter _____ in. Hydrocarbon Thickness _____ ft.

Total Depth _____ ft.

Depth to Liquid _____ ft.

Volume Factor (VF)			
	2" = 0.17	6" = 1.50	12" = 5.80
	3" = 0.38	8" = 2.60	
	4" = 0.66	10" = 4.10	

(# of casing volumes) _____ x _____ x(VF) _____ = (Estimated Purge Volume) _____ gal.

Purging Equipment _____

Sampling Equipment Continue from previous

Starting Time _____ Purging Flow Rate _____ gpm.

(Estimated Purge Volume) _____ gal. / (Purging Flow Rate) _____ gpm. = (Anticipated Purging Time) _____ min.

Time	pH	Conductivity	Temperature	Volume
8:00	7.37	~~857~~ 875	65.9	34
8:04	7.39	~~860~~ 870	65.3	38
8:08	7.38	870	65.6	40
8:15	7.38	872	65.7	42

Did well dewater? No If yes, time _____ Volume _____

Sampling Time 8:15 Weather Conditions _____

Analysis Gas Diesel M/O TOG VOC CdCrNi Pb Zn Bottles Used _____

Chain of Custody Number _____

COMMENTS _____

FOREMAN FIC/ive ASSISTANT _____

Gettler - Ryan Inc. ENVIRONMENTAL DIVISION **Work Order**

COMPANY Groth Brothers - Oldsmobile - GMC JOB NO. 6136.01

JOB LOCATION 59 South L Street

CITY Livermore, CA PHONE NO. 447-3190

AUTHORIZED Roberts Cantrell DATE 4/28/94 P.O. NO

JOB DESCRIPTION Please Develop and Sample newly installed groundwater monitoring well MW-1. Development should not exceed 55 gallons (Low budget job). Samples will be Submitted to Anametrix Labs and analyzed for TPH-G, TPH-D, TPH-MO; VOCs; TOG; and Metals Cd, Cr, Ni, Pb, and Zn. Bring Sample Back to office, I will take it from There.

WORK PERFORMED/MATERIAL

Sampling preformed 5-2-94 @ 7.00am to 9.00 am. Well monitored for Depth 45 from TOC Well was surged using Stainless steel Bailer to Remove silt to Bottom of Well. Water level @ 34.03 from top of casing. Bailed well using clean 1 7/8" Teflon Bailer 6' Long Bailed ≈ 40gals from well. pH Cond & Temperature monitored every two gallons Well did not clear up completely final samples were slightly cloudy

Samples to Anametrix

1 drum left onsite with ≈ 40gal of water Method Dot Gooch he said he would handle.

Final Total Depth @ 44.0' from TOC

COMP. HRS. PICKUP HRS. 20-16 DUMP HRS. ROLLER HRS. CONC. SAW LF.

DATE COMPLETED 5-2-94 FOREMAN

APPENDIX E

LABORATORY ANALYTICAL REPORTS FOR SOIL AND WATER SAMPLES AND CHAIN-OF-CUSTODY FORMS

Inchcape Testing Services
Anametrix Laboratories

1961 Concourse Drive
Suite E
San Jose, CA 95131
Tel: 408-432-8192
Fax: 408-432-8198

MR. ROBERT CAMPBELL
GEOSTRATEGIES
6747 SIERRA COURT, SUITE G
DUBLIN, CA 94568

Workorder # : 9404333
Date Received : 04/28/94
Project ID : 6136.01
Purchase Order: N/A

The following samples were received at Anametrix for analysis :

ANAMETRIX ID	CLIENT SAMPLE ID
9404333- 1	B1-16
9404333- 2	B2-16
9404333- 3	B3-16
9404333- 4	B4-35.5

This report is organized in sections according to the specific Anametrix laboratory group which performed the analysis(es) and generated the data.

The results contained within this report relate to only the sample(s) tested. Additionally, these data should be considered in their entirety and Anametrix cannot be responsible for the detachment, separation, or otherwise partial use of this report.

Anametrix is certified by the California Department of Health Services (DHS) to perform environmental testing under Certificate Number 1234.

If you have any further questions or comments on this report, please call us as soon as possible. Thank you for using Anametrix.

Doug Robbins
Laboratory Director

5-16-94
Date

This report consists of 35 pages.

RECEIVED
MAY 19 1994
Geostrategies Inc.

6136.01
Groth Brothers

ANAMETRIX REPORT DESCRIPTION
GCMS

Organic Analysis Data Sheets (OADS)

OADS forms contain tabulated results for target compounds. The OADS are grouped by method and, within each method, organized sequentially in order of increasing Anametrix ID number.

Tentatively Identified Compounds (TICs)

TIC forms contain tabulated results for non-target compounds detected in GC/MS analyses. TICs must be requested at the time samples are submitted at Anametrix. TIC forms immediately follow the OADS form for each sample. If TICs are requested but not found, then TIC forms will not be included with the report.

Surrogate Recovery Summary (SRS)

SRS forms contain quality assurance data. An SRS form will be printed for each method, if the method requires surrogate compounds. They will list surrogate percent recoveries for all samples and any method blanks. Any surrogate recovery outside the established limits will be flagged with an "*", and the total number of surrogates outside the limits will be listed in the column labelled "Total Out".

Matrix Spike Recovery Form (MSR)

MSR forms contain quality assurance data. They summarize percent recovery and relative percent difference information for matrix spikes and matrix spike duplicates. This information is a statement of both accuracy and precision. Any percent recovery or relative percent difference outside established limits will be flagged with an "*", and the total number outside the limits will be listed at the bottom of the page. Not all reports will contain an MSR form.

Qualifiers

Anametrix uses several data qualifiers (Q) in it's report forms. These qualifiers give additional information on the compounds reported. They should help a data reviewer to verify the integrity of the analytical results. The following is a list of qualifiers and their meanings:

- U - Indicates that the compound was analyzed for, but was not detected at or above the specified reporting limit.
- B - Indicates that the compound was detected in the associated method blank.
- J - Indicates that the compound was detected at an amount below the specified reporting limit. Consequently, the amount should be considered an approximate value. Tentatively identified compounds will always have a "J" qualifier because they are not included in the instrument calibration.
- E - Indicates that the amount reported exceeded the linear range of the instrument calibration.
- D - Indicates that the compound was detected in an analysis performed at a secondary dilution.
- A - Indicates that the tentatively identified compound is a suspected aldol condensation product. This is common in EPA Method 8270 soil analyses.

Absence of a qualifier indicates that the compound was detected at a concentration at or above the specified reporting limit.

REPORTING CONVENTIONS

- Due to a size limitation in our data processing step, only the first eight (8) characters of your project ID and sample ID will be printed on the report forms. However, the report cover letter and report summary pages display up to twenty (20) characters of your project and sample IDs.
- Amounts reported are gross values, i.e., not corrected for method blank contamination.

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

MR. ROBERT CAMPBELL
GEOSTRATEGIES
6747 SIERRA COURT, SUITE G
DUBLIN, CA 94568

Workorder # : 9404333
Date Received : 04/28/94
Project ID : 6136.01
Purchase Order: N/A
Department : GCMS
Sub-Department: GCMS

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9404333- 1	B1-16	SOIL	04/26/94	8240
9404333- 2	B2-16	SOIL	04/26/94	8240
9404333- 3	B3-16	SOIL	04/26/94	8240
9404333- 4	B4-35.5	SOIL	04/26/94	8240

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

MR. ROBERT CAMPBELL
GEOSTRATEGIES
6747 SIERRA COURT, SUITE G
DUBLIN, CA 94568

Workorder # : 9404333
Date Received : 04/28/94
Project ID : 6136.01
Purchase Order: N/A
Department : GCMS
Sub-Department: GCMS

QA/QC SUMMARY :

- Reported values for methylene chloride and acetone that are near the method blank contamination levels are most likely laboratory artifacts.

Paul Govan 5-16-94
Department Supervisor Date

Denise Powell 5-16-94
Chemist Date

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

Project ID : 6136.01
Sample ID : B1-16
Matrix : SOIL
Date Sampled : 4/26/94
Date Analyzed : 5/ 5/94
Instrument ID : MSD1

Anametrix ID : 9404333-01
Analyst : BP
Supervisor : PG

Dilution Factor : 1.0
Conc. Units : ug/Kg

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
74-87-3	Chloromethane	10.	ND	U
75-01-4	Vinyl chloride	10.	ND	U
74-83-9	Bromomethane	10.	ND	U
75-00-3	Chloroethane	10.	ND	U
75-69-4	Trichlorofluoromethane	5.	ND	U
75-35-4	1,1-Dichloroethene	5.	ND	U
76-13-1	Trichlorotrifluoroethane	5.	ND	U
67-64-1	Acetone	20.	ND	U
75-15-0	Carbon disulfide	5.	ND	U
75-09-2	Methylene chloride	5.	5.	BJ
156-60-5	Trans-1,2-dichloroethene	5.	ND	U
75-34-3	1,1-Dichloroethane	5.	ND	U
156-59-2	Cis-1,2-dichloroethene	5.	ND	U
78-93-3	2-Butanone	20.	ND	U
67-66-3	Chloroform	5.	ND	U
71-55-6	1,1,1-Trichloroethane	5.	ND	U
56-23-5	Carbon tetrachloride	5.	ND	U
108-05-4	Vinyl acetate	10.	ND	U
71-43-2	Benzene	5.	ND	U
107-06-2	1,2-Dichloroethane	5.	ND	U
79-01-6	Trichloroethene	5.	ND	U
78-87-5	1,2-Dichloropropane	5.	ND	U
75-27-4	Bromodichloromethane	5.	ND	U
10061-01-5	Cis-1,3-dichloropropene	5.	ND	U
108-10-1	4-Methyl-2-pentanone	10.	ND	U
108-88-3	Toluene	5.	ND	U
10061-02-6	Trans-1,3-dichloropropene	5.	ND	U
79-00-5	1,1,2-Trichloroethane	5.	ND	U
127-18-4	Tetrachloroethene	5.	ND	U
591-78-6	2-Hexanone	10.	ND	U
124-48-1	Dibromochloromethane	5.	ND	U
108-90-7	Chlorobenzene	5.	ND	U
100-41-4	Ethylbenzene	5.	ND	U
1330-20-7	Xylene (Total)	5.	ND	U
100-42-5	Styrene	5.	ND	U
75-25-2	Bromoform	5.	ND	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	ND	U
541-73-1	1,3-Dichlorobenzene	5.	ND	U
106-46-7	1,4-Dichlorobenzene	5.	ND	U
95-50-1	1,2-Dichlorobenzene	5.	ND	U

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

Project ID : 6136.01
Sample ID : B2-16
Matrix : SOIL
Date Sampled : 4/26/94
Date Analyzed : 5/ 5/94
Instrument ID : MSD1

Anametrix ID : 9404333-02
Analyst : JF
Supervisor : PG

Dilution Factor : 1.0
Conc. Units : ug/Kg

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
74-87-3	Chloromethane	10.	ND	U
75-01-4	Vinyl chloride	10.	ND	U
74-83-9	Bromomethane	10.	ND	U
75-00-3	Chloroethane	10.	ND	U
75-69-4	Trichlorofluoromethane	5.	ND	U
75-35-4	1,1-Dichloroethene	5.	ND	U
76-13-1	Trichlorotrifluoroethane	5.	ND	U
67-64-1	Acetone	20.	ND	U
75-15-0	Carbon disulfide	5.	ND	U
75-09-2	Methylene chloride	5.	4.	BJ
156-60-5	Trans-1,2-dichloroethene	5.	ND	U
75-34-3	1,1-Dichloroethane	5.	ND	U
156-59-2	Cis-1,2-dichloroethene	5.	ND	U
78-93-3	2-Butanone	20.	ND	U
67-66-3	Chloroform	5.	ND	U
71-55-6	1,1,1-Trichloroethane	5.	ND	U
56-23-5	Carbon tetrachloride	5.	ND	U
108-05-4	Vinyl acetate	10.	ND	U
71-43-2	Benzene	5.	ND	U
107-06-2	1,2-Dichloroethane	5.	ND	U
79-01-6	Trichloroethene	5.	ND	U
78-87-5	1,2-Dichloropropane	5.	ND	U
75-27-4	Bromodichloromethane	5.	ND	U
10061-01-5	Cis-1,3-dichloropropene	5.	ND	U
108-10-1	4-Methyl-2-pentanone	10.	ND	U
108-88-3	Toluene	5.	ND	U
10061-02-6	Trans-1,3-dichloropropene	5.	ND	U
79-00-5	1,1,2-Trichloroethane	5.	ND	U
127-18-4	Tetrachloroethene	5.	ND	U
591-78-6	2-Hexanone	10.	ND	U
124-48-1	Dibromochloromethane	5.	ND	U
108-90-7	Chlorobenzene	5.	ND	U
100-41-4	Ethylbenzene	5.	ND	U
1330-20-7	Xylene (Total)	5.	ND	U
100-42-5	Styrene	5.	ND	U
75-25-2	Bromoform	5.	ND	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	ND	U
541-73-1	1,3-Dichlorobenzene	5.	ND	U
106-46-7	1,4-Dichlorobenzene	5.	ND	U
95-50-1	1,2-Dichlorobenzene	5.	ND	U

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

Project ID	: 6136.01	Anametrix ID	: 9404333-03
Sample ID	: B3-16	Analyst	: MF
Matrix	: SOIL	Supervisor	: PG
Date Sampled	: 4/26/94		
Date Analyzed	: 5/ 5/94	Dilution Factor	: 1.0
Instrument ID	: MSD1	Conc. Units	: ug/Kg

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
74-87-3	Chloromethane	10.	ND	U
75-01-4	Vinyl chloride	10.	ND	U
74-83-9	Bromomethane	10.	ND	U
75-00-3	Chloroethane	10.	ND	U
75-69-4	Trichlorofluoromethane	5.	ND	U
75-35-4	1,1-Dichloroethene	5.	ND	U
76-13-1	Trichlorotrifluoroethane	5.	ND	U
67-64-1	Acetone	20.	12.	J
75-15-0	Carbon disulfide	5.	ND	U
75-09-2	Methylene chloride	5.	5.	B
156-60-5	Trans-1,2-dichloroethene	5.	ND	U
75-34-3	1,1-Dichloroethane	5.	ND	U
156-59-2	Cis-1,2-dichloroethene	5.	ND	U
78-93-3	2-Butanone	20.	ND	U
67-66-3	Chloroform	5.	ND	U
71-55-6	1,1,1-Trichloroethane	5.	ND	U
56-23-5	Carbon tetrachloride	5.	ND	U
108-05-4	Vinyl acetate	10.	ND	U
71-43-2	Benzene	5.	ND	U
107-06-2	1,2-Dichloroethane	5.	ND	U
79-01-6	Trichloroethene	5.	ND	U
78-87-5	1,2-Dichloropropane	5.	ND	U
75-27-4	Bromodichloromethane	5.	ND	U
10061-01-5	Cis-1,3-dichloropropene	5.	ND	U
108-10-1	4-Methyl-2-pentanone	10.	ND	U
108-88-3	Toluene	5.	ND	U
10061-02-6	Trans-1,3-dichloropropene	5.	ND	U
79-00-5	1,1,2-Trichloroethane	5.	ND	U
127-18-4	Tetrachloroethene	5.	ND	U
591-78-6	2-Hexanone	10.	ND	U
124-48-1	Dibromochloromethane	5.	ND	U
108-90-7	Chlorobenzene	5.	ND	U
100-41-4	Ethylbenzene	5.	ND	U
1330-20-7	Xylene (Total)	5.	ND	U
100-42-5	Styrene	5.	ND	U
75-25-2	Bromoform	5.	ND	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	ND	U
541-73-1	1,3-Dichlorobenzene	5.	ND	U
106-46-7	1,4-Dichlorobenzene	5.	ND	U
95-50-1	1,2-Dichlorobenzene	5.	ND	U

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

Project ID : 6136.01
Sample ID : B4-35.5
Matrix : SOIL
Date Sampled : 4/26/94
Date Analyzed : 5/ 5/94
Instrument ID : MSD1

Anametrix ID : 9404333-04
Analyst : DP
Supervisor : PG

Dilution Factor : 1.0
Conc. Units : ug/Kg

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
74-87-3	Chloromethane	10.	ND	U
75-01-4	Vinyl chloride	10.	ND	U
74-83-9	Bromomethane	10.	ND	U
75-00-3	Chloroethane	10.	ND	U
75-69-4	Trichlorofluoromethane	5.	ND	U
75-35-4	1,1-Dichloroethene	5.	ND	U
76-13-1	Trichlorotrifluoroethane	5.	ND	U
67-64-1	Acetone	20.	ND	U
75-15-0	Carbon disulfide	5.	ND	U
75-09-2	Methylene chloride	5.	8.	B
156-60-5	Trans-1,2-dichloroethene	5.	ND	U
75-34-3	1,1-Dichloroethane	5.	ND	U
156-59-2	Cis-1,2-dichloroethene	5.	ND	U
78-93-3	2-Butanone	20.	ND	U
67-66-3	Chloroform	5.	ND	U
71-55-6	1,1,1-Trichloroethane	5.	ND	U
56-23-5	Carbon tetrachloride	5.	ND	U
108-05-4	Vinyl acetate	10.	ND	U
71-43-2	Benzene	5.	ND	U
107-06-2	1,2-Dichloroethane	5.	ND	U
79-01-6	Trichloroethene	5.	ND	U
78-87-5	1,2-Dichloropropane	5.	ND	U
75-27-4	Bromodichloromethane	5.	ND	U
10061-01-5	Cis-1,3-dichloropropene	5.	ND	U
108-10-1	4-Methyl-2-pentanone	10.	ND	U
108-88-3	Toluene	5.	ND	U
10061-02-6	Trans-1,3-dichloropropene	5.	ND	U
79-00-5	1,1,2-Trichloroethane	5.	ND	U
127-18-4	Tetrachloroethene	5.	ND	U
591-78-6	2-Hexanone	10.	ND	U
124-48-1	Dibromochloromethane	5.	ND	U
108-90-7	Chlorobenzene	5.	ND	U
100-41-4	Ethylbenzene	5.	ND	U
1330-20-7	Xylene (Total)	5.	ND	U
100-42-5	Styrene	5.	ND	U
75-25-2	Bromoform	5.	ND	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	ND	U
541-73-1	1,3-Dichlorobenzene	5.	ND	U
106-46-7	1,4-Dichlorobenzene	5.	ND	U
95-50-1	1,2-Dichlorobenzene	5.	ND	U

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

Project ID :
Sample ID : VBLKOZ
Matrix : SOIL
Date Sampled : 0/ 0/ 0
Date Analyzed : 5/ 5/94
Instrument ID : MSD1

Anametrix ID : BY0503A1
Analyst : DP
Supervisor : PG

Dilution Factor : 1.0
Conc. Units : ug/Kg

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
74-87-3	Chloromethane	10.	ND	U
75-01-4	Vinyl chloride	10.	ND	U
74-83-9	Bromomethane	10.	ND	U
75-00-3	Chloroethane	10.	ND	U
75-69-4	Trichlorofluoromethane	5.	ND	U
75-35-4	1,1-Dichloroethene	5.	ND	U
76-13-1	Trichlorotrifluoroethane	5.	ND	U
67-64-1	Acetone	20.	ND	U
75-15-0	Carbon disulfide	5.	ND	U
75-09-2	Methylene chloride	5.	5.	J
156-60-5	Trans-1,2-dichloroethene	5.	ND	U
75-34-3	1,1-Dichloroethane	5.	ND	U
156-59-2	Cis-1,2-dichloroethene	5.	ND	U
78-93-3	2-Butanone	20.	ND	U
67-66-3	Chloroform	5.	ND	U
71-55-6	1,1,1-Trichloroethane	5.	ND	U
56-23-5	Carbon tetrachloride	5.	ND	U
108-05-4	Vinyl acetate	10.	ND	U
71-43-2	Benzene	5.	ND	U
107-06-2	1,2-Dichloroethane	5.	ND	U
79-01-6	Trichloroethene	5.	ND	U
78-87-5	1,2-Dichloropropane	5.	ND	U
75-27-4	Bromodichloromethane	5.	ND	U
10061-01-5	Cis-1,3-dichloropropene	5.	ND	U
108-10-1	4-Methyl-2-pentanone	10.	ND	U
108-88-3	Toluene	5.	ND	U
10061-02-6	Trans-1,3-dichloropropene	5.	ND	U
79-00-5	1,1,2-Trichloroethane	5.	ND	U
127-18-4	Tetrachloroethene	5.	ND	U
591-78-6	2-Hexanone	10.	ND	U
124-48-1	Dibromochloromethane	5.	ND	U
108-90-7	Chlorobenzene	5.	ND	U
100-41-4	Ethylbenzene	5.	ND	U
1330-20-7	Xylene (Total)	5.	ND	U
100-42-5	Styrene	5.	ND	U
75-25-2	Bromoform	5.	ND	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	ND	U
541-73-1	1,3-Dichlorobenzene	5.	ND	U
106-46-7	1,4-Dichlorobenzene	5.	ND	U
95-50-1	1,2-Dichlorobenzene	5.	ND	U

SURROGATE RECOVERY SUMMARY -- EPA METHOD 8240
ANAMETRIX, INC. (408)432-8192

Project ID : 6136.01
Matrix : SOLID

Anametrix ID : 9404333
Analyst : DP
Supervisor : RG

	SAMPLE ID	SU1	SU2	SU3
1	VBLKOZ	95	98	97
2	VLCSES	97	102	98
3	B1-16	94	96	93
4	B1-16MS	94	97	91
5	B1-16MSD	95	100	93
6	B2-16	94	98	90
7	B3-16	94	96	86
8	B4-35.5	100	102	103
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

	QC LIMITS
SU1 = 1,2-Dichloroethane-d4	(85-121)
SU2 = Toluene-d8	(83-117)
SU3 = 1,4-Bromofluorobenzene	(82-116)

* Values outside of Anametrix QC limits

MATRIX SPIKE RECOVERY FORM -- EPA METHOD 8240
ANAMETRIX, INC. (408)432-8192

Project ID : 6136.01
Sample ID : B1-16
Matrix : SOIL
Date Sampled : 4/26/94
Date Analyzed : 5/ 5/94
Instrument ID : MSD1

Anametrix ID : 9404333-01
Analyst : DM
Supervisor : PG

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC	%REC LIMITS
1,1-Dichloroethene	50.	0.	47.	95	62-131
Benzene	50.	0.	56.	112	65-117
Trichloroethene	50.	0.	48.	97	57-131
Toluene	50.	0.	54.	109	62-114
Chlorobenzene	50.	0.	51.	102	62-122

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC	% RPD	RPD LIMITS	%REC LIMITS
1,1-Dichloroethene	50.	47.	94	1	30	62-131
Benzene	50.	56.	113	1	30	65-117
Trichloroethene	50.	48.	97	0	30	57-131
Toluene	50.	54.	109	0	30	62-114
Chlorobenzene	50.	51.	103	1	30	62-122

* Value is outside of Anametrix QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

LABORATORY CONTROL SPIKE RECOVERY FORM --- EPA METHOD 624/8240
ANAMETRIX, INC. (408)432-8192

Project/Case	:	Anametrix ID	: MY0501A1
Matrix	: SOIL	Analyst	: MF
Date Sampled	: 0/ 0/ 0	Supervisor	: PG
Date Analyzed	: 5/05/94	SDG/Batch	:
Instrument ID	: MSD1	Sample ID	: VLCSES

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC	%REC LIMITS
1,1-Dichloroethene	50	0	46	92	78-150
Benzene	50	0	57	114	85-120
Trichloroethene	50	0	51	102	64-135
Toluene	50	0	55	110	88-119
Chlorobenzene	50	0	53	106	86-116

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

MR. ROBERT CAMPBELL
GEOSTRATEGIES
6747 SIERRA COURT, SUITE G
DUBLIN, CA 94568

Workorder # : 9404333
Date Received : 04/28/94
Project ID : 6136.01
Purchase Order: N/A
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9404333- 1	B1-16	SOIL	04/26/94	TPHd
9404333- 2	B2-16	SOIL	04/26/94	TPHd
9404333- 3	B3-16	SOIL	04/26/94	TPHd
9404333- 4	B4-35.5	SOIL	04/26/94	TPHd
9404333- 1	B1-16	SOIL	04/26/94	TPHg
9404333- 2	B2-16	SOIL	04/26/94	TPHg
9404333- 3	B3-16	SOIL	04/26/94	TPHg
9404333- 4	B4-35.5	SOIL	04/26/94	TPHg

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

MR. ROBERT CAMPBELL
GEOSTRATEGIES
6747 SIERRA COURT, SUITE G
DUBLIN, CA 94568

Workorder # : 9404333
Date Received : 04/28/94
Project ID : 6136.01
Purchase Order: N/A
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- No QA/QC problems encountered for these samples.

Cheryl Bedmen 5/16/94
Department Supervisor Date

Reggie Davison 5/16/94
Chemist Date

Organic Analysis Data Sheet
Total Petroleum Hydrocarbons as Gasoline with BTEX
ITS - Anametrix Laboratories - (408)432-8192

Lab Workorder : 9404333 | Client Project ID : 6136.01

Matrix : SOIL | Units : mg/Kg

Compound Name	Method Reporting Limit*	Client ID B1-16 Lab ID 9404333-01	Client ID B2-16 Lab ID 9404333-02	Client ID B3-16 Lab ID 9404333-03	Client ID B4-35.5 Lab ID 9404333-04	Client ID Lab ID METHOD BLANK
Benzene	0.0050	--	--	--	--	--
Toluene	0.0050	--	--	--	--	--
Ethylbenzene	0.0050	--	--	--	--	--
Total Xylenes	0.0050	--	--	--	--	--
TPH as Gasoline	0.50	ND	ND	ND	ND	ND
Surrogate Recovery		90%	85%	90%	75%	81%
Instrument ID		HP4	HP4	HP4	HP4	HP4
Date Sampled		04/26/94	04/26/94	04/26/94	04/26/94	N/A
Date Analyzed		05/02/94	05/02/94	05/02/94	05/02/94	05/02/94
RLMF		1	1	1	1	1
Filename Reference		FPA33301.D	FPA33302.D	FPA33303.D	FPA33304.D	BY0201E1.D

* The Method Reporting Limit must be multiplied by the Reporting Limit Multiplication Factor (RLMF) to achieve the compound's reporting limit in the analysis.

ND : Not detected at or above the reporting limit for the analysis as performed.
TPHg : Determined by GC/FID following sample purge & trap by EPA Method 5030.
BTEX : Determined by modified EPA Method 8020 following sample purge & trap by EPA Method 5030.

Lab Control Limits for surrogate compound p-Bromofluorobenzene are 53-147%.

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

Doshi 5/6/94
Analyst Date

Cheryl Balman 5/3/94
Supervisor Date

Issued on 5/3/94 @ 10:59 am

Laboratory Control Spike Report
Total Petroleum Hydrocarbons as Gasoline
ITS - Anametrix Laboratories - (408)432-8192

Instrument ID : HP4
Matrix : SOLID

Analyst : D
Supervisor : [illegible]
Units : mg/Kg

COMPOUND NAME	SPIKE AMOUNT	LCS RECOVERY	RECOVERY LIMITS
Gasoline	0.50	82%	56-141
Surrogate Recovery		77%	53-147
Date Analyzed		05/02/94	
Multiplier		1	
Filename Reference		MY0203E1.D	

* Limits established by Inchcape Testing Services, Anametrix Laboratories.

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS DIESEL
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.: 9404333
Matrix : SOIL
Date Sampled : 04/26/94
Date Extracted: 04/29/94

Project Number : 6136.01
Date Released : 05/03/94
Instrument I.D.: HP23

Anametrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (mg/Kg)	Amount Found (mg/Kg)	Surrogate %Rec
9404333-01	B1-16	04/30/94	10	ND	98%
9404333-02	B2-16	04/30/94	10	ND	100%
9404333-03	B3-16	05/02/94	10	ND	81%
9404333-04	B4-35.5	04/30/94	10	ND	98%
BA29H1F1	METHOD BLANK	04/30/94	10	ND	101%

Note : Reporting limit is obtained by multiplying the dilution factor times 10 mg/Kg.
The surrogate recovery limits for o-terphenyl are 55-129%.

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

TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following sample extraction by EPA Method 3550.

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

Doshi 5/6/94
Analyst Date

Cheryl Balmer 5/5/94
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.: 9404333
Matrix : SOIL
Date Sampled : 04/26/94
Date Extracted: 04/29/94

Project Number : 6136.01
Date Released : 05/03/94
Instrument I.D.: HP23

Anametrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (mg/Kg)	Amount Found (mg/Kg)	Surrogate %Rec
9404333-01	B1-16	04/30/94	10	ND	98%
9404333-02	B2-16	04/30/94	10	ND	100%
9404333-03	B3-16	05/02/94	10	ND	81%
9404333-04	B4-35.5	04/30/94	10	ND	98%
BA29H1F1	METHOD BLANK	04/30/94	10	ND	101%

Note : Reporting limit is obtained by multiplying the dilution factor times 10 mg/Kg.
The surrogate recovery limits for o-terphenyl are 55-129%.

ND - Not detected at or above the practical quantitation limit for the method.
TPHd - Total Petroleum Hydrocarbons as motor oil is determined by GCFID following sample extraction by EPA Method 3550.

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

Doshi 5/6/94
Analyst Date

Cheryl Bateman 5/3/94
Supervisor Date

TOTAL EXTRACTABLE HYDROCARBON LABORATORY CONTROL SAMPLE REPORT
EPA METHOD 3550 WITH GC/FID
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: LAB CONTROL SAMPLE	Anametrix I.D.	: MA29H1F1
Matrix	: SOIL	Analyst	:
Date Sampled	: N/A	Supervisor	:
Date Extracted	: 04/29/94	Date Released	: 05/03/94
Date Analyzed	: 04/30/94	Instrument I.D.	: HP9

COMPOUND	SPIKE AMT (mg/Kg)	REC LCS (mg/Kg)	% REC LCS	% REC LIMITS *
DIESEL	62.5	66.2	106%	48-113
SURROGATE			115%	55-129

* Quality control limits established by Anametrix, Inc.

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

MR. ROBERT CAMPBELL
GEOSTRATEGIES
6747 SIERRA COURT, SUITE G
DUBLIN, CA 94568

Workorder # : 9404333
Date Received : 04/28/94
Project ID : 6136.01
Purchase Order: N/A
Department : PREP
Sub-Department: PREP

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9404333- 1	B1-16	SOIL	04/26/94	418.1
9404333- 2	B2-16	SOIL	04/26/94	418.1
9404333- 3	B3-16	SOIL	04/26/94	418.1
9404333- 4	B4-35.5	SOIL	04/26/94	418.1

REPORT SUMMARY
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GEOSTRATEGIES
6747 SIERRA COURT, SUITE G
DUBLIN, CA 94568

Workorder # : 9404333
Date Received : 04/28/94
Project ID : 6136.01
Purchase Order: N/A
Department : PREP
Sub-Department: PREP

QA/QC SUMMARY :

-No QA/QC problems encountered for these samples.

Department Supervisor 5/16/94 Date

Chemist 5/16/94 Date

ANALYSIS DATA SHEET - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS
EPA METHOD 418.1
ANAMETRIX LABORATORIES (408) 432-8192

Project #	: 6136.01	Anametrix I.D.	: 9404333
Matrix	: SOIL	Analyst	: BD
Date sampled	: 04/26/94	Supervisor	: CM
Date ext.	: 05/02/94	Date released	: 05/05/94
Date analyzed	: 05/02/94		

Workorder #	Sample I.D.	Reporting Limit (mg/Kg)	Amount Found (mg/Kg)
9404333-01	B1-16	5.0	ND
9404333-02	B2-16	5.0	7.8
9404333-03	B3-16	5.0	5.8
9404333-04	B4-35.5	5.0	ND
BY02H1WN	METHOD BLANK	5.0	ND

ND - Not detected above the reporting limit for the method.

Reference - Methods for Chemical Analysis of Water and Wastes, 3rd edition, US EPA-600/4-79-020, March 1983.

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

LAB CONTROL SAMPLE REPORT - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS
EPA METHOD 418.1
ANAMETRIX LABORATORIES (408) 432-8192

Sample I.D.	: LAB CONTROL SAMPLE	Anametrix I.D.	: MY02H1WN
Matrix	: SOIL	Analyst	:
Date sampled	: N/A	Supervisor	:
Date extracted	: 05/02/94	Date Released	: 05/05/94
Date analyzed	: 05/02/94		

COMPOUND	SPIKE AMT. (mg/Kg)	LCS (mg/Kg)	%REC LCS	%REC LIMITS
PETROLEUM HYDROCARBON	33	37	112	81-119

Reference - Methods for Chemical Analysis of Water and Wastes, 3rd edition US-600/4-79-020, March 1983.

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

ANAMETRIX REPORT DESCRIPTION
INORGANICS

Analytical Data Report (ADR)

The ADR contains tabulated results for inorganic analytes. All field samples, QC samples and blanks were prepared and analyzed according to procedures in the following references:

- "Test Methods for Evaluating Solid Waste," SW-846, EPA, 3rd Edition, November 1986.
- "Methods for Chemical Analysis of Water and Wastes," EPA, 3rd Edition, 1983.
- CCR Title 22, Section 66261, Appendix II, California Waste Extraction Test.
- CCR Title 22, Section 66261, Appendix XI, Organic Lead.
- "Standard Methods for the Examination of Water and Wastewater," APHA, AWWA, WEF, 18th Edition, 1992.
- USEPA Contract Laboratory Program Statement of Work for Inorganic Analyses, ILM02.1, 1991.

Matrix Spike Report (MSR)

The MSR summarizes percent recovery and relative percent difference information for matrix spikes and matrix spike duplicates. This information is a statement of both accuracy and precision. MSRs may not be provided with all analytical reports. Anametrix control limit for MSR is 75-125% with 25% for RPD limits.

Laboratory Control Sample Report (LCSR)

The LCSR summarizes percent recovery information for laboratory control spikes on reagent water or soil. This information is a statement of performance for the method, i.e., the samples are properly prepared and analyzed according to the applicable methods. Anametrix control limit for LCSR is 80-120%.

Method Blank Report (MBR)

The MBR summarizes quality control information for reagents used in preparing samples. The absolute value of each analyte measured in the method blank should be below the method reporting limit for that analyte.

Post Digestion Spike Report (PDSR)

The PDSR summarizes percent recovery information for post digestion spikes. A post digestion spike is performed for a particular analyte if the matrix spike recovery is outside of established control limits. Any percent recovery for a post digestion spike outside of established limits for an analyte indicates probable matrix effects and interferences for that analyte. Anametrix control limit for PDSR is 85-115%.

Qualifiers (Q)

Anametrix uses several data qualifiers in inorganic reports. These qualifiers give additional information on the analytes reported. The following is a list of qualifiers and their meanings:

I - Sample was analyzed at the stated dilution due to spectral interferences.
U - Analyte concentration was below the method reporting limit. For matrix and post digestion spike reports, a value of "0.0" is entered for calculation of the percent recovery.
B - Sample concentration was below the reporting limit but above the instrument detection limit. Result is entered for calculation of the percent recovery only.
H - Spike percent recovery was outside of Anametrix control limits due to interferences from relatively high concentration level of the analyte in the unspiked sample.
L - Reporting limit was increased to compensate for background absorbances or matrix interferences.

Comment Codes

In addition to qualifiers, the following codes are used in the comment section of all reports to give additional information about sample preparation methods:

A - Sample was prepared for silver based on the silver digestion method developed by the Southern California Laboratory, Department of Health Services, "Acid Digestion for Sediments, Sludges, Soils and Solid Wastes. A Proposed Alternative to EPA SW846, Method 3050." Environmental Science and Technology, 1989, 23, 898-900.
T - Spikes were prepared after extraction by the Toxicity Characteristic Leaching Procedure (TCLP).
C - Spikes were prepared after extraction by the California Waste Extraction Test (CWET) method.
D - Reported results are dissolved, not total, metals.

Reporting Conventions

Analytical values reported are gross values, i.e., <u>not</u> corrected for method blank contamination. Solid matrices are reported on a wet weight basis, unless specifically requested otherwise. Unless noted, all samples were prepared according to procedures in the EPA Contract Laboratory Program Statement of Work, ILM02.1, 1991.

/6996/disk 30MH; nps/disk 61

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

MR. ROBERT CAMPBELL
GEOSTRATEGIES
6747 SIERRA COURT, SUITE G
DUBLIN, CA 94568

Workorder # : 9404333
Date Received : 04/28/94
Project ID : 6136.01
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9404333- 1	B1-16	SOIL	04/26/94	6010
9404333- 2	B2-16	SOIL	04/26/94	6010
9404333- 3	B3-16	SOIL	04/26/94	6010
9404333- 4	B4-35.5	SOIL	04/26/94	6010

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

MR. ROBERT CAMPBELL
GEOSTRATEGIES
6747 SIERRA COURT, SUITE G
DUBLIN, CA 94568

Workorder # : 9404333
Date Received : 04/28/94
Project ID : 6136.01
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

QA/QC SUMMARY :

- Matrix spike recoveries for chromium and nickel were outside of Anametrix control limits for sample B4-35.5 because of the high level of analyte concentration in the sample compared to spike amount.
- Matrix spike duplicate for zinc was outside of Anametrix control limits for sample B4-35.5, possibly due to the heterogenous nature of the sample.

Department Supervisor 5/16/94 Date

Chemist 5/16/94 Date

INORGANIC ANALYSIS DATA SHEET
ANAMETRIX, INC. (408) 432-8192

Anametrix I.D.: 9404333-01
Client I.D. : B1-16
Project I.D. : 6136.01
Matrix : SOIL
Reporting Unit: mg/Kg

Date Sampled : 04/26/94
Analyst :
Supervisor : MN
Date Released : 05/11/94
Instrument I.D. : ICP1

ANALYTE-METHOD	DATE PREPARED	DATE ANALYZED	REPORT LIMIT	DIL. FACTOR	RESULT	Q
Cadmium-6010	05/02/94	05/04/94	0.25	1	ND	
Chromium-6010	05/02/94	05/04/94	0.50	1	56.8	
Lead-6010	05/02/94	05/04/94	2.0	1	4.0	
Nickel-6010	05/02/94	05/04/94	2.0	1	173	
Zinc-6010	05/02/94	05/04/94	1.0	1	37.1	

COMMENT:

INORGANIC ANALYSIS DATA SHEET
ANAMETRIX, INC. (408) 432-8192

Anametrix I.D.: 9404333-02
Client I.D. : B2-16
Project I.D. : 6136.01
Matrix : SOIL
Reporting Unit: mg/Kg

Date Sampled : 04/26/94
Analyst :
Supervisor :
Date Released : 05/11/94
Instrument I.D. : ICP1

ANALYTE-METHOD	DATE PREPARED	DATE ANALYZED	REPORT LIMIT	DIL. FACTOR	RESULT	Q
Cadmium-6010	05/02/94	05/04/94	0.25	1	ND	
Chromium-6010	05/02/94	05/04/94	0.50	1	54.7	
Lead-6010	05/02/94	05/04/94	2.0	1	4.0	
Nickel-6010	05/02/94	05/04/94	2.0	1	122	
Zinc-6010	05/02/94	05/04/94	1.0	1	37.2	

COMMENT:

INORGANIC ANALYSIS DATA SHEET
ANAMETRIX, INC. (408) 432-8192

Anametrix I.D.: 9404333-03
Client I.D. : B3-16
Project I.D. : 6136.01
Matrix : SOIL
Reporting Unit: mg/Kg

Date Sampled : 04/26/94
Analyst :
Supervisor :
Date Released : 05/11/94
Instrument I.D. : ICP1

ANALYTE-METHOD	DATE PREPARED	DATE ANALYZED	REPORT LIMIT	DIL. FACTOR	RESULT	Q
Cadmium-6010	05/02/94	05/04/94	0.25	1	ND	
Chromium-6010	05/02/94	05/04/94	0.50	1	32.6	
Lead-6010	05/02/94	05/04/94	2.0	1	3.7	
Nickel-6010	05/02/94	05/04/94	2.0	1	82.3	
Zinc-6010	05/02/94	05/04/94	1.0	1	37.6	

COMMENT:

INORGANIC ANALYSIS DATA SHEET
ANAMETRIX, INC. (408) 432-8192

Anametrix I.D.: 9404333-04
Client I.D. : B4-35.5
Project I.D. : 6136.01
Matrix : SOIL
Reporting Unit: mg/Kg

Date Sampled : 04/26/94
Analyst : JO MN
Supervisor :
Date Released : 05/11/94
Instrument I.D. : ICP1

ANALYTE-METHOD	DATE PREPARED	DATE ANALYZED	REPORT LIMIT	DIL. FACTOR	RESULT	Q
Cadmium-6010	05/02/94	05/04/94	0.25	1	ND	
Chromium-6010	05/02/94	05/04/94	0.50	1	63.3	
Lead-6010	05/02/94	05/04/94	2.0	1	4.4	
Nickel-6010	05/02/94	05/04/94	2.0	1	135	
Zinc-6010	05/02/94	05/04/94	1.0	1	39.5	

COMMENT:

METHOD BLANK REPORT
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.# : 9404333
Method Blank I.D.: BY024SA
Project I.D. : 6136.01
Matrix : SOIL
Reporting Unit : mg/Kg

Analyst : SP MW
Supervisor :
Date Released : 05/11/94
Instrument I.D. : ICP1

ANALYTE-METHOD	DATE PREPARED	DATE ANALYZED	REPORTING LIMIT	RESULT	Q
Cadmium-6010	05/02/94	05/04/94	0.25	ND	
Chromium-6010	05/02/94	05/04/94	0.50	ND	
Lead-6010	05/02/94	05/04/94	2.0	ND	
Nickel-6010	05/02/94	05/04/94	2.0	ND	
Zinc-6010	05/02/94	05/04/94	1.0	ND	

COMMENT:

MATRIX SPIKE REPORT
ANAMETRIX, INC. (408) 432-8192

Spike I.D. : 9404333-04MS,MD
Client I.D. : B4-35.5
Project I.D. : 6136.01
Matrix : SOIL
Reporting Unit: mg/Kg

Date Prepared : 05/02/94
Date Analyzed : 05/04/94
Analyst :
Supervisor :
Date Released : 05/11/94
Instrument I.D. : ICP1

ANALYTE-METHOD	SPIKE AMOUNT	SAMPLE CONC.	M.S. CONC.	% REC.	M.S.D. CONC.	% REC.	RPD	Q
Cadmium-6010	2.5	0.0	2.3	92.0	2.3	92.0	0.0	U
Chromium-6010	10.0	63.3	54.9	NR	50.3	NR	8.7	H
Lead-6010	25.0	4.4	25.2	83.2	24.8	81.6	1.6	
Nickel-6010	25.0	135	165	120	148	52.0	10.9	H
Zinc-6010	25.0	39.5	61.1	86.4	55.7	64.8	9.2	

COMMENT: NR= Not reported due to high level of the analyte concentration in the sample compared to spike amount.

POST DIGESTION SPIKE REPORT
ANAMETRIX, INC. (408) 432-8192

Spike I.D. : 9404333-04PDS
Client I.D. : B4-35.5
Project I.D. : 6136.01
Matrix : SOIL
Reporting Unit: mg/Kg

Date Prepared : 05/04/94
Date Analyzed : 05/04/94
Analyst : KD
Supervisor :
Date Released : 05/11/94
Instrument I.D. : ICP1

ANALYTE-METHOD	SPIKE AMOUNT	SAMPLE CONC.	P.D.S. CONC.	% REC.	Q
Zinc-6010	80.0	39.5	109	86.9	

COMMENT:

LABORATORY CONTROL SAMPLE REPORT
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.# : 9404333
Spike I.D. : LY024SA
Project I.D. : 6136.01
Matrix : SOIL
Reporting Unit : mg/Kg

Analyst :
Supervisor :
Date Released : 05/11/94
Instrument I.D.: ICP1

ANALYTE-METHOD	DATE PREPARED	DATE ANALYZED	SPIKE AMT.	METHOD SPIKE	% REC.	Q
Cadmium-6010	05/02/94	05/04/94	2.5	2.5	100	
Chromium-6010	05/02/94	05/04/94	10.0	10.9	109	
Lead-6010	05/02/94	05/04/94	25.0	24.7	98.8	
Nickel-6010	05/02/94	05/04/94	25.0	25.3	101	
Zinc-6010	05/02/94	05/04/94	25.0	25.1	100	

COMMENT:

LLL-

Gettler - Ryan Inc. 9404333 (2) **Chain of Custody**

ENVIRONMENTAL DIVISION

COMPANY Groth Brothers JOB NO. 6136.01

JOB LOCATION 59 South L Street

CITY Livermore, CA PHONE NO. 447 -

AUTHORIZED Robert S. Gyllenhall DATE 4-28-94 P.O. NO.

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
B1-16	1	Soil	4-26-94	TPH-gasoline, TPH-diesel, TPH-motor oil (8015); VOCs (8240); Total Oil & Grease (418.1); metals: Ni, Cd, Cr, Pb, Zn.	(1)
B2-16	1	Soil	4-26-94	TPH-gasoline, TPH-diesel, TPH-motor oil (8015); VOCs (8240); TOG (418.1); metals: Ni, Cd, Cr, Pb, Zn.	(2)
B3-16	1	Soil	4-26-94	TPH-G & TPH-D (8015); TPH-mo; VOCs (8240); TOG (418.1); metals: Ni, Cd, Cr, Pb, Zn	(3)
B4-35.5	1	Soil	4-26-94	TPH-G, TPH-D (8015); TPH-mo; VOCs (8240); TOG (418.1); metals: Ni, Cd, Cr, Pb, Zn.	(4)

RELINQUISHED BY: Robert S. Gyllenhall

RECEIVED BY: Benny S. Arroyo 4-28-94 1000

RELINQUISHED BY: Benny S. Arroyo 4/28/94 1200

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY LAB: 4/22/94 12:00

DESIGNATED LABORATORY: DHS #:

REMARKS:

15:40 MB

DATE COMPLETED FOREMAN

Inchcape Testing Services
Anametrix Laboratories

1961 Concourse Drive
Suite E
San Jose, CA 95131
Tel: 408-432-8192
Fax: 408-432-8198

INVOICE

NUMBER	PAGE
32650	1
DATE	
May 20 94	

RECEIVED

MAY 23 1994

Geostrategies Inc.

COPY

SOLD TO
ATTN : ACCOUNTS PAYABLE
GETTLER RYAN / GEOSTRATEGIES
6747 SIERRA COURT
SUITE J
DUBLIN, CA
94568

SHIP TO SAME

ORDERING	ORDER DATE	CUSTOMER NO.	SALES PERSON	PURCHASE ORDER NO.	SHIP VIA	TERMS
	May 3 94	719	HOUSE	6136.01	REGULAR MAIL	UPON RECEIPT

QTY. ORDERED	QTY. SHIPPED	QTY. B/O	ITEM NUMBER	DESCRIPTION	UNIT PRICE	U/M	EXTENDED PRICE
1.00			A/8240/	VOLATILES - 5mL	168.00		168.00
1.00			B/ TEH/	TPH - DIESEL	80.00		80.00
1.00			B/ TVH/	TPH - GASOLINE	80.00		80.00
1.00			M/6010/	ICAP,Cd,Cr,Ni,Pb,Zn	40.00		40.00
1.00			P/5520/BF	GRAVIMETRIC / GEL CLEANUP	56.00		56.00
							424.00

COMMENTS:
A 1 1/2% MONTHLY SERVICE CHARGE WILL BE ADDED TO ALL INVOICES OUTSTANDING PAST THIRTY (30) DAYS.

MISC. CHARGES	
SALES TAX	
FREIGHT	
TOTAL ▶	$ 424.00

WORK ORDER NO.9405020 ** WATER

Inchcape Testing Services
Anametrix Laboratories

1961 Concourse Drive
Suite E
San Jose, CA 95131
Tel: 408-432-8192
Fax: 408-432-8198

MR. ROBERT CAMPBELL
GEOSTRATEGIES
6747 SIERRA COURT, SUITE G
DUBLIN, CA 94568

Workorder # : 9405020
Date Received : 05/03/94
Project ID : 6136.01
Purchase Order: 6136.01

The following samples were received at Anametrix for analysis :

ANAMETRIX ID	CLIENT SAMPLE ID
9405020- 1	MW-1
9405020- 2	T.BLANK

This report is organized in sections according to the specific Anametrix laboratory group which performed the analysis(es) and generated the data.

The results contained within this report relate to only the sample(s) tested. Additionally, these data should be considered in their entirety and Anametrix cannot be responsible for the detachment, separation, or otherwise partial use of this report.

Anametrix is certified by the California Department of Health Services (DHS) to perform environmental testing under Certificate Number 1234.

If you have any further questions or comments on this report, please call us as soon as possible. Thank you for using Anametrix.

Corinne Rhan for
Doug Robbins
Laboratory Director

05/20/94
Date

This report consists of 27 pages.

ANAMETRIX REPORT DESCRIPTION
GCMS

Organic Analysis Data Sheets (OADS)

OADS forms contain tabulated results for target compounds. The OADS are grouped by method and, within each method, organized sequentially in order of increasing Anametrix ID number.

Tentatively Identified Compounds (TICs)

TIC forms contain tabulated results for non-target compounds detected in GC/MS analyses. TICs must be requested at the time samples are submitted at Anametrix. TIC forms immediately follow the OADS form for each sample. If TICs are requested but not found, then TIC forms will not be included with the report.

Surrogate Recovery Summary (SRS)

SRS forms contain quality assurance data. An SRS form will be printed for each method, if the method requires surrogate compounds. They will list surrogate percent recoveries for all samples and any method blanks. Any surrogate recovery outside the established limits will be flagged with an "*", and the total number of surrogates outside the limits will be listed in the column labelled "Total Out".

Matrix Spike Recovery Form (MSR)

MSR forms contain quality assurance data. They summarize percent recovery and relative percent difference information for matrix spikes and matrix spike duplicates. This information is a statement of both accuracy and precision. Any percent recovery or relative percent difference outside established limits will be flagged with an "*", and the total number outside the limits will be listed at the bottom of the page. Not all reports will contain an MSR form.

Qualifiers

Anametrix uses several data qualifiers (Q) in it's report forms. These qualifiers give additional information on the compounds reported. They should help a data reviewer to verify the integrity of the analytical results. The following is a list of qualifiers and their meanings:

- U - Indicates that the compound was analyzed for, but was not detected at or above the specified reporting limit.
- B - Indicates that the compound was detected in the associated method blank.
- J - Indicates that the compound was detected at an amount below the specified reporting limit. Consequently, the amount should be considered an approximate value. Tentatively identified compounds will always have a "J" qualifier because they are not included in the instrument calibration.
- E - Indicates that the amount reported exceeded the linear range of the instrument calibration.
- D - Indicates that the compound was detected in an analysis performed at a secondary dilution.
- A - Indicates that the tentatively identified compound is a suspected aldol condensation product. This is common in EPA Method 8270 soil analyses.

Absence of a qualifier indicates that the compound was detected at a concentration at or above the specified reporting limit.

REPORTING CONVENTIONS

- Due to a size limitation in our data processing step, only the first eight (8) characters of your project ID and sample ID will be printed on the report forms. However, the report cover letter and report summary pages display up to twenty (20) characters of your project and sample IDs.
- Amounts reported are gross values, i.e., not corrected for method blank contamination.

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

MR. ROBERT CAMPBELL
GEOSTRATEGIES
6747 SIERRA COURT, SUITE G
DUBLIN, CA 94568

Workorder # : 9405020
Date Received : 05/03/94
Project ID : 6136.01
Purchase Order: 6136.01
Department : GCMS
Sub-Department: GCMS

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9405020- 1	MW-1	WATER	05/02/94	8240
9405020- 2	T.BLANK	WATER	05/02/94	8240

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

MR. ROBERT CAMPBELL
GEOSTRATEGIES
6747 SIERRA COURT, SUITE G
DUBLIN, CA 94568

Workorder # : 9405020
Date Received : 05/03/94
Project ID : 6136.01
Purchase Order: 6136.01
Department : GCMS
Sub-Department: GCMS

QA/QC SUMMARY :

- No QA/QC problems.

Paul Gowan 5-19-94
Department Supervisor Date

Denise Powell 5-19-94
Chemist Date

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

Project ID : 6136.01
Sample ID : MW-1
Matrix : WATER
Date Sampled : 5/ 2/94
Date Analyzed : 5/10/94
Instrument ID : MSD1

Anametrix ID : 9405020-01
Analyst : MF
Supervisor : PG

Dilution Factor : 1.0
Conc. Units : ug/L

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
74-87-3	Chloromethane	10.	ND	U
75-01-4	Vinyl chloride	10.	ND	U
74-83-9	Bromomethane	10.	ND	U
75-00-3	Chloroethane	10.	ND	U
75-69-4	Trichlorofluoromethane	5.	ND	U
75-35-4	1,1-Dichloroethene	5.	ND	U
76-13-1	Trichlorotrifluoroethane	5.	ND	U
67-64-1	Acetone	20.	ND	U
75-15-0	Carbon disulfide	5.	ND	U
75-09-2	Methylene chloride	5.	3.	J
156-60-5	Trans-1,2-dichloroethene	5.	ND	U
75-34-3	1,1-Dichloroethane	5.	ND	U
156-59-2	Cis-1,2-dichloroethene	5.	ND	U
78-93-3	2-Butanone	20.	ND	U
67-66-3	Chloroform	5.	ND	U
71-55-6	1,1,1-Trichloroethane	5.	ND	U
56-23-5	Carbon tetrachloride	5.	ND	U
108-05-4	Vinyl acetate	10.	ND	U
71-43-2	Benzene	5.	ND	U
107-06-2	1,2-Dichloroethane	5.	ND	U
79-01-6	Trichloroethene	5.	5.	
78-87-5	1,2-Dichloropropane	5.	ND	U
75-27-4	Bromodichloromethane	5.	ND	U
10061-01-5	Cis-1,3-dichloropropene	5.	ND	U
108-10-1	4-Methyl-2-pentanone	10.	ND	U
108-88-3	Toluene	5.	ND	U
10061-02-6	Trans-1,3-dichloropropene	5.	ND	U
79-00-5	1,1,2-Trichloroethane	5.	ND	U
127-18-4	Tetrachloroethene	5.	400.	
591-78-6	2-Hexanone	10.	ND	U
124-48-1	Dibromochloromethane	5.	ND	U
108-90-7	Chlorobenzene	5.	ND	U
100-41-4	Ethylbenzene	5.	ND	U
1330-20-7	Xylene (Total)	5.	ND	U
100-42-5	Styrene	5.	ND	U
75-25-2	Bromoform	5.	ND	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	ND	U
541-73-1	1,3-Dichlorobenzene	5.	ND	U
106-46-7	1,4-Dichlorobenzene	5.	ND	U
95-50-1	1,2-Dichlorobenzene	5.	ND	U

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

Project ID : 6136.01
Sample ID : T.BLANK
Matrix : WATER
Date Sampled : 5/ 2/94
Date Analyzed : 5/10/94
Instrument ID : MSD1

Anametrix ID : 9405020-02
Analyst : DP
Supervisor : PG

Dilution Factor : 1.0
Conc. Units : ug/L

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
74-87-3	Chloromethane	10.	ND	U
75-01-4	Vinyl chloride	10.	ND	U
74-83-9	Bromomethane	10.	ND	U
75-00-3	Chloroethane	10.	ND	U
75-69-4	Trichlorofluoromethane	5.	ND	U
75-35-4	1,1-Dichloroethene	5.	ND	U
76-13-1	Trichlorotrifluoroethane	5.	ND	U
67-64-1	Acetone	20.	ND	U
75-15-0	Carbon disulfide	5.	ND	U
75-09-2	Methylene chloride	5.	3.	J
156-60-5	Trans-1,2-dichloroethene	5.	ND	U
75-34-3	1,1-Dichloroethane	5.	ND	U
156-59-2	Cis-1,2-dichloroethene	5.	ND	U
78-93-3	2-Butanone	20.	ND	U
67-66-3	Chloroform	5.	ND	U
71-55-6	1,1,1-Trichloroethane	5.	ND	U
56-23-5	Carbon tetrachloride	5.	ND	U
108-05-4	Vinyl acetate	10.	ND	U
71-43-2	Benzene	5.	ND	U
107-06-2	1,2-Dichloroethane	5.	ND	U
79-01-6	Trichloroethene	5.	ND	U
78-87-5	1,2-Dichloropropane	5.	ND	U
75-27-4	Bromodichloromethane	5.	ND	U
10061-01-5	Cis-1,3-dichloropropene	5.	ND	U
108-10-1	4-Methyl-2-pentanone	10.	ND	U
108-88-3	Toluene	5.	ND	U
10061-02-6	Trans-1,3-dichloropropene	5.	ND	U
79-00-5	1,1,2-Trichloroethane	5.	ND	U
127-18-4	Tetrachloroethene	5.	ND	U
591-78-6	2-Hexanone	10.	ND	U
124-48-1	Dibromochloromethane	5.	ND	U
108-90-7	Chlorobenzene	5.	ND	U
100-41-4	Ethylbenzene	5.	ND	U
1330-20-7	Xylene (Total)	5.	ND	U
100-42-5	Styrene	5.	ND	U
75-25-2	Bromoform	5.	ND	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	ND	U
541-73-1	1,3-Dichlorobenzene	5.	ND	U
106-46-7	1,4-Dichlorobenzene	5.	ND	U
95-50-1	1,2-Dichlorobenzene	5.	ND	U

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

Project ID :
Sample ID : VBLKPH
Matrix : WATER
Date Sampled : 0/ 0/ 0
Date Analyzed : 5/10/94
Instrument ID : MSD1

Anametrix ID : BY1002A2
Analyst : bp
Supervisor : PG

Dilution Factor : 1.0
Conc. Units : ug/L

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
74-87-3	Chloromethane	10.	ND	U
75-01-4	Vinyl chloride	10.	ND	U
74-83-9	Bromomethane	10.	ND	U
75-00-3	Chloroethane	10.	ND	U
75-69-4	Trichlorofluoromethane	5.	ND	U
75-35-4	1,1-Dichloroethene	5.	ND	U
76-13-1	Trichlorotrifluoroethane	5.	ND	U
67-64-1	Acetone	20.	ND	U
75-15-0	Carbon disulfide	5.	ND	U
75-09-2	Methylene chloride	5.	ND	U
156-60-5	Trans-1,2-dichloroethene	5.	ND	U
75-34-3	1,1-Dichloroethane	5.	ND	U
156-59-2	Cis-1,2-dichloroethene	5.	ND	U
78-93-3	2-Butanone	20.	ND	U
67-66-3	Chloroform	5.	ND	U
71-55-6	1,1,1-Trichloroethane	5.	ND	U
56-23-5	Carbon tetrachloride	5.	ND	U
108-05-4	Vinyl acetate	10.	ND	U
71-43-2	Benzene	5.	ND	U
107-06-2	1,2-Dichloroethane	5.	ND	U
79-01-6	Trichloroethene	5.	ND	U
78-87-5	1,2-Dichloropropane	5.	ND	U
75-27-4	Bromodichloromethane	5.	ND	U
10061-01-5	Cis-1,3-dichloropropene	5.	ND	U
108-10-1	4-Methyl-2-pentanone	10.	ND	U
108-88-3	Toluene	5.	ND	U
10061-02-6	Trans-1,3-dichloropropene	5.	ND	U
79-00-5	1,1,2-Trichloroethane	5.	ND	U
127-18-4	Tetrachloroethene	5.	ND	U
591-78-6	2-Hexanone	10.	ND	U
124-48-1	Dibromochloromethane	5.	ND	U
108-90-7	Chlorobenzene	5.	ND	U
100-41-4	Ethylbenzene	5.	ND	U
1330-20-7	Xylene (Total)	5.	ND	U
100-42-5	Styrene	5.	ND	U
75-25-2	Bromoform	5.	ND	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	ND	U
541-73-1	1,3-Dichlorobenzene	5.	ND	U
106-46-7	1,4-Dichlorobenzene	5.	ND	U
95-50-1	1,2-Dichlorobenzene	5.	ND	U

SURROGATE RECOVERY SUMMARY -- EPA METHOD 8240
ANAMETRIX, INC. (408)432-8192

Project ID : 6136.01
Matrix : LIQUID

Anametrix ID : 9405020
Analyst : DF
Supervisor : PG

	SAMPLE ID	SU1	SU2	SU3
1	VBLKPH	95	99	100
2	VLCSEY	96	101	99
3	MW-1	97	99	101
4	T.BLANK	97	100	101
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

	QC LIMITS
SU1 = 1,2-Dichloroethane-d4	(75-113)
SU2 = Toluene-d8	(83-110)
SU3 = 1,4-Bromofluorobenzene	(82-114)

* Values outside of Anametrix QC limits

LABORATORY CONTROL SPIKE RECOVERY FORM --- EPA METHOD 624/8240
ANAMETRIX, INC. (408)432-8192

Project/Case	:	Anametrix ID	: MY1001A2
Matrix	: WATER	Analyst	: DP
Date Sampled	: 0/ 0/ 0	Supervisor	: RG
Date Analyzed	: 5/10/94	SDG/Batch	:
Instrument ID	: MSD1	Sample ID	: VLCSEY

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	%REC LIMITS
1,1-Dichloroethene	50	0	42	84	72-145
Benzene	50	0	50	100	83-125
Trichloroethene	50	0	48	96	61-140
Toluene	50	0	50	100	82-123
Chlorobenzene	50	0	50	100	82-125

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

MR. ROBERT CAMPBELL
GEOSTRATEGIES
6747 SIERRA COURT, SUITE G
DUBLIN, CA 94568

Workorder # : 9405020
Date Received : 05/03/94
Project ID : 6136.01
Purchase Order: 6136.01
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9405020- 1	MW-1	WATER	05/02/94	TPHd
9405020- 1	MW-1	WATER	05/02/94	TPHg
9405020- 2	T.BLANK	WATER	05/02/94	TPHg

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

MR. ROBERT CAMPBELL
GEOSTRATEGIES
6747 SIERRA COURT, SUITE G
DUBLIN, CA 94568

Workorder # : 9405020
Date Received : 05/03/94
Project ID : 6136.01
Purchase Order: 6136.01
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- The concentration reported as gasoline for sample MW-1 is primarily due to the presence of a discrete peak not indicative of gasoline.
- The diesel recoveries for the laboratory control sample and laboratory control sample duplicate are outside of quality control limits.

Cheryl Baerman 5/10/94
Department Supervisor Date

C R Patel 05/10/94
Chemist Date

Organic Analysis Data Sheet
Total Petroleum Hydrocarbons as Gasoline with BTEX
ITS - Anametrix Laboratories - (408)432-8192

Lab Workorder : 9405020 Client Project ID : 6136.01

Matrix : WATER Units : ug/L

Compound Name	Method Reporting Limit*	Client ID MW-1 Lab ID 9405020-01	Client ID T.BLANK Lab ID 9405020-02	Client ID Lab ID Method blank	Client ID Lab ID 	Client ID Lab ID
Benzene	0.50	-	-	-		
Toluene	0.50	-	-	-		
Ethylbenzene	0.50	-	-	-		
Total Xylenes	0.50	-	-	-		
TPH as Gasoline	50	110	ND	ND		
Surrogate Recovery		103%	100%	93%		
Instrument ID		HP12	HP12	HP12		
Date Sampled		05/02/94	05/02/94	N/A		
Date Analyzed		05/04/94	05/04/94	05/04/94		
RLMF		1	1	1		
Filename Reference		FPY02001.D	FPY02002.D	BY0401E1.D		

* The Method Reporting Limit must be multiplied by the Reporting Limit Multiplication Factor (RLMF) to achieve the compound's reporting limit in the analysis.

ND : Not detected at or above the reporting limit for the analysis as performed.
TPHg : Determined by GC/FID following sample purge & trap by EPA Method 5030.
BTEX : Determined by modified EPA Method 8020 following sample purge & trap by EPA Method 5030.

Lab Control Limits for surrogate compound p-Bromofluorobenzene are 61-139%.

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

Irma S. Cox 5/5/94
Analyst Date

Cheryl Balmer 5/5/94
Supervisor Date

Issued on 5/5/94 @ 1:35 PM

Laboratory Control Spike Report
Total Petroleum Hydrocarbons as BTEX
ITS - Anametrix Laboratories - (408)432-8192

Instrument ID : HP12
Matrix : LIQUID

Analyst : KK
Supervisor : CS
Units : ug/L

COMPOUND NAME	SPIKE AMOUNT	LCS RECOVERY	LCSD RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS
Benzene	40	80%	100%	52-133	-22%	30
Toluene	40	83%	103%	57-136	-22%	30
Ethylbenzene	40	83%	108%	56-139	-26%	30
Total Xylenes	40	78%	100%	56-141	-25%	30
Surrogate Recovery		103%	100%	61-139		
Date Analyzed		05/04/94	05/04/94			
Multiplier		1	1			
Filename Reference		MY0401E1.D	MY0402E1.D			

* Limits established by Inchcape Testing Services, Anametrix Laboratories.

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS DIESEL
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.: 9405020
Matrix : WATER
Date Sampled : 05/02/94
Date Extracted: 05/06/94

Project Number : 6136.01
Date Released : 05/10/94
Instrument I.D.: HP9

Anametrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (ug/L)	Amount Found (ug/L)	Surrogate %Rec
9405020-01	MW-1	05/06/94	50	ND	100%
BY0611F9	METHOD BLANK	05/06/94	50	ND	100%

Note : Reporting limit is obtained by multiplying the dilution factor times 50 ug/L.
The surrogate recovery limits for o-terphenyl are 47-114%.

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

TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following sample extraction by EPA Method 3510.

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

ORPatel 05/10/94
Analyst Date

Cheryl Balmer 5/10/94
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.: 9405020
Matrix : WATER
Date Sampled : 05/02/94
Date Extracted: 05/06/94

Project Number : 6136.01
Date Released : 05/10/94
Instrument I.D.: HP9

Anametrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (ug/L)	Amount Found (ug/L)	Surrogate %Rec
9405020-01	MW-1	05/06/94	100	ND	100%
BY0611F9	METHOD BLANK	05/06/94	100	ND	100%

Note : Reporting limit is obtained by multiplying the dilution factor times 100 ug/L.
The surrogate recovery limits for o-terphenyl are 47-114%.

ND - Not detected at or above the practical quantitation limit for the method.
TPHd - Total Petroleum Hydrocarbons as motor oil is determined by GCFID following sample extraction by EPA Method 3510.

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

EKPatel 05/10/94
Analyst Date

Cheryl Balman 5/10/94
Supervisor Date

TOTAL EXTRACTABLE HYDROCARBON LABORATORY CONTROL SAMPLE REPORT
EPA METHOD 3510 WITH GC/FID
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : LAB CONTROL SAMPLE
Matrix : WATER
Date Sampled : N/A
Date Extracted: 05/06/94
Date Analyzed : 05/06/94

Anametrix I.D. : MY0611F9
Analyst : NP
Supervisor : CS
Date Released : 05/10/94
Instrument I.D.: HP9

COMPOUND	SPIKE AMT (ug/L)	LCS REC (ug/L)	% REC LCS	LCSD REC (ug/L)	% REC LCSD	RPD	% REC LIMITS
DIESEL	1250	1290	103%	1270	102%	-2%	38-96
SURROGATE			110%		109%		47-114

* Quality control limits established by Anametrix, Inc.

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

MR. ROBERT CAMPBELL
GEOSTRATEGIES
6747 SIERRA COURT, SUITE G
DUBLIN, CA 94568

Workorder # : 9405020
Date Received : 05/03/94
Project ID : 6136.01
Purchase Order: 6136.01
Department : PREP
Sub-Department: PREP

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9405020- 1	MW-1	WATER	05/02/94	5520BF

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

MR. ROBERT CAMPBELL
GEOSTRATEGIES
6747 SIERRA COURT, SUITE G
DUBLIN, CA 94568

Workorder # : 9405020
Date Received : 05/03/94
Project ID : 6136.01
Purchase Order: 6136.01
Department : PREP
Sub-Department: PREP

QA/QC SUMMARY :

- No QA/QC problems encountered for this sample.

Department Supervisor 5/17/94 Date

Chemist 5/12/94 Date

ANALYSIS DATA SHEET - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS
ANAMETRIX LABORATORY (408) 432-8192

Project I.D. : 6136.01
Matrix : WATER
Date sampled : 05/02/94
Date extracted: 05/10/94
Date analyzed : 05/12/94

Anametrix I.D. : 9405020
Analyst : &
Supervisor : CW
Date released : 05/12/94

Workorder #	Sample I.D.	Reporting Limit (mg/L)	Amount Found (mg/L)
9405020-01	MW-1	5.0	ND
BY1011W4	METHOD BLANK	5.0	ND

ND - Not detected above the reporting limit for the method.
TRPH - Total Recoverable Petroleum Hydrocarbons are determined by Standard Method 5520BF.

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

LAB CONTROL SAMPLE REPORT - TOTAL RECOVERABLE PETROLEUM HYDROCARBONS
STANDARD METHOD 5520BF
ANAMETRIX LABORATORIES (408) 432-8192

Sample I.D.	: LAB CONTROL SAMPLE	Anametrix I.D.	: M/NY1011W4
Matrix	: WATER	Analyst	:
Date sampled	: N/A	Supervisor	:
Date extracted	: 05/10/94	Date Released	: 05/12/94
Date analyzed	: 05/12/94		

COMPOUND	SPIKE AMT. (mg/L)	LCS (mg/L)	%REC LCS	LCSD (mg/L)	%REC LCSD	%RPD	%REC LIMITS
Motor Oil	50	42	84	42	84	0	44-128

* Quality control limits established by Anametrix Laboratories.

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

MR. ROBERT CAMPBELL
GEOSTRATEGIES
6747 SIERRA COURT, SUITE G
DUBLIN, CA 94568

Workorder # : 9405020
Date Received : 05/03/94
Project ID : 6136.01
Purchase Order: 6136.01
Department : METALS
Sub-Department: METALS

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9405020- 1	MW-1	WATER	05/02/94	6010

ANAMETRIX REPORT DESCRIPTION
INORGANICS

Analytical Data Report (ADR)

The ADR contains tabulated results for inorganic analytes. All field samples, QC samples and blanks were prepared and analyzed according to procedures in the following references:

- "Test Methods for Evaluating Solid Waste," SW-846, EPA, 3rd Edition, November 1986.
- "Methods for Chemical Analysis of Water and Wastes," EPA, 3rd Edition, 1983.
- CCR Title 22, Section 66261, Appendix II, California Waste Extraction Test.
- CCR Title 22, Section 66261, Appendix XI, Organic Lead.
- "Standard Methods for the Examination of Water and Wastewater," APHA, AWWA, WEF, 18th Edition, 1992.
- USEPA Contract Laboratory Program Statement of Work for Inorganic Analyses, ILM02.1, 1991.

Matrix Spike Report (MSR)

The MSR summarizes percent recovery and relative percent difference information for matrix spikes and matrix spike duplicates. This information is a statement of both accuracy and precision. MSRs may not be provided with all analytical reports. Anametrix control limit for MSR is 75-125% with 25% for RPD limits.

Laboratory Control Sample Report (LCSR)

The LCSR summarizes percent recovery information for laboratory control spikes on reagent water or soil. This information is a statement of performance for the method, i.e., the samples are properly prepared and analyzed according to the applicable methods. Anametrix control limit for LCSR is 80-120%.

Method Blank Report (MBR)

The MBR summarizes quality control information for reagents used in preparing samples. The absolute value of each analyte measured in the method blank should be below the method reporting limit for that analyte.

Post Digestion Spike Report (PDSR)

The PDSR summarizes percent recovery information for post digestion spikes. A post digestion spike is performed for a particular analyte if the matrix spike recovery is outside of established control limits. Any percent recovery for a post digestion spike outside of established limits for an analyte indicates probable matrix effects and interferences for that analyte. Anametrix control limit for PDSR is 85-115%.

Qualifiers (Q)

Anametrix uses several data qualifiers in inorganic reports. These qualifiers give additional information on the analytes reported. The following is a list of qualifiers and their meanings:

I - Sample was analyzed at the stated dilution due to spectral interferences.
U - Analyte concentration was below the method reporting limit. For matrix and post digestion spike reports, a value of "0.0" is entered for calculation of the percent recovery.
B - Sample concentration was below the reporting limit but above the instrument detection limit. Result is entered for calculation of the percent recovery only.
H - Spike percent recovery was outside of Anametrix control limits due to interferences from relatively high concentration level of the analyte in the unspiked sample.
L - Reporting limit was increased to compensate for background absorbances or matrix interferences.

Comment Codes

In addition to qualifiers, the following codes are used in the comment section of all reports to give additional information about sample preparation methods:

A - Sample was prepared for silver based on the silver digestion method developed by the Southern California Laboratory, Department of Health Services, "Acid Digestion for Sediments, Sludges, Soils and Solid Wastes. A Proposed Alternative to EPA SW846, Method 3050." Environmental Science and Technology, 1989, 23, 898-900.
T - Spikes were prepared after extraction by the Toxicity Characteristic Leaching Procedure (TCLP).
C - Spikes were prepared after extraction by the California Waste Extraction Test (CWET) method.
D - Reported results are dissolved, not total, metals.

Reporting Conventions

Analytical values reported are gross values, i.e., <u>not</u> corrected for method blank contamination. Solid matrices are reported on a wet weight basis, unless specifically requested otherwise. Unless noted, all samples were prepared according to procedures in the EPA Contract Laboratory Program Statement of Work, ILM02.1, 1991.

/6996/disk 30MH; nps/disk 61

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

MR. ROBERT CAMPBELL
GEOSTRATEGIES
6747 SIERRA COURT, SUITE G
DUBLIN, CA 94568

Workorder # : 9405020
Date Received : 05/03/94
Project ID : 6136.01
Purchase Order: 6136.01
Department : METALS
Sub-Department: METALS

QA/QC SUMMARY :

- No QA/QC problems encountered for this workorder.

Department Supervisor 5/10/94 Date

Chemist 5/10/94 Date

INORGANIC ANALYSIS DATA SHEET
ANAMETRIX, INC. (408) 432-8192

Anametrix I.D.: 9405020-01
Client I.D. : MW-1
Project I.D. : 6136.01
Matrix : WATER
Reporting Unit: ug/L

Date Sampled : 05/02/94
Analyst :
Supervisor :
Date Released : 05/20/94
Instrument I.D. : ICP1

ANALYTE-METHOD	DATE PREPARED	DATE ANALYZED	REPORT LIMIT	DIL. FACTOR	RESULT	Q
Cadmium-6010	05/06/94	05/09/94	5.0	1	ND	
Chromium-6010	05/06/94	05/09/94	10.0	1	954	
Lead-6010	05/06/94	05/20/94	40.0	1	66.1	
Nickel-6010	05/06/94	05/09/94	40.0	1	3700	
Zinc-6010	05/06/94	05/09/94	20.0	1	562	

COMMENT:

METHOD BLANK REPORT
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.# : 9405020
Method Blank I.D.: BY064WA
Project I.D. : 6136.01
Matrix : WATER
Reporting Unit : ug/L

Analyst :
Supervisor :
Date Released : 05/11/94
Instrument I.D. : ICP1

ANALYTE-METHOD	DATE PREPARED	DATE ANALYZED	REPORTING LIMIT	RESULT	Q
Cadmium-6010	05/06/94	05/09/94	5.0	ND	
Chromium-6010	05/06/94	05/09/94	10.0	ND	
Nickel-6010	05/06/94	05/09/94	40.0	ND	
Lead-6010	05/06/94	05/09/94	40.0	ND	
Zinc-6010	05/06/94	05/09/94	20.0	ND	

COMMENT:

LABORATORY CONTROL SAMPLE REPORT
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.# : 9405020
Spike I.D. : LY064WA
Project I.D. : 6136.01
Matrix : WATER
Reporting Unit : ug/L

Analyst :
Supervisor :
Date Released : 05/11/94
Instrument I.D.: ICP1

ANALYTE-METHOD	DATE PREPARED	DATE ANALYZED	SPIKE AMT.	METHOD SPIKE	% REC.	Q
Cadmium-6010	05/06/94	05/09/94	50.0	49.6	99.2	
Chromium-6010	05/06/94	05/09/94	200	202	101	
Nickel-6010	05/06/94	05/09/94	500	538	108	
Lead-6010	05/06/94	05/09/94	500	472	94.4	
Zinc-6010	05/06/94	05/09/94	500	493	98.6	

COMMENT:

Gettler - Ryan Inc. 9405020

ENVIRONMENTAL DIVISION

5287 **Chain of Custody**

COMPANY Groth Brothers GMC-Olds JOB NO. 6136.01

JOB LOCATION 59 South L Street

CITY Livermore CA PHONE NO.

AUTHORIZED Robert Campbell DATE 5-2-94 P.O. NO. 6136.01

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
MW-1	11	Liquid	5-2-94/8:15	THC(Gas) TPH(Diesel)	(1)
				TPH(MO) BPA 8240	
				TOG Cd, Cr, Ni, Pb, Zn	
Trip Blank	~~4~~ 6 for	Liquid	—	THC(Gas) BPA 8240	(2)

RELINQUISHED BY: RECEIVED BY:

RELINQUISHED BY: RECEIVED BY:

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DESIGNATED LABORATORY: Anametrix DHS #:

REMARKS: Normal TAT

DATE COMPLETED 5-2-94 FOREMAN FCline

14:50 DB

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