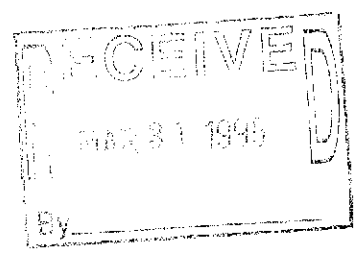


1630-1135 = 1.3



ENGEO
INCORPORATED
2401 Crow Canyon Road
Suite 200
San Ramon, CA 94583
(510) 838-1600
Fax (510) 838-7425

LETTER OF TRANSMITTAL

DATE: March 30, 1995 ENGEO PROJECT NO.: 3174-F7

TO: Alameda County
Department of Environmental Health
Environmental Protection Division
1131 Harbor Bay Parkway, #250
Alameda, CA 94502-6577

ATTENTION: Eva Chu

SUBJECT: 2900 Ladd Avenue, Livermore

- ① HP grab samples collected from perched water at 20-21' bgs } vs. MW 3 & 4 screened in aquifer from ~28-53' bgs
- ② Soil contain delineated
- ③ Aquifer contain delineated
- ④ Perched water contain NOI delineated? as is it to mix-f where soil at 15-20' bgs up to 44 ppm nitrate, 25 ppm benzene

TRANSMITTED HEREWITH: Two copies of the "Report on Ground-water Monitoring Well Installation" for the subject site.

REMARKS: Quarterly sampling and laboratory testing of the monitoring wells is scheduled for May and August of 1995.
Please let me know if you have any questions or comments regarding the findings of the study or the quarterly sampling plan.

- ⑤ Get X-sec of soil + GW plume
- ⑥ Get QWER
- ⑦ Only 1 report (over)

ENGEO INCORPORATED
BY: Brian Flaherty
COPIES: _____

- FOR YOUR INFORMATION
- FOR YOUR REVIEW
- RETURNING _____
- COPIES AT YOUR REQUEST

Some thoughts:

Purched water w/ high levels of benzene at a 20' bgs -
Should this be remediated to prevent further migration
into aquifer at 38-40' bgs?

Should wells be installed to monitor purched water to 25' ?
probably - since this is where contamination is, if its
purched - can be pumped w/ VE.

If purched water is seasonal - can install wells - if dry,
just vapor extract.

ENGEO

INCORPORATED

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

In Reply
Please Refer to:
3174-F7

July 9, 1994

Mr. Dick Alford
Livermore Valley Joint Unified School District
685 E. Jack London Boulevard
Livermore, CA 94550

Subject: 2900 Ladd Avenue
Livermore, California

REPORT ON GROUND-WATER MONITORING WELL INSTALLATION

- References:
1. ENGEO Inc.; Work Plan for Additional Subsurface Investigation, 2900 Ladd Avenue, Livermore, California; April 11, 1994; Revised May 23, 1994.
 2. ENGEO Inc.; Report on Soil and Ground-Water Investigation, 2900 Ladd Avenue, Livermore, California; July 8, 1993.
 3. Alameda County Department of Environmental Health, SWI Report for 2900 Ladd Avenue, Livermore, California; July 30, 1993.

Dear Mr. Alford:

ENGEO Incorporated is pleased to present our report on the installation of ground-water monitoring wells at 2900 Ladd Avenue in Livermore, California. Exploratory test borings and Hydropunch ground-water samples were also collected at the direction of the Alameda County Department of Environmental Health. The intention of the exploration was to further characterize the soil and ground-water contamination associated with underground fuel storage tanks formerly at the maintenance yard/transportation facility. The scope of the study was to evaluate the vertical and lateral extent of the petroleum hydrocarbon contamination in the vadose zone soils, at the top of the ground-water table and in the ground water northwest of the tank complex.

Livermore Valley Joint Unified School District
2900 Ladd Avenue

REPORT ON GROUND-WATER MONITORING WELL INSTALLATION

3174-F7

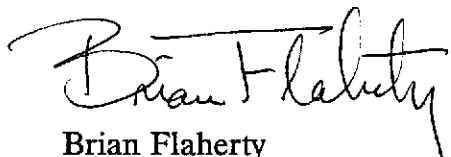
July 9, 1994

Page 2

We are available at your convenience to discuss the findings and recommendations of our report. Please do not hesitate to contact our office if you have any questions.

Very truly yours,

ENGEO INCORPORATED

A handwritten signature in cursive script that reads "Brian Flaherty". The signature is written in black ink and is positioned above the printed name and title.

Brian Flaherty
CEG 1256

cc: 2 - Alameda County Department of Environmental Health

REPORT ON GROUND-WATER MONITORING WELL INSTALLATION

for

2900 LADD AVENUE

LIVERMORE, CALIFORNIA

Submitted

to

Livermore Valley Joint Unified School District

Livermore, California

Prepared

by

ENGEO Incorporated

Project 3174-F7

July 9, 1994

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BACKGROUNDSite Description

The facility at 2900 Ladd Avenue included an operations building, a maintenance yard, fuel dispensing pumps, associated underground piping and vents, and three fiberglass underground fuel storage tanks (Figure 1). The underground tank complex consisted of 6,000-gallon regular gasoline, 6,000-gallon unleaded gasoline and 10,000-gallon diesel fuel storage tanks. The tanks were located within a common excavation and were attached to a concrete hold-down pad.

Previous Investigations

The regular gasoline storage tank failed a precision test in 1990. In order to prepare a preliminary assessment of possible soil contamination, a limited subsurface investigation was undertaken with samples collected adjacent to the 6,000-gallon regular gasoline tank. Laboratory testing of the soils exposed total petroleum hydrocarbons (TPH) as gasoline at concentrations of 2,300 parts per million (ppm) at 14 feet and 1,500 ppm at 17 feet. These gasoline concentrations exceeded the Regional Water Quality Control Board (RWQCB) guideline level of 100 ppm for TPH in soil. We understand that an *Underground Storage Tank Unauthorized Release Report* was prepared at that time.

ENGEO Incorporated conducted a soil and ground-water study of the area around the tank complex in December, 1990. A ground-water monitoring well (MW1) placed adjacent to the underground tanks exposed soil and ground-water contamination. Laboratory testing of soil samples found significant petroleum hydrocarbon contamination from 15 to 40 feet beneath the ground surface in the area of the tanks. A ground-water sample contained concentrations of benzene at 63 parts per billion (ppb).

Ground-water sampling of the monitoring well was conducted in September 1991 and July 1992. Gasoline and BTXE were not detected in a ground-water sample obtained in September 1991. Laboratory analysis of the ground-water sample recovered in July 1992 detected 50 ppb gasoline and 17 ppb benzene. The measured ground-water surface had fallen 15.2 feet to 59.0 feet below the ground surface between the December 1990 and September 1991. The ground-water level rose 6.4 feet to a depth of 52.6 feet beneath the ground surface between September 1991 and July 1992. A schematic drawing of the tank complex with the location of the well is shown on Figure 1.

The three underground fuel storage tanks were removed from the site in August, 1992. Laboratory testing of soil samples recovered adjacent to the northern end of the 6000-gallon leaded gasoline storage tank detected gasoline at 1200 ppm.

Decommissioning of the monitoring well was undertaken on July 9, 1992, since the well location was within the limits of the proposed tank excavation. A permit to decommission the well was obtained from Alameda County Zone 7 Flood Control District.

1993 Investigation

Review of the boring logs, PID readings and the laboratory test results for both the soil and ground-water samples found that the subject site had been impacted by petroleum hydrocarbons. It appears that the soil and ground water had been affected primarily in the area northwest of the former underground storage tanks complex. Soil samples collected from the east and southwest of the tanks were not significantly impacted by petroleum hydrocarbons.

Review of the laboratory test data found that the soil from a depth of approximately 15 feet below the ground surface down to the top of the ground-water table was possibly impacted.

A review of the previous soil and ground-water studies on the site found that the ground-water level in 1993 was ten to fifteen feet higher than measured in July, 1992.

It appears that the soil from depths of about 18 feet to 35 feet are the most affected. The concentrations of petroleum hydrocarbons in the soil beneath 35 feet seem to be lower. It appears that the petroleum hydrocarbon contamination in the soil is dispersing toward the northwest within a sandy gravel layer. The gravel extends from beneath the tank excavation down to depths of at least 30 to 35 feet below the ground surface. The gravel layers may be interstratified with a clayey silt such that the stratification could be influencing the vertical and lateral spreading of the hydrocarbons as they migrate laterally and downward.

The reported concentrations of total petroleum hydrocarbons and BTXE in the ground water were greater than the levels recorded in the previous monitoring well reports. As the ground-water level rises it appears that the water comes in contact with the impacted soil. We anticipate that the northwestward dispersion of the hydrocarbons is most likely affecting the ground water in this direction.

Based on the findings of the 1993 subsurface investigation, additional exploration of the soil and ground water was recommended by ENGEO and the Alameda County Department of Environmental Health.

Scope of Work

The scope of work included:

1. Drilling and logging of exploratory test borings with the collection of soil samples and Hydropunch ground-water samples. An Organic Vapor Meter (PID) was used during the drilling of the boreholes to monitor for volatile vapors.
2. Installation of two ground-water monitoring wells with the collection of ground-water samples from the wells to be analyzed for TPH as gasoline, and BTXE.

3. Submittal of soil samples and hydropunch ground-water samples for laboratory testing. Samples were analyzed for Total Petroleum Hydrocarbons (TPH) as gasoline, and volatile aromatic compounds (BTXE).
4. Analyses of the soil vapor readings and the laboratory test results. The test results and exploratory test boring information were studied in an attempt to develop an areal and vertical representation of the soil and ground-water contaminant plume.
5. Preparation of this report documenting the work performed and the findings of the investigation including recommendations for further study.

SOIL AND GROUND-WATER INVESTIGATION

Prior to drilling, we obtained the necessary permits from Alameda County.

A. Soil Borings

Exploratory test borings were initially drilled to the depth of the ground-water table. The exploratory soil borings were drilled in the approximate locations shown on Figure 1.

The exploratory borings were advanced using a truck-mounted, 6-inch-diameter hollow stem auger. The soil samples were collected using a 3-inch-diameter split spoon barrel sampler retaining 6-inch-long stainless steel tubes. Sampling equipment was washed with a trisodium phosphate (TSP) and water solution then rinsed with clean water between each sampling event.

Drilling was performed under the observation of an ENGEO Environmental Geologist who logged the borings in accordance with the Unified Soil Classification System. Soil samples were obtained at five-foot sampling intervals and from the saturated soil above the ground-water table. The samples and soil cuttings were screened in the field using a photoionization detector (PID), a device that provides a field determination for volatile organic compounds.

These samples were preserved for laboratory testing by sealing the sample tube with teflon, plastic end caps and tape. The soil samples were selected for laboratory testing on the basis of the PID screening and visual observations. The samples were placed in a cooled ice chest and transported under documented chain-of-custody to a certified analytical testing laboratory.

The drill cuttings were stored in 55-gallon drums until the laboratory test results were available and a schedule for the disposal of the soil was developed. The boreholes were backfilled in accordance with Alameda County requirements.

B. Ground-Water Sampling

Ground-water samples were collected from the exploratory boreholes using the Hydropunch sampling method. The purpose was to evaluate the possible dispersion of the contaminants in the ground water and to decide on locations for the permanent ground-water monitoring wells.

The Hydropunch is a 2-inch-diameter stainless steel sampling tool used for the collection of representative ground-water samples without the installation of permanent monitoring wells. The hollow stem drill auger was used to provide the bore hole or "pilot hole" for the Hydropunch. After inserting the polypropylene screen and attaching the point, the Hydropunch was fixed to the casing, lowered through the bore hole and driven to the proper depth. The tool was then withdrawn approximately 48 inches, leaving the point in the ground and exposing the screen so that ground water could drain into the sampler.

A 1-inch-diameter O.D. bailer was lowered through the hollow stem interior of the drive casing and the Hydropunch in order to collect the representative samples. The ground-water samples were decanted into clean 40-milliliter volatile organic analysis vials (VOA). The samples were cooled in an ice chest until delivery under a documented chain-of-custody to an analytical testing laboratory.

Sample collection, preservation, chain-of-custody procedures and equipment decontamination were performed in accordance with ENGEO's quality assurance/quality control procedures.

C. Ground-Water Monitoring Well Installation

The ground-water monitoring well locations were determined after review and analysis of the soil and Hydropunch sampling test results. We also reviewed the exploratory test data with the Alameda County Department of Environmental Health prior to deciding on the permanent monitoring well location.

The monitoring wells were advanced using a truck-mounted, 6-inch-diameter hollow stem auger. Drilling was performed under the direction of an ENGEEO Environmental Geologist who logged the well borings in accordance with the Unified Soil Classification System. Soil samples were obtained at five-foot sampling intervals and in the saturated zone above the ground-water table. Soil samples were collected using a 3-inch-diameter split spoon barrel sampler retaining 6-inch-long stainless steel tubes. Sampling equipment was washed with a trisodium phosphate (TSP) and water solution and rinsed with clean water between each sampling event.

The samples were screened in the field using a photoionization detector (PID), a device that provides a field determination of the presence of certain volatile organic compounds. The drill cuttings were stored in 55-gallon drums until the laboratory test results were available and a schedule for the disposal of the soil was developed.

The soil samples from the well drilling operation were preserved for testing by sealing the sample tube with teflon sheets, plastic end caps and tape. The samples were placed in a cooled ice chest and transported under documented chain-of-custody to a certified analytical testing laboratory.

The monitoring wells consist of 2-inch-diameter PVC casing with flush joints, installed down through the hollow stem auger. The wells were constructed with about 15 feet of screened casing (0.01-inch slot width) and an appropriate length of solid PVC well casing (2-inch-

diameter Schedule 40 PVC). Since there appears to be a significant seasonal variation in the depth to the ground water beneath the site, the total depth of the monitoring wells was extended to about 50 feet below the ground surface. A #2 sand filter pack was placed from the base of the wells to one foot above the top of the screened interval. A 12-inch-thick bentonite seal was placed at the top of the filter pack. The remaining annular space was backfilled with a cement-bentonite grout seal. The wells were completed in a locking, traffic-resistant box with the top of the well casing secured by a locking waterproof cap.

After the cement-bentonite grout had set for at least 48 hours, the wells were developed using a surge block and bailer to produce relatively non-turbid water. Ten to twenty well volumes of water was removed from the wells during the development process.

The purged water was stored on site within Department of Transportation approved drums until the results of the laboratory testing were available. At that time a disposal plan for the purged water was developed.

Twenty-four hours after development, we measured the depth to the top of the ground-water table and checked for the presence of free product. Prior to sampling, four to seven well volumes of water was removed from the wells using a PVC bailer or purging pump. Water quality parameters, including temperature, pH, dissolved solids and oxidation-reduction potential were monitored. Ground-water samples were collected for laboratory testing using a clean dedicated polyethylene bailer. The samples were decanted into clean 40-milliliter volatile organic analysis vials (VOA) and cooled in an ice chest until delivery under a documented chain-of-custody to an analytical testing laboratory. Sample collection, preservation, chain-of-custody procedures and equipment decontamination were performed in accordance with ENGEO's quality assurance/quality control procedures.

Following completion of the monitoring wells, we completed Department of Water Resources (DWR) Well Installation Forms for submittal to the County and State.

D. Laboratory Testing

The soil and ground-water samples selected for laboratory testing will be analyzed for Total Petroleum Hydrocarbons (TPH) as gasoline (EPA Test Methods 8015/5030 and 8020) and for benzene, toluene, xylene and ethyl benzene (BTEX) (EPA 602). The laboratory testing was performed in accordance with test methods specified in the Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites (August, 1990). Copies of the laboratory test results are included in the Appendix. Table I provides a summary of the laboratory test results.

TABLE I - *water samples*
Laboratory Analysis Summary
(Concentrations reported in parts per billion)

NUMBER	DATE	TPHg	B	T	E	X
MW3	7/12/94	<50	<0.5	<0.5	<0.5	<0.5
MW4	7/12/94	<50	<0.5	<0.5	<0.5	<0.5
B10 20'	7/01/94	56,000	5,700	13,000	ND	13,000
"A" 44'	6/30/94	70,000	12,000	16,000	1,700	11,000

HP
HP

Soil Analysis - mg/kg

		<u>TPHG</u>	<u>B</u>	<u>T</u>	<u>E</u>	<u>X</u>
MW-3	10-40'	ND	ND	ND	ND	ND
MW-4	15'	20	.21	.75	.21	1.4
	20'	44	.25	.70	.28	2.3
	10, 25-45'	ND	ND	ND	ND	ND
B-9	15'	ND	.074	.008	.011	.059
	20'	640	4.2	23	10	70
	25'	ND	.12	.013	ND	.020
3174-F7 B-10 July 9, 1994	15'	3	.50	.57	.11	.62
	19'	ND	9ND	ND	ND	ND

REVIEW OF LABORATORY TEST RESULTS

Ground Water

The laboratory testing of the ground water sampled from both of the monitoring wells (MW-3 and MW-4) was nondetectable for petroleum hydrocarbons as gasoline or for benzene, ethyl benzene, toluene or total xylenes (BTEX). Ground water was measured at depth of about 38 to 40 feet below the ground surface in the two wells at the time of sampling.

Hydropunch water samples were collected from exploratory borehole B-10 and pilot test hole "A". Laboratory testing detected high concentrations of gasoline and BETX in both of the hydropunch water samples.

The Hydropunch water sample from exploratory bore hole B-10 was collected from a depth of about 44 to 45 feet below the ground surface. Laboratory testing found that the sample contained gasoline at 56 ppm; benzene at 5.7 ppm; toluene at 13 ppm; ethyl benzene was ND (not detected); with total xylenes at 13 ppm. *was HP-B-10 to 20 or 44'*

The pilot test hole "A" was drilled to a total depth of 20 feet with the Hydropunch sample collected from the bottom of the borehole. Laboratory testing detected gasoline at 70 ppm; benzene at 12 ppm; toluene at 16 ppm; ethyl benzene at 1.7 ppm and xylenes at 11 ppm. *was A to 20 or 44'?*

It should be kept in mind that the Hydropunch method of collecting ground-water samples for laboratory testing can result in misleading findings. We have found that there is a tendency for the test results to show higher concentrations of compounds than what is detected after the installation of a ground-water monitoring well.

Soil Samples

Soil samples collected during the installation of the ground-water monitoring wells were submitted for laboratory testing. The soil samples were mostly nondetectable for gasoline or BTEX. We noted that the samples where gasoline was detected had been collected from about 20 feet below the ground surface from monitoring well MW-4 and from exploratory bore hole B-9. The highest concentration of gasoline in the soil was detected in Sample B9-2 at 640 ppm which was sampled from 20.5 to 21 feet below the ground surface. A soil sample collected from a similar depth in MW4 contained gasoline at 44 ppm. The soil samples tested from MW-3 were nondetectable for gasoline and BTEX.

ANALYSIS OF FINDINGS WITH RECOMMENDATIONS

Review of the monitoring well borehole logs, the PID readings and the laboratory test results for both the soil and ground-water samples show that portions of the subsurface have been impacted by petroleum hydrocarbons. From a review of the data and the impacted areas it appears that the movement of the hydrocarbons is limited in its depth and areal extent.

The monitoring well locations were located by a registered survey crew. Careful measurement to the top of the ground-water surface and interpolation of the survey data found that the ground-water flow direction was toward the northwest. This finding was calculated from a ground-water level approximately 35 feet below the ground surface.

Review of the findings from exploratory test holes B-9, B-10 "A" and monitoring well MW4 found a perched zone of ground water at a depth of about 20 feet. Laboratory testing of soil samples found levels of gasoline contamination around the 20 to 21 foot depth. The perched zone extends toward the northwest away from the area of the former underground fuel storage tanks in the same direction as the ground-water gradient.

It appears that the petroleum hydrocarbon contamination in the soil is dispersing toward the northwest within a sandy gravel layer. The gravel extends from beneath the tank excavation down to depths of at least 30 to 35 feet below the ground surface. The gravel layers are interstratified with clayey silt layers which appear to control the migration of the hydrocarbons. It is possible that a relatively impermeable layer of silty clay may have formed the perched zone at a depth of about 20 feet.

Laboratory testing of the ground-water samples from monitoring wells MW-3 and MW-4 was non detectable for total petroleum hydrocarbons as gasoline and for BTEX. Some lower levels of gasoline at concentrations of 26 and 44 ppm were detected in soil samples from

MW-4 at depths of 16 to 21 feet below the ground surface. This data is also suggestive of a shallow perched zone extending to the northwest. It does not appear that the levels of contaminants in the perched zone in this area were as high or that there was a significant vertical gradient to contaminate the ground water in the monitoring wells.

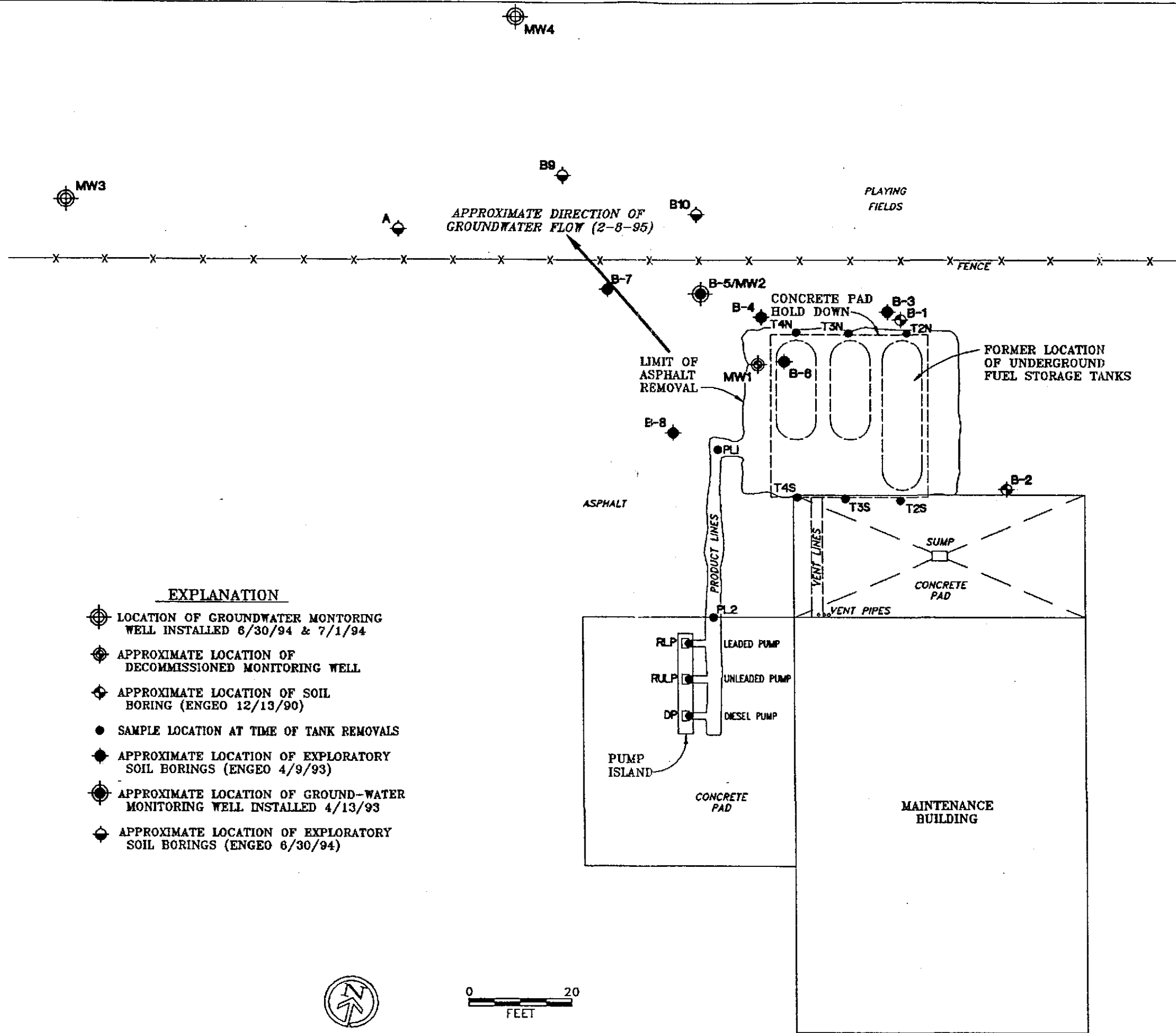
The Hydropunch sample from Pilot hole "A" also contained significant concentrations of gasoline and BTEX. The soil samples collected from MW-3 for laboratory testing were nondetectable for gasoline and BTEX. Review of this data suggests that the Hydropunch sample collected from a depth of 44 feet contained water from a shallower contaminated perched water zone or that the contamination has not yet migrated to MW4.

Based on the information collected in this exploration continued quarterly sampling and laboratory testing of the ground water will be required. It appears that the hydrocarbon contamination is limited in its extent and has not dispersed a great distance from the area of the former underground fuel storage tanks. The northwesterly migration of the hydrocarbons appears to be controlled by interstratified gravel and clayey silt/silty clay with a perched zone of ground water at a depth of about 20 feet.

Continued sampling and laboratory testing of the ground-water monitoring wells for a period of at least one year is recommended in order to study the possible connection between the perched water at 20 feet and the deeper ground water.

APPENDIX A

Figure 1	Ground-Water Monitoring Well Locations
Figures 2 through 6	Boring Logs
Monitoring Well Construction Details	



EXPLANATION

- ⊕ LOCATION OF GROUNDWATER MONITORING WELL INSTALLED 6/30/94 & 7/1/94
- ⊕ APPROXIMATE LOCATION OF DECOMMISSIONED MONITORING WELL
- ⊕ APPROXIMATE LOCATION OF SOIL BORING (ENGE0 12/13/90)
- SAMPLE LOCATION AT TIME OF TANK REMOVALS
- ◆ APPROXIMATE LOCATION OF EXPLORATORY SOIL BORINGS (ENGE0 4/9/93)
- ⊕ APPROXIMATE LOCATION OF GROUND-WATER MONITORING WELL INSTALLED 4/13/93
- ◆ APPROXIMATE LOCATION OF EXPLORATORY SOIL BORINGS (ENGE0 6/30/94)

FIGURE NO. 1

JOB NO.: 3174-F7

DATE: JULY 1994

DRAWN BY: [Signature] CHECKED BY: [Signature]

GROUND WATER MONITORING WELL LOCATIONS
 L.V.J.U.S.D. MAINTENANCE YARD
 2900 LADD AVENUE
 LIVERMORE, CALIFORNIA

ENGE0
 INCORPORATED

DEPTH (FEET)	SAMPLE NUMBER	LOG, LOCATION AND TYPE OF SAMPLE	DATE OF BORING: July 1, 1994	MONITORING WELL CONSTRUCTION DETAIL	PID READING (10.0eV) (ppm)	N S.P.T. BLOWS/FT *MODIFIED FOR 3" O.D. SAMPLER
			SURFACE ELEVATION: Approx. feet MSL			
0			Loose layer of GRAVEL, light brown (fill)?	Type I/II Portland Cement		
			Brown, sandy SILT with some gravel, damp. Increase in gravel at 3 feet. Fine to coarse GRAVEL with little sand and silt.			
5			Some fine to coarse GRAVEL, angular to subrounded, little fine to coarse sand, damp, trace of clay.			
			Increase in clay, fine gravel, increase in moisture.			
10	MW3-1		Brown/reddish brown, moist/wet fine to coarse SAND and fine to coarse GRAVEL.	Bentonite seal 0.01 in. slotted 2 in. PVC pipe with #3 Monterey sand		
			Increase in moisture.			
15	MW3-2		Red brown/brown, moist, clayey SILT to silty CLAY, stiff.			
			More gravelly at 19 to 20 feet.			
20	MW3-3		Poor recovery, wet fine to coarse sand and gravel.			
			Brown, moist, fine to coarse SAND with lenses of silty clay, trace 10 to 15% gravel, no obvious odor.			
25	MW3-4		Brown, wet fine to coarse SAND with fine to medium GRAVEL, little clay.			
			Clay content varies.			
30						


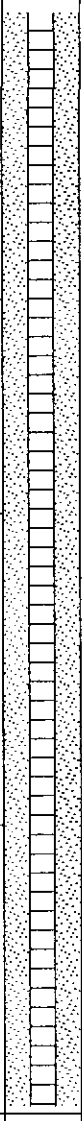


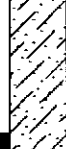
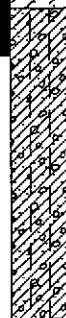


WELL3 3174B 3/22/95

ENGEEO
INCORPORATED

2900 LADD AVENUE
LIVERMORE, CALIFORNIA

WELL NO.: MW3
DATE: March 1995
JOB NO.: 3174-F7

FIGURE NO.
2

DEPTH (FEET)	SAMPLE NUMBER	LOG, LOCATION AND TYPE OF SAMPLE	DATE OF BORING: July 1, 1994	MONITORING WELL CONSTRUCTION DETAIL	PID READING (10.0eV) (ppm)	N S.P.T. BLOWS/FT *MODIFIED FOR 3" O.D. SAMPLER	
			SURFACE ELEVATION: Approx. feet MSL				DESCRIPTION
30	MW3-5		Brown/reddish brown, fine to coarse SAND with fine to medium GRAVEL, lenses of fine to medium sand, wet, trace little clay.				
		 Water level at time of drilling.					
35	MW3-6		Increase in fines, brown fine to coarse SAND with silt, little clay trace of gravel, interbedded with lenses of fine to coarse sand. Brown, stiff, silty CLAY with fine to coarse sand, little gravel, moist. Wet, clayey sand.				
40	MW3-7		Yellow-brown, stiff, sandy SILT, little fine to medium gravel, lenses of stiff silt with fine to medium sand. Becomes more CLAYEY. No odors Increase in gravel at 43 to 44 feet.				
45			Brown, wet, silty CLAY with little fine to coarse sand, trace of fine gravel.				
50			Brown, wet, fine to coarse SAND with fine to medium GRAVEL. Wet.				
			Wet, fine to coarse SAND and fine to medium GRAVEL.				
			Bottom of boring at approximately 53 feet.				
55							
60							
ENGEO INCORPORATED			2900 LADD AVENUE LIVERMORE, CALIFORNIA		WELL NO.: MW3 DATE: March 1995 JOB NO.: 3174-F7		FIGURE NO. 2

WELLS 3174B 3/22/95

DEPTH (FEET)	SAMPLE NUMBER	LOG, LOCATION AND TYPE OF SAMPLE	DATE OF BORING: June 30, 1994	MONITORING WELL CONSTRUCTION DETAIL	PID READING (10.0eV) (ppm)	N S.P.T. BLOWS/FT *MODIFIED FOR 3" O.D. SAMPLER
			SURFACE ELEVATION: Approx. feet MSL			
0			Dark brown, moist, clayey LOAM.	Type I/II Portland Cement	310	
			Increase in gravel.			
5			Brown/dark brown, moist, silty CLAY with gravel, some sand.			
			Clayey SAND with fine to medium gravel, brown, moist. Moist clayey SAND and GRAVEL, brown.			
10	MW4-1		Brown, wet SAND and GRAVEL, trace of clay, angular gravels.	Bentonite seal	268	
			Brown, wet, SAND and GRAVEL, little silt and clay.			
15	MW4-2		Brown, wet, SAND and GRAVEL, trace of clay.			
20	MW4-3		Brown, wet, fine to coarse SAND and fine to coarse GRAVEL, little clay, slight odor.	0.01 in slotted 2 in. PVC pipe with #3 Monterey sand	90	
			Increase in clay content, wet.			
25	MW4-4		Brown/yellow brown, clayey fine to coarse SAND, moist.			
			Brown, moist/wet, fine to coarse SAND with some clay, little fine to medium gravel.			
30						


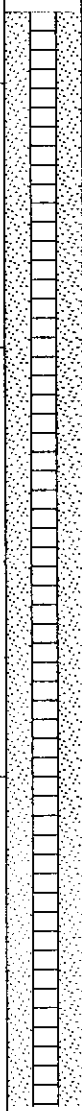







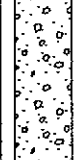
WELLS 3174B 3/22/95

ENGEEO
INCORPORATED

2900 LADD AVENUE
LIVERMORE, CALIFORNIA

WELL NO.: MW4
DATE: March 1995
JOB NO.: 3174-F7

FIGURE NO.
3

DEPTH (FEET)	SAMPLE NUMBER	LOG, LOCATION AND TYPE OF SAMPLE	DATE OF BORING: June 30, 1994	MONITORING WELL CONSTRUCTION DETAIL	PID READING (10.0eV) (ppm)	N S.P.T. BLOWS/FT *MODIFIED FOR 3" O.D. SAMPLER	
			SURFACE ELEVATION: Approx. feet MSL				DESCRIPTION
30	MW4-5		Brown SAND and GRAVEL (large angular gravel fragments in liner).		116		
			Yellow-brown, moist sandy CLAY, fine to coarse sand, trace of gravel. Clay increase with fine to coarse sand and a trace of fine gravel.				
35	MW4-6		Yellow-brown/brown, moist clayey SILT, no odor.			34	
			Increase in gravel.				
40	MW4-7		Moist, brown, hard, fine to coarse SAND and GRAVEL, trace of clay and silt.			14	
			Brown, moist, fine to coarse sandy CLAY with fine to medium gravel.				
45	MW4-8		Brown, moist, fine to coarse SAND and fine to coarse GRAVEL. Water at time of drilling.				
			Brown, wet, fine to coarse SAND with little fine to medium gravel.				
50			Clayey fine to coarse SAND with GRAVEL, wet.				
			Bottom of boring at approximately 53 feet.				
55							
60							

WELL3 3174B 3/22/95

ENGEO
INCORPORATED

2900 LADD AVENUE
LIVERMORE, CALIFORNIA

WELL NO.: MW4
DATE: March 1995
JOB NO.: 3174-F7

FIGURE NO.
3

DEPTH (FEET)	SAMPLE NUMBER	LOG, LOCATION AND TYPE OF SAMPLE	DATE OF BORING: July 1, 1994	N S.P.T. BLOW/FT	OVM READING P.I.D. (10.0eV)	IN PLACE	
			SURFACE ELEVATION: Approx. feet msl			DRY UNIT WEIGHT	MOIST. CONTENT
DESCRIPTION			*MODIFIED FOR 3" O.D. SAMPLER	(parts per million)	(PCF)	% DRY WEIGHT	
0			Dry GRAVEL, base rock.				
			Reddish brown, damp, sandy SILT.				
			Changes to silty GRAVEL, little sand.				
			Brown, silty SAND with some fine to medium gravel, damp/dry.				
5			Light brown, damp, silty SAND (fine to coarse) with some gravel.				
			Increase in gravel (gravel layer).				
10			Brown, damp, silty, fine to coarse SAND and fine to medium GRAVEL.		20		
			Increase in clay content.				
			Brown, moist, clayey, fine to coarse SAND with some fine to medium gravel.				
15	9-1		Brown, wet, fine to coarse SAND with fine to medium GRAVEL, little clay, little silt, slight odor.		19		
			Brown, wet, clayey SAND with fine to medium gravel.		50		
20	9-2		Brown, wet, fine to coarse SAND with fine to medium GRAVEL, slight odor.		66		
			Increase in clay content.				
			Clayey fine to coarse SAND, some fine to medium gravel.		23		
25	9-3		Brown, slightly clayey fine to coarse SAND with fine to medium GRAVEL.		12		
			Bottom of boring at approximately 26.5 feet.				
30							


OVM 3174B 3/22/95

ENGEEO
INCORPORATED




2900 LADD AVENUE
LIVERMORE, CALIFORNIA

BORING NO.: B9
DATE: March 1995
JOB NO.: 3174-F7

FIGURE
NO.
4

DEPTH (FEET)	SAMPLE NUMBER	LOG, LOCATION AND TYPE OF SAMPLE	DATE OF BORING: July 1, 1994	N S.P.T. BLOW/FT	OVM READING P.I.D. (10.0eV)	IN PLACE	
			SURFACE ELEVATION: Approx. feet msl			*MODIFIED FOR 3" O.D. SAMPLER	(parts per million)
			DESCRIPTION				
0			Light reddish brown, damp, fine to medium sandy SILT with fine to medium gravel. Increase in gravel.				
5			Light brown, sandy SILT with fine to medium gravel.				
10			Fine to coarse SAND and fine to medium GRAVEL. Increase in moisture. Brown, slightly clayey, damp, fine to coarse SAND and fine to medium GRAVEL.				
15	10-1		Brown, moist, clayey fine to coarse SAND with fine to medium GRAVEL, moist to wet. Mottled yellow-brown/gray-brown, moist, fine sandy SILT to silty fine SAND, moist (odor).			104	
20	10-2		Fine sandy SILT, little fine gravel. Brown moist to wet, fine interbeds of wet fine to coarse SAND with silt (moist).			22	
20			Bottom of boring at approximately 20 feet.				
25							
30							
ENGEO INCORPORATED			2900 LADD AVENUE LIVERMORE, CALIFORNIA		BORING NO.: B10 DATE: March 1995 JOB NO.: 3174-F7		FIGURE NO. 5

OVM 3174B 3/22/95

DEPTH (FEET)	SAMPLE NUMBER	LOG, LOCATION AND TYPE OF SAMPLE	DATE OF BORING: July 1, 1994	N S.P.T. BLOW/FT	OVM READING P.I.D. (10.0eV)	IN PLACE	
			SURFACE ELEVATION: Approx. feet msl			DRY UNIT WEIGHT (PCF)	MOIST. CONTENT % DRY WEIGHT
			DESCRIPTION	*MODIFIED FOR 3" O.D. SAMPLER	(parts per million)		
0			Brown, silty LOAM				
5			Light brown, dry, sandy GRAVEL.				
10					3		
15			Brown, clayey GRAVEL, moist/wet.				
20					14		
25			Brown clayey GRAVEL, some fine to coarse sand, wet, slight hydrocarbon odor. Decrease in gravel.				
30			Wet, clayey, fine to medium GRAVEL with sand, hydrocarbon odor.				
					24		
ENGEIO INCORPORATED			2900 LADD AVENUE LIVERMORE, CALIFORNIA		BORING NO.: PHA		FIGURE NO. 6
					DATE: March 1995		
					JOB NO.: 3174-F7		

OVM 3174B 3/22/95

DEPTH (FEET)	SAMPLE NUMBER	LOG, LOCATION AND TYPE OF SAMPLE	DATE OF BORING: July 1, 1994	N S.P.T. BLOW/FT	OVM READING P.I.D. (10.0eV)	IN PLACE		
			SURFACE ELEVATION: Approx. feet msl			DRY UNIT WEIGHT (PCF)	MOIST. CONTENT % DRY WEIGHT	
			DESCRIPTION	*MODIFIED FOR 3" O.D. SAMPLER	(parts per million)			
30			Decrease in gravel clayey Wet, odorous, clayey GRAVEL, gravelly CLAY.		58			
35			Stiffer, sandy CLAY, wet, brown, odor.					
40			Brown, stiff, wet silty CLAY, little fine to medium gravel.			37		
45			Hydropunch samples collected from 44'-45'.			9		
45			Bottom of boring at approximately 45 feet.					
50								
55								
60								

OVM 3174B 3/22/95

ENGEEO
INCORPORATED

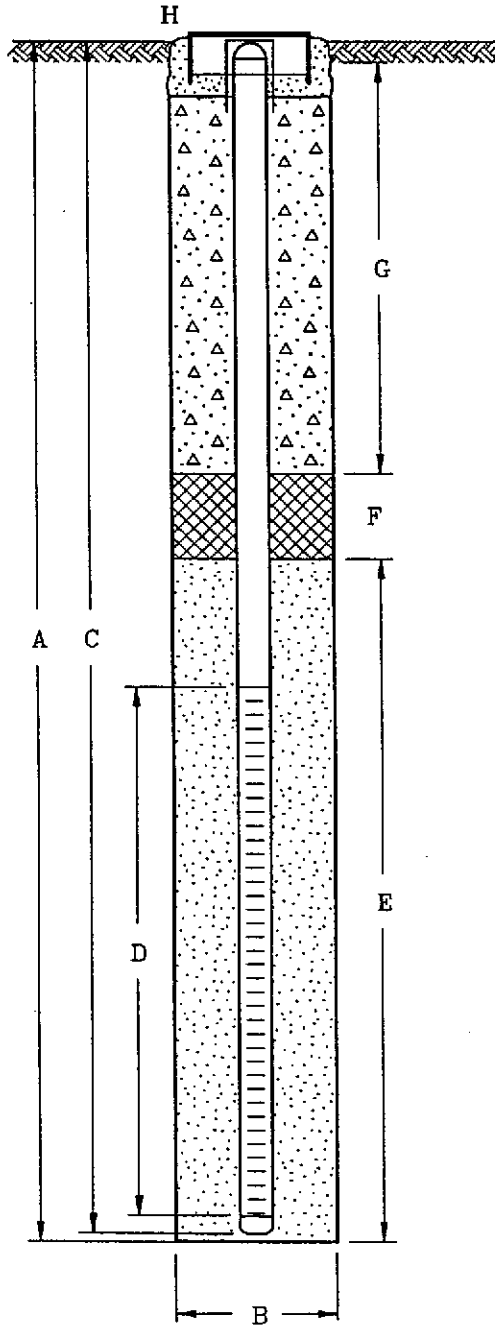
2900 LADD AVENUE
LIVERMORE, CALIFORNIA

BORING NO.: PHA
DATE: March 1995
JOB NO.: 3174-F7

FIGURE
NO.
6

MONITORING WELL DETAIL

PROJECT NUMBER 3174-F7 DATE OF INSTALLATION July 1, 1994
 PROJECT NAME 2900 Ladd Avenue TOP OF CASING ELEV. _____
 COUNTY Alameda GROUND SURFACE ELEV. _____
 WELL PERMIT NO. 94371 DATUM _____

**EXPLORATORY BORING**

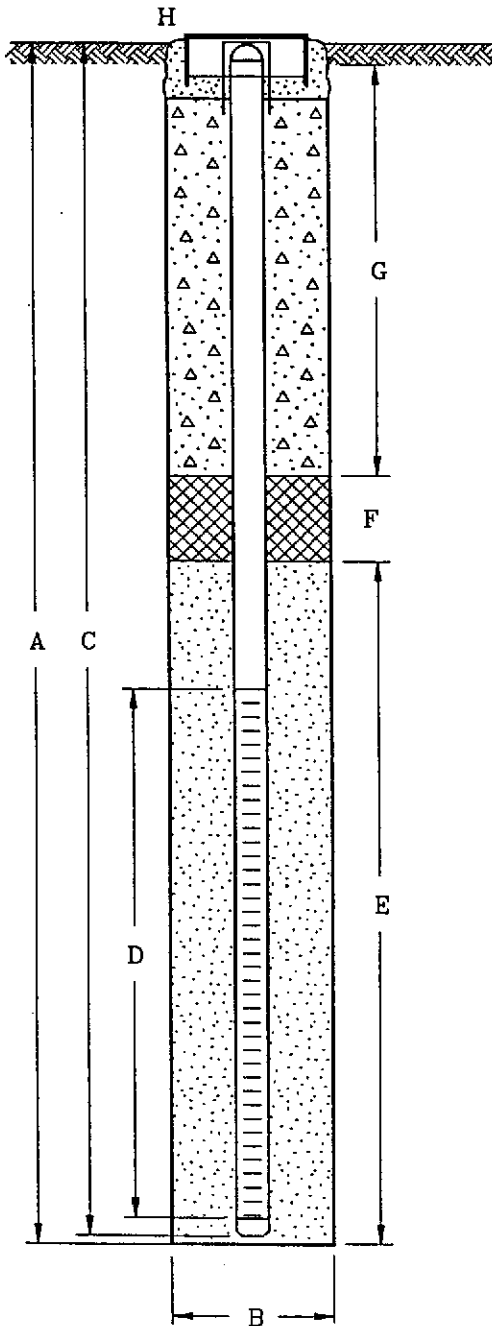
A. TOTAL DEPTH 53 FT.
 B. DIAMETER 7.25 IN.
 DRILLING METHOD Hollow Stem Auger

WELL CONSTRUCTION

C. CASING LENGTH 53 FT.
 MATERIAL Schedule 40 PVC
 DIAMETER 2 IN.
 D. SLOTTED INTERVAL LENGTH 25 FT.
 SLOTTED INTERVAL FROM 28 TO 53 FT.
 SLOT SIZE 0.020 IN.
 E. FILTER PACK INTERVAL 26 TO 53 FT.
 FILTER MATERIAL No. 3 Monterey Sand
 F. FILTER PACK SEAL 24 TO 26 FT.
 SEAL MATERIAL Bentonite Pellets
 G. GROUT INTERVAL 0 TO 24 FT.
 GROUT MATERIAL Type I/II Portland Cement
 H. Flush Mount Cristie Box

MONITORING WELL DETAIL

PROJECT NUMBER 3174-F7 DATE OF INSTALLATION June 30, 1994
 PROJECT NAME 2900 Ladd Avenue TOP OF CASING ELEV. _____
 COUNTY Alameda GROUND SURFACE ELEV. _____
 WELL PERMIT NO. 94371 DATUM _____

**EXPLORATORY BORING**

A. TOTAL DEPTH 53 FT.
 B. DIAMETER 7.25 IN.
 DRILLING METHOD Hollow Stem Auger

WELL CONSTRUCTION

C. CASING LENGTH 53 FT.
 MATERIAL Schedule 40 PVC
 DIAMETER 2 IN.
 D. SLOTTED INTERVAL LENGTH 25 FT.
 SLOTTED INTERVAL FROM 28 TO 53 FT.
 SLOT SIZE 0.020 IN.
 E. FILTER PACK INTERVAL 26 TO 53 FT.
 FILTER MATERIAL No. 3 Monterey Sand
 F. FILTER PACK SEAL 24 TO 26 FT.
 SEAL MATERIAL Bentonite Pellets
 G. GROUT INTERVAL 0 TO 24 FT.
 GROUT MATERIAL Type I/II Portland Cement
 H. Flush Mount Cristie Box

APPENDIX B

Ground-Water Sampling Information
Coast-to-Coast Analytical Services Laboratory Test Results
Drilling Permit Application

3174-F7
July 9, 1994

ENGEO INCORPORATED
GROUND-WATER SAMPLING INFORMATION

Job Name: 2900 Ladd Avenue	Job Number: 3174-F7
Location: Livermore, California	Date: July 12, 1994
Client: LVJUSD	By: Shawn Munger

WELL INFORMATION

Well Number: MW-3	Diameter (in): 2
Total Depth (ft): 52.93	Screen Length: 25'
Depth to Water (ft): 38.76	Casing Volume (gal): 2.41

PURGING INFORMATION

Bailer:	Pump: X (rate): .66 gpm	Time: (init./fin) 14:00/14:19
Volume Removed (gal): 12.5		No. of Casing Vol: 5.2
pH Reading: 7.4		Temp (C): 21.8
Cond (μ S): 970		eh (mV): ---

SAMPLE INFORMATION

Bailer: X Pump: (rate):	
Decon Procedure: Solvent	Acid
TSP	Dist. H ₂ O
Disposable X	Other

Sample	Time	Size	Presv.	Test	Comments
MW-3	14:25	40ml(2)	ICE	TPHg/BTEX	

**ENGEO INCORPORATED
GROUND-WATER SAMPLING INFORMATION**

<u>Job Name: 2900 Ladd Avenue</u>	<u>Job Number: 3174-F7</u>
<u>Location: Livermore, California</u>	<u>Date: July 12, 1994</u>
<u>Client: LVJUSD</u>	<u>By: Shawn Munger</u>

WELL INFORMATION

<u>Well Number: MW-4</u>	<u>Diameter (in): 2</u>
<u>Total Depth (ft): 53.88</u>	<u>Screen Length: 25'</u>
<u>Depth to Water (ft): 39.50</u>	<u>Casing Volume (gal): 2.44</u>

PURGING INFORMATION

<u>Bailer:</u>	<u>Pump: X (rate): .67 gpm</u>	<u>Time: (init./fin) 14:50/15:09</u>
<u>Volume Removed (gal): 12.5</u>	<u>No. of Casing Vol: 5.1</u>	
<u>pH Reading: 7.8</u>	<u>Temp (C): 23.0</u>	
<u>Cond (μS): 840</u>	<u>eh (mV): --</u>	

SAMPLE INFORMATION

<u>Bailer: X Pump: (rate):</u>	
<u>Decon Procedure: Solvent</u>	<u>Acid</u>
<u>TSP</u>	<u>Dist. H₂O</u>
<u>Disposable X</u>	<u>Other</u>

Sample	Time	Size	Presv.	Test	Comments
MW-4	15:17	40ml(2)	ICE	TPHg/BTEX	



COAST-TO-COAST ANALYTICAL SERVICES, INC.

EXCELLENCE
IN ANALYSIS

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2134-1
Project : 3174-F7, LVJUSD
Analyzed : 07/08/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

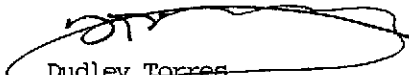
SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
P.H. "A"	Aqueous	Brian Flaherty	06/30/94 1120	07/07/94
CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
BTEX + TPH (Gasoline)				1
Benzene		500.	12000.	
Toluene		500.	16000.	
Ethylbenzene		500.	1700.	
Xylenes		500.	11000.	
Total Petroleum Hydrocarbons (Gasoline)		50000.	70000.	
Percent Surrogate Recovery			89.	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\707B329
DT/etet/nfg(dw)
W-BTX-070794

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.


Dudley Torres
Organics Manager

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COAST-TO-COAST ANALYTICAL SERVICES, INC.

EXCELLENCE
IN ANALYSIS

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2134-2
Project : 3174-F7, LVJUSD
Analyzed : 07/08/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

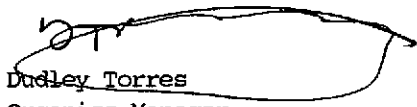
SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
B10 H2O	Aqueous	Brian Flaherty	07/01/94 1454	07/07/94
CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
BTEX + TPH (Gasoline)				1
Benzene		500.	5700.	
Toluene		500.	13000.	
Ethylbenzene		500.	ND	
Xylenes		500.	13000.	
Total Petroleum Hydrocarbons (Gasoline)		50000.	56000.	
Percent Surrogate Recovery			87.	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\707B331
DT/etet/nfg(dw)
W-BTX-070794

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Dudley Torres
Organics Manager

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EXCELLENCE
IN ANALYSIS

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: S-A-070894

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/09/94
Analyzed by: LD
Method : EPA 8020/8015M

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
METHOD BLANK	Solid				
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE	
BTEX + TPH (Gasoline)				1,2	
Benzene		0.005	ND		
Toluene		0.005	ND		
Ethylbenzene		0.005	ND		
Xylenes		0.005	ND		
Total Petroleum Hydrocarbons (Gasoline)		1.	ND		
Percent Surrogate Recovery			107.		

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#4\708B626
DT/etet/lmd/nfg(dw)
JK2134-4

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.


Dudley Torres
Organics Manager

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NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: S-A-070894

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/09/94
Analyzed by: LD
Method : EPA 8020/8015M

QC MATRIX SPIKE
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
MATRIX SPIKE	Solid				
CONSTITUENT	ORIGINAL RESULT	SPIKE AMOUNT	RESULT mg/Kg	%REC	NOTE
BTEX + TPH (Gasoline)					1,2
Benzene	ND	0.10	0.11	110.	
Toluene	ND	0.10	0.10	100.	
Ethylbenzene	ND	0.10	0.099	99.	
Xylenes	ND	0.30	0.30	100.	
Total Petroleum Hydrocarbons (Gasoline)	ND	2.5	2.1	84.	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\708B323
DT/etet/lmd/nfg(dw)
JK2134-4

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.


Dudley Torres
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2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: S-A-070894

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/09/94
Analyzed by: LD
Method : EPA 8020/8015M

QC MATRIX SPIKE REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED
--------------------	--------	------------	-----------------------

MATRIX SPIKE DUPLICATE	Solid		
------------------------	-------	--	--

CONSTITUENT	ORIGINAL RESULT	SPIKE AMOUNT	RESULT mg/Kg	%REC	%DIFF	NOTE
BTEX + TPH (Gasoline)						1,2
Benzene	ND	0.10	0.11	110.	0.	
Toluene	ND	0.10	0.098	98.	2.	
Ethylbenzene	ND	0.10	0.096	96.	3.1	
Xylenes	ND	0.30	0.29	97.	3.4	
Total Petroleum Hydrocarbons (Gasoline)	ND	2.5	2.4	96.	13.	

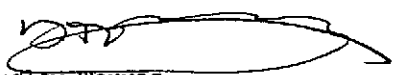
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\708B324
DT/etet/lmd/nfg(dw)
JK2134-4

Respectfully submitted,
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Dudley Torres
Organics Manager

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EXCELLENCE
IN ANALYSIS

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: S-A-070894

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/09/94
Analyzed by: LD
Method : EPA 8020/8015M

QC SPIKE REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED			
QC SPIKE	Solid					
CONSTITUENT		*PQL mg/Kg	SPIKE AMOUNT	RESULT mg/Kg	%REC	NOTE
BTEX + TPH (Gasoline)						1,2
Benzene		0.005	0.10	0.10	100.	
Toluene		0.005	0.10	0.10	100.	
Ethylbenzene		0.005	0.10	0.097	97.	
Xylenes		0.005	0.30	0.30	100.	
Total Petroleum Hydrocarbons (Gasoline)		1.	2.5	2.3	92.	


San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#4\708B635
DT/etet/lmd/nfg(dw)
JK2134-4

Respectfully submitted,
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Dudley Torres
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EXCELLENCE
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NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: S-A-070894

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/09/94
Analyzed by: LD
Method : EPA 8020/8015M

QC SPIKE
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED		
QC SPIKE DUPLICATE	Solid					
CONSTITUENT	*PQL mg/Kg	SPIKE AMOUNT	RESULT mg/Kg	%REC	%DIFF	NOTE
BTEX + TPH (Gasoline)						1,2
Benzene	0.005	0.10	0.11	110.	9.5	
Toluene	0.005	0.10	0.11	110.	9.5	
Ethylbenzene	0.005	0.10	0.099	99.	2.	
Xylenes	0.005	0.30	0.30	100.	0.	
Total Petroleum Hydrocarbons (Gasoline)	1.	2.5	2.2	88.	4.4	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#4\708B636
DT/etet/lmd/nfg(dw)
JK2134-4

Respectfully submitted,
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Dudley Torres
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EXCELLENCE
IN ANALYSIS

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: S-A-070894

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/09/94
Analyzed by: LD
Method : EPA 8020/8015M

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED	
METHOD BLANK	Solid			
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			107.	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#4\708B626
DT/etet/lmd/nfg(dw)
JK2134-4

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.


Dudley Torres
Organics Manager

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EXCELLENCE
IN ANALYSIS

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: S-A-070894

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/09/94
Analyzed by: LD
Method : EPA 8020/8015M

QC MATRIX SPIKE REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
MATRIX SPIKE	Solid				
CONSTITUENT	ORIGINAL RESULT	SPIKE AMOUNT	RESULT mg/Kg	%REC	NOTE
BTEX + TPH (Gasoline)					1,2
Benzene	ND	0.10	0.11	110.	
Toluene	ND	0.10	0.10	100.	
Ethylbenzene	ND	0.10	0.099	99.	
Xylenes	ND	0.30	0.30	100.	
Total Petroleum Hydrocarbons (Gasoline)	ND	2.5	2.1	84.	

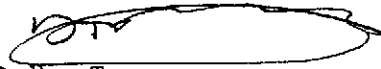
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\708B323
DT/etet/lmd/nfg(dw)
JK2134-4

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(408) 955-9077

QC Batch ID: S-A-070894

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/09/94
Analyzed by: LD
Method : EPA 8020/8015M

QC MATRIX SPIKE REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED			
MATRIX SPIKE DUPLICATE	Solid					
CONSTITUENT	ORIGINAL RESULT	SPIKE AMOUNT	RESULT mg/Kg	%REC	%DIFF	NOTE
BTEX + TPH (Gasoline)						1,2
Benzene	ND	0.10	0.11	110.	0.	
Toluene	ND	0.10	0.098	98.	2.	
Ethylbenzene	ND	0.10	0.096	96.	3.1	
Xylenes	ND	0.30	0.29	97.	3.4	
Total Petroleum Hydrocarbons (Gasoline)	ND	2.5	2.4	96.	13.	

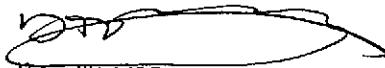
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\708B324
DT/etet/lmd/nfg(dw)
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QC Batch ID: S-A-070894

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/09/94
Analyzed by: LD
Method : EPA 8020/8015M

QC SPIKE
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
QC SPIKE	Solid				
CONSTITUENT		*PQL mg/Kg	SPIKE AMOUNT	RESULT mg/Kg	%REC NOTE
BTEX + TPH (Gasoline)					1,2
Benzene		0.005	0.10	0.10	100.
Toluene		0.005	0.10	0.10	100.
Ethylbenzene		0.005	0.10	0.097	97.
Xylenes		0.005	0.30	0.30	100.
Total Petroleum Hydrocarbons (Gasoline)		1.	2.5	2.3	92.

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#4\708B635
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QC Batch ID: S-A-070894

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/09/94
Analyzed by: LD
Method : EPA 8020/8015M

QC SPIKE REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED		
QC SPIKE DUPLICATE	Solid					
CONSTITUENT	*PQL mg/Kg	SPIKE AMOUNT	RESULT mg/Kg	%REC	%DIFF	NOTE
BTEX + TPH (Gasoline)						1,2
Benzene	0.005	0.10	0.11	110.	9.5	
Toluene	0.005	0.10	0.11	110.	9.5	
Ethylbenzene	0.005	0.10	0.099	99.	2.	
Xylenes	0.005	0.30	0.30	100.	0.	
Total Petroleum Hydrocarbons (Gasoline)	1.	2.5	2.2	88.	4.4	

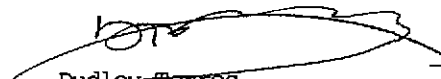
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#4\708B636
DT/etet/lmd/nfg(dw)
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QC Batch ID: S-A-071194

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/12/94
Analyzed by: LD
Method : EPA 8020/8015M

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
METHOD BLANK	Solid				
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE	
BTEX + TPH (Gasoline)				1,2	
Benzene		0.005	ND		
Toluene		0.005	ND		
Ethylbenzene		0.005	ND		
Xylenes		0.005	ND		
Total Petroleum Hydrocarbons (Gasoline)		1.	ND		
Percent Surrogate Recovery			101.		

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\712B318
DT/etet/nfg(dw)
JK2134-15

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QC Batch ID: S-A-071194

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/12/94
Analyzed by: LD
Method : EPA 8020/8015M

QC MATRIX SPIKE
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
MATRIX SPIKE	Solid				
CONSTITUENT	ORIGINAL RESULT	SPIKE AMOUNT	RESULT mg/Kg	%REC	NOTE
BTEX + TPH (Gasoline)					1,2
Benzene	ND	0.10	0.11	110.	
Toluene	ND	0.10	0.10	100.	
Ethylbenzene	ND	0.10	0.098	98.	
Xylenes	ND	0.30	0.30	100.	
Total Petroleum Hydrocarbons (Gasoline)	ND	2.5	2.1	84.	


San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\712B323
DT/etet/nfg(dw)
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QC Batch ID: S-A-071194

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/12/94
Analyzed by: ID
Method : EPA 8020/8015M

QC MATRIX SPIKE
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED
--------------------	--------	------------	-----------------------

MATRIX SPIKE DUPLICATE	Solid		
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CONSTITUENT	ORIGINAL RESULT	SPIKE AMOUNT	RESULT mg/Kg	%REC	%DIFF	NOTE
BTEX + TPH (Gasoline)						1,2
Benzene	ND	0.10	0.11	110.	0.	
Toluene	ND	0.10	0.099	99.	1.	
Ethylbenzene	ND	0.10	0.097	97.	1.	
Xylenes	ND	0.30	0.29	97.	3.4	
Total Petroleum Hydrocarbons (Gasoline)	ND	2.5	2.4	96.	13.	


San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\712B324
DT/etet/nfg (dw)
JK2134-15

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QC Batch ID: S-A-071194

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/12/94
Analyzed by: LD
Method : EPA 8020/8015M

QC SPIKE
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
QC SPIKE	Solid				
CONSTITUENT	*PQL mg/Kg	SPIKE AMOUNT	RESULT mg/Kg	%REC	NOTE
BTEX + TPH (Gasoline)					1,2
Benzene	0.005	0.10	0.12	120.	
Toluene	0.005	0.10	0.11	110.	
Ethylbenzene	0.005	0.10	0.11	110.	
Xylenes	0.005	0.30	0.32	107.	
Total Petroleum Hydrocarbons (Gasoline)	1.	2.5	2.6	104.	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\712B319
DT/etet/nfg(dw)
JK2134-15

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San Jose, CA 95131
(408) 955-9077

QC Batch ID: S-A-071194

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/12/94
Analyzed by: LD
Method : EPA 8020/8015M

QC SPIKE REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED			
QC SPIKE DUPLICATE	Solid					
CONSTITUENT	*PQL mg/Kg	SPIKE AMOUNT	RESULT mg/Kg	%REC	%DIFF	NOTE
BTEX + TPH (Gasoline)						1,2
Benzene	0.005	0.10	0.12	120.	0.	
Toluene	0.005	0.10	0.11	110.	0.	
Ethylbenzene	0.005	0.10	0.11	110.	0.	
Xylenes	0.005	0.30	0.32	107.	0.	
Total Petroleum Hydrocarbons (Gasoline)	1.	2.5	2.5	100.	3.9	

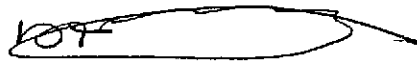
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\712B320
DT/etet/nfg(dw)
JK2134-15

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San Jose, CA 95131
(408) 955-9077

CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2134-3
Project : 3174-F7, LVJUSD
Analyzed : 07/12/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW3-1	Soil	Brian Flaherty	07/01/94 0839	07/07/94
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			80.	


San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\711B318
DT/etet/nfg(dw)
S-A-070894

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CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2134-4
Project : 3174-F7, LVJUSD
Analyzed : 07/08/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW3-2	Soil	Brian Flaherty	07/01/94 0848	07/07/94
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			99.	


San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
4\708B623
DT/etet/lmd/nfg(dw)
S-A-070894

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CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2134-5
Project : 3174-F7, LVJUSD
Analyzed : 07/12/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW3-3	Soil	Brian Flaherty	07/01/94 0857	07/07/94
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			91.	

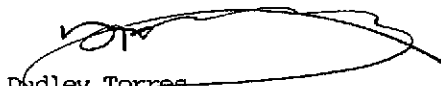
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\711B319
DT/etet/nfg(dw)
S-A-070894

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CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2134-6
Project : 3174-F7, LVJUSD
Analyzed : 07/12/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW3-4	Soil	Brian Flaherty	07/01/94 0909	07/07/94
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			87.	

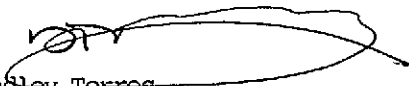
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\711B320
DT/etet/nfg(dw)
S-A-070894

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(408) 955-9077

CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2134-7
Project : 3174-F7, LVJUSD
Analyzed : 07/12/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW3-5	Soil	Brian Flaherty	07/01/94 0919	07/07/94

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			88.	


San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\711B321
DT/etet/nfg(dw)
S-A-070894

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.


Dudley Torres
Organics Manager

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COAST-TO-COAST ANALYTICAL SERVICES, INC.

EXCELLENCE
IN ANALYSIS

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2134-8
Project : 3174-F7, LVJUSD
Analyzed : 07/11/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW3-6	Soil	Brian Flaherty	07/01/94 0930	07/07/94

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			100.	

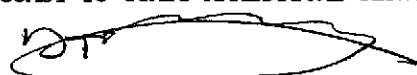
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#4\711B612
DT/etet/nfg(dw)
S-A-070894

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.


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Organics Manager

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CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2134-9
Project : 3174-F7, LVJUSD
Analyzed : 07/12/94
Analyzed by: CB
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW3-7	Soil	Brian Flaherty	07/01/94 0942	07/07/94
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			97.	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\712B308
DT/etet/nfg(dw)
S-A-070894

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CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2134-10
Project : 3174-F7, LVJUSD
Analyzed : 07/12/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW4-1	Soil	Brian Flaherty	06/30/94 1324	07/07/94
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			101.	


San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#4\711B617
DT/etet/nfg(dw)
S-A-070894

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CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2134-11
Project : 3174-F7, LVJUSD
Analyzed : 07/12/94
Analyzed by: CB
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW4-2	Soil	Brian Flaherty	06/30/94 1334	07/07/94
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.05	0.21	
Toluene		0.05	0.75	
Ethylbenzene		0.05	0.21	
Xylenes		0.05	1.4	
Total Petroleum Hydrocarbons (Gasoline)		10.	26.	
Percent Surrogate Recovery			108.	


San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\712B310
DT/etet/nfg(dw)
S-A-070894

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CLIENT: Shawn Munger
Engeo Inc.
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San Ramon, CA 94583

Lab Number : JK-2134-12
Project : 3174-F7, LVJUSD
Analyzed : 07/12/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW4-3	Soil	Brian Flaherty	06/30/94 1344	07/07/94
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.05	0.25	
Toluene		0.05	0.70	
Ethylbenzene		0.05	0.28	
Xylenes		0.05	2.3	
Total Petroleum Hydrocarbons (Gasoline)		10.	44.	
Percent Surrogate Recovery			129.	

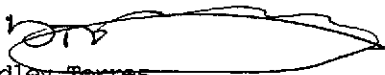
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\712B311
DT/etet/nfg(dw)
S-A-070894

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CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2134-13
Project : 3174-F7, LVJUSD
Analyzed : 07/12/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW4-4	Soil	Brian Flaherty	06/30/94 1353	07/07/94
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			95.	

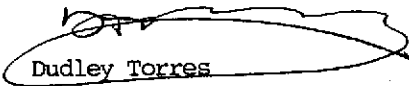
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#4\711B620
DT/etet/nfg(dw)
S-A-070894

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Lab Number : JK-2134-14
Project : 3174-F7, LVJUSD
Analyzed : 07/13/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW4-5	Soil	Brian Flaherty	06/30/94 1401	07/07/94
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			99.	

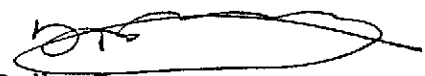
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#4\712B625
DT/etet/nfg(dw)
S-A-071194

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CLIENT: Shawn Munger
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San Ramon, CA 94583

Lab Number : JK-2134-15
Project : 3174-F7, LVJUSD
Analyzed : 07/12/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW4-6	Soil	Brian Flaherty	06/30/94 1412	07/07/94
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			97.	

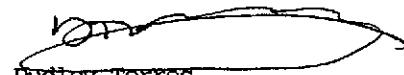
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\712B314
DT/etet/nfg(dw)
S-A-071194

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CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2134-16
Project : 3174-F7, LVJUSD
Analyzed : 07/13/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW4-7	Soil	Brian Flaherty	06/30/94 1425	07/07/94
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			96.	

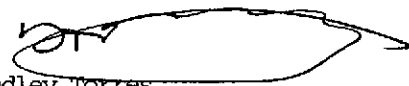
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#4\712B626
DT/etet/nfg(dw)
S-A-071194

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CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2134-17
Project : 3174-F7, LVJUSD
Analyzed : 07/13/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW4-8	Soil	Brian Flaherty	06/30/94 1434	07/07/94
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			93.	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#4\712B627
DT/etet/nfg(dw)
S-A-071194

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2134-18
Project : 3174-F7, LVJUSD
Analyzed : 07/13/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
B9-1	Soil	Brian Flaherty	07/01/94 1208	07/07/94
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.005	0.074	
Toluene		0.005	0.008	
Ethylbenzene		0.005	0.011	
Xylenes		0.005	0.059	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			98.	

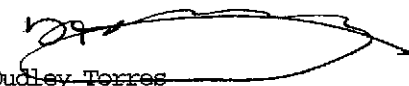
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#4\712B628
DT/etet/nfg(dw)
S-A-071194

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CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2134-19
Project : 3174-F7, LVJUSD
Analyzed : 07/13/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
B9-2	Soil	Brian Flaherty	07/01/94 1216	07/07/94
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2,3
Benzene		0.3	4.2	
Toluene		0.3	23.	
Ethylbenzene		0.3	10.	
Xylenes		0.3	70.	
Total Petroleum Hydrocarbons (Gasoline)		50.	640.	

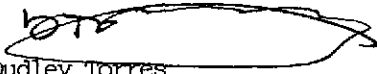
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)
- (3) Surrogate was diluted out.

07/15/94
GC#2\713B311A
DI/etet/nfg(dw)
S-A-071194

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CLIENT: Shawn Munger
Engeo Inc.
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San Ramon, CA 94583

Lab Number : JK-2134-20
Project : 3174-F7, LVJUSD
Analyzed : 07/13/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
B9-3	Soil	Brian Flaherty	07/01/94 1221	07/07/94
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.005	0.12	
Toluene		0.005	0.013	
Ethylbenzene		0.005	ND	
Xylenes		0.005	0.020	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			88.	

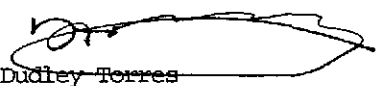
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\713B313A
DT/etet/nfg (dw)
S-A-071194

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.


Dudley Torres
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(408) 955-9077

CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2134-21
Project : 3174-F7, LVJUSD
Analyzed : 07/13/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
B10-1	Soil	Brian Flaherty	07/01/94 1345	07/07/94
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.005	0.50	
Toluene		0.005	0.57	
Ethylbenzene		0.005	0.11	
Xylenes		0.005	0.62	
Total Petroleum Hydrocarbons (Gasoline)		1.	3.	
Percent Surrogate Recovery			96.	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\713B307
DI/etet/nfg (dw)
S-A-071194

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.


Dudley Torres
Organics Manager

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Air, Water & Hazardous Waste Sampling, Analysis & Consultation • Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories



COAST-TO-COAST ANALYTICAL SERVICES, INC.

EXCELLENCE
IN ANALYSIS

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2134-22
Project : 3174-F7, LVJUSD
Analyzed : 07/13/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
B10-2	Soil	Brian Flaherty	07/01/94 1357	07/07/94
CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			102.	

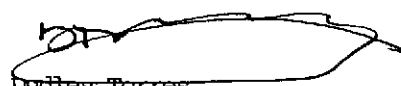
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) Sample Preparation on 07/08/94 by LB
- (2) EXTRACTED by EPA 5030 (purge-and-trap)

07/15/94
GC#2\713B308A
DT/etet/nfg(dw)
S-A-071194

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.


Dudley Torres
Organics Manager

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BTEX/GAS.C

ENGEO
INCORPORATED
 2401 CROW CANYON ROAD, SUITE 200
 SAN RAMON, CALIFORNIA 94583
 PHONE (510) 838-1600

CHAIN OF CUSTODY RECORD

PROJECT NUMBER		PROJECT NAME					TPH (EPA 8015/5030)	TPH - DIESEL (EPA 8015/3550/3510)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 824, 8240)	BASE/NEUTRALS, ACIDS (EPA 625, 8270)	TOTAL OIL & GREASE (SUMW 5520(F))	OC PESTICIDES/PCB (EPA 606, 8060)	OP PESTICIDES (EPA 614/8140)	TITLE 26 METALS (17)	PRIORITY METALS (13)	REMARKS REQUIRED DETECTION LIMITS
3174-F7		LVJUSD																
SAMPLED BY: (SIGNATURE) <i>Brian T. Laberty</i>																		
SAMPLE NUMBER	DATE	TIME	MATRIX	NUMBER OF CONTAINERS	CONTAINER SIZE	PRESERVATIVE												
P.H. "A"	6-30-94	11:20 AM	H ₂ O	2	40ml	ice	X											JK2134-1
MW3-1	7-1-94	8:39	soil	1	2 1/2" x 6"	ice	X	X										-3
MW3-2	7-1-94	8:48	soil	1	2 1/2" x 6"	ice	X	X										-4
MW3-3	7-1-94	8:57	soil	1	2 1/2" x 6"	ice	X	X										-5
MW3-4	7-1-94	9:09	soil	1	2 1/2" x 6"	ice	X	X										-6
MW3-5	7-1-94	9:19	soil	1	2 1/2" x 6"	ice	X	X										-7
MW3-6	7-1-94	9:30	soil	1	2 1/2" x 6"	ice	X	X										-8
MW3-7	7-1-94	9:42	soil	1	2 1/2" x 6"	ice	X	X										-9
MW4-1	6-30-94	13:24	soil	1	2 1/2" x 6"	ice	X	X										-10
MW4-2	6-30-94	13:34	soil	1	2 1/2" x 6"	ice	X	X										-11
MW4-3	6-30-94	13:44	soil	1	2 1/2" x 6"	ice	X	X										-12
MW4-4	6-30-94	13:53	soil	1	2 1/2" x 6"	ice	X	X										-13
MW4-5	6-30-94	14:01	soil	1	2 1/2" x 6"	ice	X	X										-14
MW4-6	6-30-94	14:12	soil	1	2 1/2" x 6"	ice	X	X										-15
MW4-7	6-30-94	14:25	soil	1	2 1/2" x 6"	ice	X	X										-16
MW4-8	6-30-94	14:34	soil	1	2 1/2" x 6"	ice	X	X										-17
RELINQUISHED BY: (SIGNATURE) <i>Brian T. Laberty</i>							DATE/TIME 2-7-94 12:35		RECEIVED BY: (SIGNATURE) <i>Tom Suppin</i>			RELINQUISHED BY: (SIGNATURE) <i>Tom Suppin</i>		DATE/TIME 7-7-94 13:28		RECEIVED BY: (SIGNATURE)		
RELINQUISHED BY: (SIGNATURE)							DATE/TIME		RECEIVED BY: (SIGNATURE)			RELINQUISHED BY: (SIGNATURE)		DATE/TIME		RECEIVED BY: (SIGNATURE)		
RELINQUISHED BY: (SIGNATURE) <i>Wendy [unclear]</i>							DATE/TIME 07/17/94 12:30		RECEIVED FOR LABORATORY BY: (SIGNATURE) <i>Sonal R. Sheth</i>			DATE/TIME		REMARKS 7 day TAT				

DISTRIBUTION: ORIGINAL ACCOMPANIES SHIPMENT; COPY TO PROJECT FIELD FILES

ENGEO INCORPORATED

2401 CROW CANYON ROAD, SUITE 200
SAN RAMON, CALIFORNIA 94583
PHONE (510) 838-1600

CHAIN OF CUSTODY RECORD

PROJECT NUMBER		PROJECT NAME					TPH - GASOLINE (EPA 8015/5030)	TPH - DIESEL (EPA 8015/3550/3510)	PURGEABLE AROMATICS BTX (EPA 602, 6020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240)	BASE/NEUTRALS, ACIDS (EPA 625, 8270)	TOTAL OIL & GREASE (SMW 520(F))	OC PESTICIDES/PCB (EPA 605, 8080)	OP PESTICIDES (EPA 614/8140)	TITLE 26 METALS (17)	PRIORITY METALS (13)	REMARKS REQUIRED DETECTION LIMITS
SAMPLE NUMBER	DATE	TIME	MATRIX	NUMBER OF CONTAINERS	CONTAINER SIZE	PRESERVATIVE												
374 F7		WJUSD					SAMPLED BY: (SIGNATURE) <i>Jim F. Halvick</i>											
B9-1	7-1-94	12:08	soil	1	2 1/2 x 6	ue	X	X									JK 2134 - 18	
B9-2	7-1-94	12:16	soil	1	2 1/2 x 6	ue	X	X									-19	
B9-3	7-1-94	12:21	soil	1	2 1/2 x 6	ue	X	X									-20	
B10-1	7-1-94	13:45	soil	1	2 1/2 x 6	ue	X	X									-21	
B10-2	7-1-94	13:57	soil	1	2 1/2 x 6	ue	X	X									-22	
B10H2O	7-1-94	14:54	H2O	2	40ml	ue	X	X									-2	
RELINQUISHED BY: (SIGNATURE) <i>Jim F. Halvick</i>		DATE/TIME	RECEIVED BY: (SIGNATURE) <i>Tom Rippen</i>		RELINQUISHED BY: (SIGNATURE)		DATE/TIME	RECEIVED BY: (SIGNATURE)										
RELINQUISHED BY: (SIGNATURE)		DATE/TIME	RECEIVED BY: (SIGNATURE)		RELINQUISHED BY: (SIGNATURE)		DATE/TIME	RECEIVED BY: (SIGNATURE)										
RELINQUISHED BY: (SIGNATURE)		DATE/TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE) <i>S.R. Sketh</i>		DATE/TIME	REMARKS												
					07/7/94	1:35												



COAST-TO-COAST ANALYTICAL SERVICES, INC.

EXCELLENCE
IN ANALYSIS

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2190-1
Project : 3174-F7, 2900 Ladd Avenue
Analyzed : 07/19/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

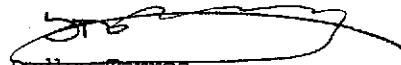
SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW-3	Aqueous	Shawn Munger	07/12/94 1425	07/13/94
CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
BTEX + TPH (Gasoline)				1
Benzene		0.5	ND	
Toluene		0.5	ND	
Ethylbenzene		0.5	ND	
Xylenes		0.5	ND	
Total Petroleum Hydrocarbons (Gasoline)		50.	ND	
Percent Surrogate Recovery			91.	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

07/25/94
GC#4\719B617
DT/etet/nfg(dw)
W-GAS-071994

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.


Dudley Torres
Organics Manager

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EXCELLENCE
IN ANALYSIS

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

CLIENT: Shawn Munger
Engeo Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Lab Number : JK-2190-2
Project : 3174-F7, 2900 Ladd Avenue
Analyzed : 07/19/94
Analyzed by: LD
Method : EPA 8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW-4	Aqueous	Shawn Munger	07/12/94 1517	07/13/94
CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
BTEX + TPH (Gasoline)				1
Benzene		0.5	ND	
Toluene		0.5	ND	
Ethylbenzene		0.5	ND	
Xylenes		0.5	ND	
Total Petroleum Hydrocarbons (Gasoline)		50.	ND	
Percent Surrogate Recovery			92.	

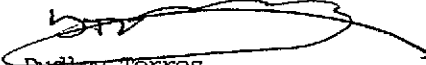
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) EXTRACTED by EPA 5030 (purge-and-trap)

07/25/94
GC#4\719B610
DT/etet/nfg(dw)
W-GAS-071994

Respectfully submitted,
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2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: W-GAS-071994

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/19/94
Analyzed by: LD
Method : EPA 8020/8015M

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

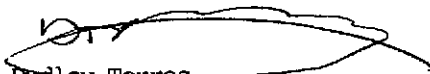
SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
METHOD BLANK	Aqueous				
CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE	
BTEX + TPH (Gasoline)				1	
Benzene		0.5	ND		
Toluene		0.5	ND		
Ethylbenzene		0.5	ND		
Xylenes		0.5	ND		
Total Petroleum Hydrocarbons (Gasoline)		50.	ND		
Percent Surrogate Recovery			103.		

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

07/25/94
GC#4\719B605
DT/etet/nfg(dw)
JK2190-2

Respectfully submitted,
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Dudley Torres
Organics Manager

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COAST-TO-COAST ANALYTICAL SERVICES, INC.

EXCELLENCE
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NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: W-GAS-071994

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/19/94
Analyzed by: LD
Method : EPA 8020/8015M

QC MATRIX SPIKE
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
MATRIX SPIKE	Aqueous				
CONSTITUENT	ORIGINAL RESULT	SPIKE AMOUNT	RESULT $\mu\text{g/L}$	%REC	NOTE
BTEX + TPH (Gasoline)					1
Benzene	ND	10.	10.	100.	
Toluene	ND	10.	10.	100.	
Ethylbenzene	ND	10.	9.7	97.	
Xylenes	ND	30.	29.	97.	
Total Petroleum Hydrocarbons (Gasoline)	ND	250.	259.	104.	

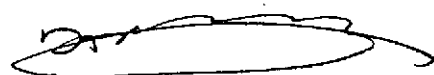
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) EXTRACTED by EPA 5030 (purge-and-trap)

07/25/94
GC#4\719B611
DT/etet/nfg(dw)
JK2190-2

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.


Dudley Torres
Organics Manager

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COAST-TO-COAST ANALYTICAL SERVICES, INC.

EXCELLENCE
IN ANALYSIS

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: W-GAS-071994

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/19/94
Analyzed by: LD
Method : EPA 8020/8015M

QC MATRIX SPIKE REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED			
MATRIX SPIKE DUPLICATE	Aqueous					
CONSTITUENT	ORIGINAL RESULT	SPIKE AMOUNT	RESULT $\mu\text{g/L}$	%REC	%DIFF	NOTE
BTEX + TPH (Gasoline)						1
Benzene	ND	10.	11.	110.	9.5	
Toluene	ND	10.	11.	110.	9.5	
Ethylbenzene	ND	10.	10.	100.	3.	
Xylenes	ND	30.	32.	107.	9.8	
Total Petroleum Hydrocarbons (Gasoline)	ND	250.	259.	104.	0.	

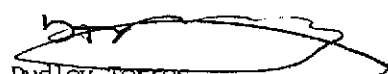
San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) EXTRACTED by EPA 5030 (purge-and-trap)

07/25/94
GC#4\719B612
DT/etet/nfg(dw)
JK2190-2

Respectfully submitted,
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Organics Manager

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EXCELLENCE
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NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: W-GAS-071994

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/19/94
Analyzed by: LD
Method : EPA 8020/8015M

QC SPIKE REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
QC SPIKE	Aqueous				
CONSTITUENT	*PQL µg/L	SPIKE AMOUNT	RESULT µg/L	%REC	NOTE
BTEX + TPH (Gasoline)					1
Benzene	0.5	10.	10.	100.	
Toluene	0.5	10.	11.	110.	
Ethylbenzene	0.5	10.	9.8	98.	
Xylenes	0.5	30.	31.	103.	
Total Petroleum Hydrocarbons (Gasoline)	50.	250.	259.	104.	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

07/25/94
GC#4\719B606
DT/etet/nfg(dw)
JK2190-2

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.


Dudley Torres
Organics Manager

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COAST-TO-COAST ANALYTICAL SERVICES, INC.

EXCELLENCE
IN ANALYSIS

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: W-GAS-071994

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 07/19/94
Analyzed by: LD
Method : EPA 8020/8015M

QC SPIKE REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED			
QC SPIKE DUPLICATE	Aqueous					
CONSTITUENT	*PQL µg/L	SPIKE AMOUNT	RESULT µg/L	%REC	%DIFF	NOTE
BTEX + TPH (Gasoline)						1
Benzene	0.5	10.	11.	110.	9.5	
Toluene	0.5	10.	11.	110.	0.	
Ethylbenzene	0.5	10.	10.	100.	2.	
Xylenes	0.5	30.	31.	103.	0.	
Total Petroleum Hydrocarbons (Gasoline)	50.	250.	260.	104.	0.39	


San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) EXTRACTED by EPA 5030 (purge-and-trap)

07/25/94
GC#4\719B607
DT/etet/nfg(dw)
JK2190-2

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.


Dudley Torres
Organics Manager

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ENGEO INCORPORATED

2401 CROW CANYON ROAD, SUITE 200
SAN RAMON, CALIFORNIA 94583
PHONE (510) 838-1600

CHAIN OF CUSTODY RECORD

PROJECT NUMBER		PROJECT NAME					PRESERVATIVE	TPH - GASOLINE (EPA 8015/5030)	TPH - DIESEL (EPA 8015/3550/3510)	PURGEABLE AROMATICS BTX (EPA 601, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 621, 8240)	BASE/NEUTRALS, ACIDS (EPA 625, 8270)	TOTAL OIL & GREASE (SMWW 5520 (F))	OC PESTICIDES/PCB (EPA 601, 8080)	OP PESTICIDES (EPA 614/8140)	TITLE 25 METALS (17)	PRIORITY METALS (13)	J	K	2	1	90	REMARKS REQUIRED DETECTION LIMITS
SAMPLED BY: (SIGNATURE)		DATE	TIME	MATRIX	NUMBER OF CONTAINERS	CONTAINER SIZE																		
3174-F7		2900 LADD AVENUE																						
SAMPLED BY: (SIGNATURE)		DATE	TIME	MATRIX	NUMBER OF CONTAINERS	CONTAINER SIZE	PRESERVATIVE	TPH - GASOLINE (EPA 8015/5030)	TPH - DIESEL (EPA 8015/3550/3510)	PURGEABLE AROMATICS BTX (EPA 601, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 621, 8240)	BASE/NEUTRALS, ACIDS (EPA 625, 8270)	TOTAL OIL & GREASE (SMWW 5520 (F))	OC PESTICIDES/PCB (EPA 601, 8080)	OP PESTICIDES (EPA 614/8140)	TITLE 25 METALS (17)	PRIORITY METALS (13)	J	K	2	1	90	REMARKS REQUIRED DETECTION LIMITS
SAMPLED BY: (SIGNATURE)		DATE	TIME	MATRIX	NUMBER OF CONTAINERS	CONTAINER SIZE	PRESERVATIVE	TPH - GASOLINE (EPA 8015/5030)	TPH - DIESEL (EPA 8015/3550/3510)	PURGEABLE AROMATICS BTX (EPA 601, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 621, 8240)	BASE/NEUTRALS, ACIDS (EPA 625, 8270)	TOTAL OIL & GREASE (SMWW 5520 (F))	OC PESTICIDES/PCB (EPA 601, 8080)	OP PESTICIDES (EPA 614/8140)	TITLE 25 METALS (17)	PRIORITY METALS (13)	J	K	2	1	90	REMARKS REQUIRED DETECTION LIMITS
MW-3	7/12/94	14:25		2	40 ml	ICP		X		X									-	1				
MW-4	7/12/94	15:17		2	40 ml	ICP		X		X									-	2				
RELINQUISHED BY: (SIGNATURE)		DATE/TIME	RECEIVED BY: (SIGNATURE)		DATE/TIME	RELINQUISHED BY: (SIGNATURE)		DATE/TIME	RECEIVED BY: (SIGNATURE)															
RELINQUISHED BY: (SIGNATURE)		DATE/TIME	RECEIVED BY: (SIGNATURE)		DATE/TIME	RELINQUISHED BY: (SIGNATURE)		DATE/TIME	RECEIVED BY: (SIGNATURE)															
RELINQUISHED BY: (SIGNATURE)		DATE/TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)		DATE/TIME	REMARKS																		

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ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE

PLEASANTON, CALIFORNIA 94588

VOICE (510) 484-2600

FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT 2900 Ladd Avenue
Livermore, California

PERMIT NUMBER 94371
LOCATION NUMBER _____

CLIENT
Name Livermore Valley Joint Unified School District
Address 685 East Jack London Voice 447-9500
City Livermore Zip 94550

PERMIT CONDITIONS

Circled Permit Requirements Apply

APPLICANT
Name Eric Harrell- ENGEO Incorporated
2401 Crow Canyon Rd. Fax 838-7425
Address Ste. 200 Voice 838-1600
City San Ramon Zip 94583

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.

TYPE OF PROJECT
Well Construction _____ Geotechnical Investigation _____
Cathodic Protection _____ General _____
Water Supply x Contamination x
Monitoring _____ Well Destruction _____

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.

PROPOSED WATER SUPPLY WELL USE
Domestic _____ Industrial _____ Other Monitoring
Municipal _____ Irrigation _____

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.

DRILLING METHOD:
Mud Rotary _____ Air Rotary _____ Auger x
Cable _____ Other _____

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

DRILLER'S LICENSE NO. 482390

E. WELL DESTRUCTION. See attached.

WELL PROJECTS
Drill Hole Diameter 7 in. Maximum _____
Casing Diameter 2 in. Depth 55 ft.
Surface Seal Depth 30 ft. Number 3

GEOTECHNICAL PROJECTS
Number of Borings 1 Maximum _____
Hole Diameter 7 in. Depth 35 ft.

ESTIMATED STARTING DATE June 30, 1994

ESTIMATED COMPLETION DATE July 1, 1994

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

Approved Wyman Hong Date 29 Jun 94

Wyman Hong

APPLICANT'S SIGNATURE Eric Harrell Date 6/29/94

APPENDIX C

ENGEO INCORPORATED
Field Health and Safety Plan

3174-F7
July 9, 1994

**ENGEO INCORPORATED
FIELD HEALTH AND SAFETY PLAN**

Project Name: LVJUSD Maintenance Yard Date: June 30, 1994

Project No.: 3174-F7 Client: L.V.J. U.S.D.

Project Location: 2900 Ladd Avenue, Livermore, California

Work Activities: Drilling and construction of 3 ground water

monitoring wells down to 55' in depth with 2 to 3 exploratory borings to 30'

Project H & S Officer: Brian Flaherty

Site H & S Officer: Brian Flaherty

Expected Chemical Hazards

Chemical Name (CAS #)	OSHA (PEL)	Field Criteria
<u>Benzene</u>	<u>1.0 ppm</u>	<u>see attached Table I</u>
<u>Toluene</u>	<u>200 ppm</u>	<u>" " will follow benzene criteria</u>
<u>Ethyl Benzene</u>	<u>100 ppm</u>	<u>" "</u>
<u>Xylenes</u>	<u>100 ppm</u>	<u>" "</u>

Physical Hazards

- Noise
- Traffic
- Equipment
- Underground Hazards
- Overhead Hazards
- Excavations/Trenches
- Other _____

Potential Explosion and Fire Hazards none known

Level of Protection Equipment

A B C D (See Personal Protective Equipment)

Personal Protective Equipment

R = Required

A = As Needed

R Hard Hat

A Safety Glasses

R Safety Boots

Respirator (Type) 1/2 mask (A)

R Orange Vest

Filter (Type) GMA

A Hearing Protection

R Gloves (Type) Nitrile

A Tyvek Coveralls

Other _____

Field Monitoring Equipment

P.I.D. (10.0ev)

Site Control Measures

cones & barricades, as needed.

Emergency Response Plans

Stop operations, evaluate conditions, administer appropriate first aid, call for emergency personnel, transport injured to hospital.

Hospital: Valley Memorial Hospital Phone: 447-7000

Address: 111 E. Stanley Boulevard

Fire Department: 911 Police: 911

Comments

see attached map for hospital location.

HSP Preparer: Brian + Liberty Review/Approval: _____

<u>Contractor/Agency</u>	<u>Signature</u>	<u>Date</u>
<u>Kwilhaug Well Drilling</u>	<u>Rodney P. Fuchs</u>	<u>June 30, 1994</u>
<u>KWD</u>	<u>George H. Johnson</u>	<u>6/30/94</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

TABLE I

HYDROCARBON VAPOR CRITERIA AND RESPONSES

<u>Hydrocarbon Concentrations*</u>	<u>Response</u>
<30 ppmv	No special action.
30 ppmv - 300 ppmv	Half-mask Organic Vapor (OV) respirators worn by all in work area.
>300 ppmv	Discontinue work activities and evacuate area. Evaluate measures to subdue excessive vapor levels.

* in parts-per-million by volume within breathing zone, measured by photoionization detector equipped with 10.04 eV bulb.