1156 Davis St
San Leandro

TRANSMITTAL

TO: Mr. Michael Whelan
Environmental Engineer
ARCO Products Company
P.O. Box 5811
San Mateo, California 94402
Phone: (415) 571-2449
Fax: (415) 571-2410

DATE: April 18, 1994
PROJECT #: 7940.03
SUBJECT: Report of Initial Subsurface Investigation at ARCO Station 2111

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

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	4/13/94	Report of Initial Subsurface Investigation at ARCO Station 2111

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cc: **Ms. Susan Hugo, Alameda County Health Care Services Agency**
Mr. John Jang, Regional Water Quality Control Board
Mr. Mike Bakaldin, City of San Leandro Fire Department

GeoStrategies Inc.

REPORT OF INITIAL SUBSURFACE INVESTIGATION

ARCO Station 2111
1156 Davis Street
San Leandro, California

7940.03

April 13, 1994

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GeoStrategies Inc.

April 13, 1994

Mr. Michael Whelan
ARCO Products Company
P.O. Box 5811
San Mateo, California 94402

Subject: Letter Report on Initial Subsurface Investigation at ARCO Station 2111, 1156 Davis Street, San Leandro, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), GeoStrategies Inc. (GSI) conducted an initial subsurface investigation at ARCO Station 2111, located at 1156 Davis Street in San Leandro, California. This investigation was initiated to further investigate the extent of hydraulic oil in soils in the vicinity of the former hydraulic hoist at the site. Analytical results of soil samples collected during the hydraulic hoist removal supervised by GSI field personnel on August 30, 1993 *(GSI, October 2, 1993)*, indicated hydraulic oil in the former hydraulic hoist excavation pit.

The work performed for this investigation included drilling and sampling two soil borings in the immediate vicinity of the former hydraulic hoist excavation pit, collecting soil samples at five foot intervals for classification and laboratory analysis, and preparing this report which presents field methods and procedures, results, and conclusions. This work was performed as outlined in the *Work Plan for Initial Subsurface Investigation (GSI, February 11, 1994)*.

ARCO Station 2111
Initial Subsurface Investigation
7940.03

April 13, 1994

SITE DESCRIPTION AND BACKGROUND

General

ARCO Service Station 2111 is an active Smog Pros Service Station located at the northwestern corner of the intersection of Davis and Preda Streets in San Leandro, California, as shown on Plate 1, Site Vicinity Map. The site is located in a residential area. A Shell service station is located directly across Davis Street to the south of the subject site. There are three 12,000-gallon capacity underground gasoline storage tanks (USTs) located near the two pump islands at the subject site. The schematic layout of the service station showing boring locations, USTs and waste-oil tank locations, former hydraulic hoist excavation pit location, and other pertinent site features are presented on Plate 2, Site Plan.

Regional and Local Hydrogeology

The site is located within the East Bay Plain, situated in the San Francisco Bay depression that is in part an irregular down-dropped block bordered by northwest trending faults (Alameda County Flood Control and Water Conservation District, June 1988). The site is at an elevation of approximately 35 feet above mean sea level (msl) and is approximately 1¾-mile west of the Hayward Fault Zone. The subsurface soils in the vicinity of the site consist of highly permeable Pleistocene alluvium composed of poorly consolidated to unconsolidated clay, silt, sand, and gravel. The alluvium was derived mainly from the Diablo Range and represents coalescing alluvial fans (Alameda County Flood Control and Water Conservation District, 1988). Groundwater flow direction in the area is generally inferred to be to the west toward San Francisco Bay, but may have components to the north due to recharge areas along the Hayward Fault. The immediate topography at the site decreases in elevation above mean sea level (msl) toward the west-northwest, which suggests that the groundwater beneath the site flows in this same direction.

PREVIOUS ENVIRONMENTAL WORK

On August 30, 1993, C.E. Thomas Company of Irvine, California, removed a hydraulic hoist from one of the service bays at the subject site. After the hoist was removed, a GSI field geologist collected four soil samples (S-7-HL, S-7½-HL, S-8-HL, and S-9-HL) from the excavation at 7, 7½, 8, and 9 feet below grade (fbg), respectively. The excavation was approximately two feet by two feet wide and eight feet in depth. The soil samples were collected with a post-hole digger, placed in 2-inch diameter brass tubes, covered with aluminum foil and polyethylene caps, labeled for identification, and placed in an ice chest for preservation. The samples were submitted under Chain-of-Custody Protocol to Sequoia Analytical Laboratories in Redwood City, California (State-certification #1210), and analyzed for total extractable petroleum hydrocarbons as hydraulic oil (TEPH as hydraulic oil) using Environmental Protection Agency (EPA) Methods 3550/8015. The analytical results of the TEPH as hydraulic oil analysis indicated in concentrations of 27,000 parts per million (ppm) in the sample collected from a depth of 7 fbg to 9,200 ppm in the sample collected from 9 fbg. The analytical results of soil samples are shown on Table 1.

FIELD WORK

Drilling

Field work for the current environmental investigation at the site was conducted in accordance with the *Site Safety Plan (GSI, March 2, 1994)*. A description of the field methods is included in Appendix A. A Groundwater Protection Ordinance Permit (Permit # 94130) was acquired from the Alameda County Flood Control and Water Conservation District, Zone 7 (ACFCWCD) prior to drilling at the site. A copy of the permit is included in Appendix B. On March 4, 1994, a GSI geologist supervised the drilling of two soil borings (B-1 and B-2) using a Mobile Drill B-61 drill rig with 8-inch hollow-stem augers to first-encountered groundwater beneath the site at approximately 20 fbg. Soil borings B-1 and B-2 were drilled in the northwestern corner of the existing ARCO Service Station building, on the northwestern and northeastern sides of the former hydraulic hoist excavation pit (See Plate 2). Boring B-1 was drilled

approximately six feet north of the location proposed in the *Work Plan for Initial Subsurface Investigation* due to the presence of an underground cable line and existing waste-oil tanks in the originally proposed location. After the borings were drilled and soil samples collected, they were backfilled with approximately one foot of bentonite chips, followed by a 10-sack sand/cement slurry with 5% bentonite to approximately ½ fbg. The top ½ fbg portion of the sand/slurry mix was set with cement accelerator to allow the application of asphalt patch to match the surrounding surface. Soil cuttings generated during drilling borings B-1 and B-2 were placed on and covered with visquene plastic sheeting in the northwestern corner of the site.

Soil Sampling and Description

A total of eight soil samples were collected from the soil borings B-1 and B-2 for description and laboratory analysis. A summary of the United Soil Classification System (USCS)/ASTM D 2488-85 and the description of the soil encountered in the borings are presented on the Log of Borings B-1 and B-2 (attached in Appendix C). Soil samples from borings B-1 and B-2 were collected at intervals of 5 feet or less from the ground surface to the total depth of the borings. Field measure of organic vapors were also measured with an organic vapor analyzer (OVA) which provides a qualitative only field analysis of organic vapor content of soil samples. OVA readings are also shown on the borings logs in Appendix C under the column titled PID (photoionization detector).

LABORATORY METHODS

Soil samples collected were preserved as required by the applicable analytical method and delivered, with Chain-of-Custody Records, to Sequoia Analytical Laboratory or Redwood City, California, a State-certified laboratory (Hazardous Waste Testing Laboratory Certification #1210) for soil analysis.

Soil Samples From Borings

Selected soil samples collected from borings B-1 and B-2 were analyzed in accordance with Alameda County Health Care Services Agency

(ACHCSA) requirements for fuel fingerprint as hydraulic oil using modified Environmental Protection Agency (EPA) Methods 3550/8015. Every soil sample collected was submitted for laboratory analysis to evaluate the vertical extent of hydraulic oil in the soil surrounding the former hydraulic hoist excavation.

Soil Stockpile Samples

On March 4, 1994, four soil samples (CCS-1A through 1D) were collected from the 1½ cubic yard soil stockpile generated during drilling of onsite soil borings B-1 and B-2. These samples were submitted under Chain-of-Custody Record to Sequoia Analytical, composited in the laboratory, and analyzed for the following: Total petroleum hydrocarbons as gasoline (TPH-G) using modified EPA Method 8015; benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method 8020; Toxicity Limit Concentration Leaching Procedure (TCLP) for BTEX; Soluble Threshold Limit Concentration (STLC) for lead; and reactivity, corrosivity, and ignitability (RCI). The purpose for these analyses was to determine the proper method for disposal of 1 cubic yard of drill cuttings. The drill cuttings were removed from the site and taken to BFI Landfill in Livermore, California on March 18, 1994. The Waste Manifest Form is included in Appendix D. The Chain-of-Custody Record is attached in Appendix E.

FIELD WORK RESULTS

Drilling

The soil materials encountered beneath the site consisted primarily of clayey silt to silt with clay. Sandy gravel (baserock) was encountered immediately below the two-inch asphalt ground surface and extended to the depths of approximately 2 to 3 fbg. Below this baserock material, clayey silt was encountered to the total depth in each boring (approximately 20 fbg). Groundwater was first-encountered at approximately 20 fbg in both borings, and stabilized at depths of approximately 18 to 18½ fbg, respectively. These data are summarized in the logs of borings in Appendix C.

Field OVA measurements taken during the drilling of borings B-1 and B-2 were nondetectable with the exception of samples collected from the capillary fringe section located directly above the first-encountered groundwater beneath the site. Field OVA measurements for borings B-1 and B-2 are shown on the boring logs in Appendix B.

RESULTS OF LABORATORY ANALYSES

Soil Samples

Analytical results of soil samples collected from boring B-1 at depths of 10 fbg and 15 fbg, and from boring B-2 at a depth of 10 fbg indicated nondetectable concentrations of fuel fingerprint as hydraulic oil (less than 1.0 part per million [ppm]). Analytical results of the soil sample collected from boring B-1 at a depth of 4½ fbg indicated a concentration of 3.0 ppm of unidentified hydrocarbons (HC) with more than nine (9) carbon chains (HC > C9) and at a depth of 20 fbg indicated 1.7 ppm of an unidentified HC ranging from C11 to C15. Analytical results of the soil sample collected from boring B-2 at a depth of 15 fbg indicated a concentration of 2.0 ppm of an unidentified hydrocarbon with discrete peaks and the sample collected at 20 fbg indicated a concentration of 11 ppm of an unidentified HC between C11 to C24. Analytical results of the soil sample collected from boring B-2 at a depth of 5 feet indicated detectable concentration of hydraulic oil (1.7 ppm).

Soil Stockpile Samples

Analytical results of composited soil stockpile samples (CCS 1A through 1D) indicated the following: Nondetectable concentrations of TPH-G (less than 1.0 ppm) and BTEX (less than 0.0050 ppm); nondetectable concentrations of TCLP as TPH-G (less than 50 parts per billion [ppb]) and BTEX (less than 0.50 ppb); detectable concentrations of STLC as lead (0.18 ppm); and flashpoint greater than 100 degrees centigrade, non-reactive with respect to cyanide and water, and corrosivity of pH 7.0.

The results of laboratory analyses of soil samples are summarized in Table 2, Soil Sample Analytical Results - Borings and Stockpile. Chain-of-Custody Reports and copies of laboratory reports and chromatograms for

soil samples are included in Appendix E.

DISCUSSION

Hydrocarbon Impacted Soil

Analytical results of soil samples collected from boring B-1 indicated either nondetectable concentrations of fuel fingerprint as hydraulic oil or unidentified hydrocarbons ranging from greater than C9 or from C11 to C15 at depth of 4½ fbg and 20 fbg. Analytical results of a soil sample collected from boring B-2 also indicated nondetectable concentrations of fuel fingerprint as hydraulic oil, discrete peaks of hydrocarbons at 15 fbg and unidentified hydrocarbons ranging from C11 to C24 at 20 fbg. Fuel Fingerprint as hydraulic oil was only detected in the soil sample collected from boring B-2 at 5 fbg. These unidentified and discrete peaked hydrocarbons detected in soil samples collected above and/or in the capillary fringe indicate the presence of hydrocarbons other than hydraulic oil.

CONCLUSIONS

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

- Hydraulic oil appears to have not impacted the soil surrounding the former hydraulic hoist excavation, with the exception of low concentrations of hydraulic oil detected in sample B2-5 (1.7 ppm); and

- Unidentified hydrocarbons appeared to have impacted the capillary fringe zone beneath the northwestern corner of the service station building at the site.

ARCO Station 2111
Initial Subsurface Investigation
7940.03

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LIMITATIONS

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

DISTRIBUTION

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

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

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

Mr. Mike Bakaldin
City of San Leandro Fire Department
835 East 14th Street
San Leandro, California 94577

ARCO Station 2111
Initial Subsurface Investigation
7940.03

April 13, 1994

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

Sincerely,
GeoStrategies Inc.

Robert D. Campbell
Project Geologist

Joel Coffman
Project Manager

Stephen J. Carter
Senior Geologist
R.G. 5577

REFERENCES

Alameda County Flood Control and Groundwater Conservation District, June 1988. Geohydrology and Groundwater - Quality Overview, East Bay Plain Area, Alameda County, California 205 (J) Report. pp. 22-65.

GSI, September 14, 1993. Letter Report of the Results of Soil Sampling Associated with Hydraulic Hoist Removal at ARCO Station 2111, 1156 Davis Street in San Leandro, California. GSI Project No. 7940.01.

GSI, February 11, 1994. Work Plan for Initial Subsurface Investigation. GSI Project No. 7940.02.

Helley, E.S., K.R. Lajoie, W.E. Spangle, and M.L. Blair. 1979. Flatland deposits of the San Francisco Bay Region, California. U.S. Geological Survey Professional Paper 943.

ARCO Station 2111
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TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
FORMER HYDRAULIC HOIST EXCAVATION PIT
ARCO Station 2111
San Leandro, California

Sample ID	TEPH as Hydraulic Oil
August 30, 1993	
S-7-HL	27,000
S-7½-HL	22,000
S-8-HL	11,000
S-9-HL	9,200

All results shown in parts per million (ppm).
TEPH: Total extractable petroleum hydrocarbons as hydraulic oil by EPA methods 3550/8015.

Sample Identification:

S-7-HL
- S-7: Soil Sample and Depth in Feet
- HL: Hydraulic Lift

ARCO Station 2111
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TABLE 2
RESULTS OF LABORATORY ANALYSES
OF SOIL SAMPLES - Fuel Fingerprint as Hydraulic Oil
ARCO Station 2111
San Leandro, California

Sample ID	Fuel Fingerprint as Hydraulic Oil	TPH-G	BTEX	TCLP BTEX	TCLP TPH-G	STLC Lead	RCI
March 4, 1994							
B1-4.5	3.0*	NA	NA	NA	NA	NA	NA
B1-10	<1.0	NA	NA	NA	NA	NA	NA
B1-15	<1.0	NA	NA	NA	NA	NA	NA
B1-20	1.7**	NA	NA	NA	NA	NA	NA
B2-5	1.7	NA	NA	NA	NA	NA	NA
B2-10	<1.0	NA	NA	NA	NA	NA	NA
B2-15	2.0***	NA	NA	NA	NA	NA	NA
B2-20	11****	NA	NA	NA	NA	NA	NA
CSS-1A-1D	NA	<0.0050	<1.0	<50	<0.5	0.18	NH

All results shown in parts per million (ppm), except TCLP TPH-G and BTEX are shown in parts per billion (ppb). Fuel fingerprint as hydraulic oil was performed using EPA Methods 3550/8015.

TPH-G = Total petroleum hydrocarbons as gasoline using EPA modified Method 8015.
BTEX = Benzene, toluene, ethylbenzene, and total xylenes using EPA Method 8020.
TCLP = Toxicity Characteristic Leaching Procedure
STLC = Soluble Threshold Limit Concentration
RCI = Reactivity, ignitability, and corrosivity

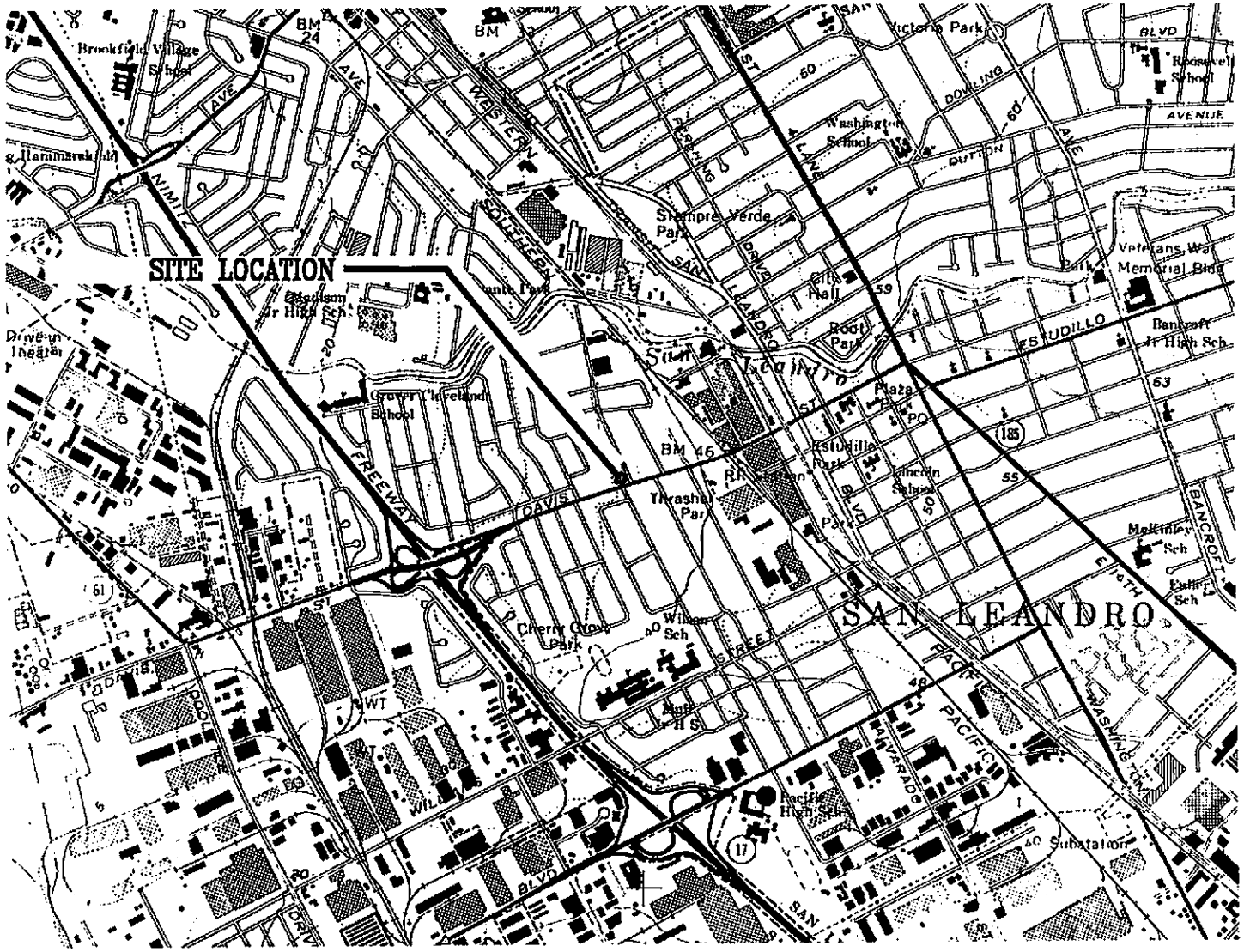
NH = Non hazardous. Composited Sample indicated non-reactivity with sulfide, cyanide, and water, a pH of 7.0 and ignitability of greater than 100 degrees centigrade.

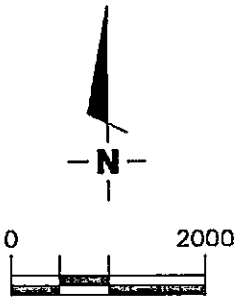
* = Unidentified hydrocarbons greater than C9.
** = Unidentified hydrocarbons greater ranging from C11 to C15.
*** = Discrete peaks - unidentified.
**** = Unidentified hydrocarbons ranging from C11 to C24.

Sample Identification:

B2-10
- 10 — Sample Depth in Feet
- B2 — Soil Boring

CSS 1A-1D
- 1A-1D — Sample Numbers
- CSS — Composite Soil Sample



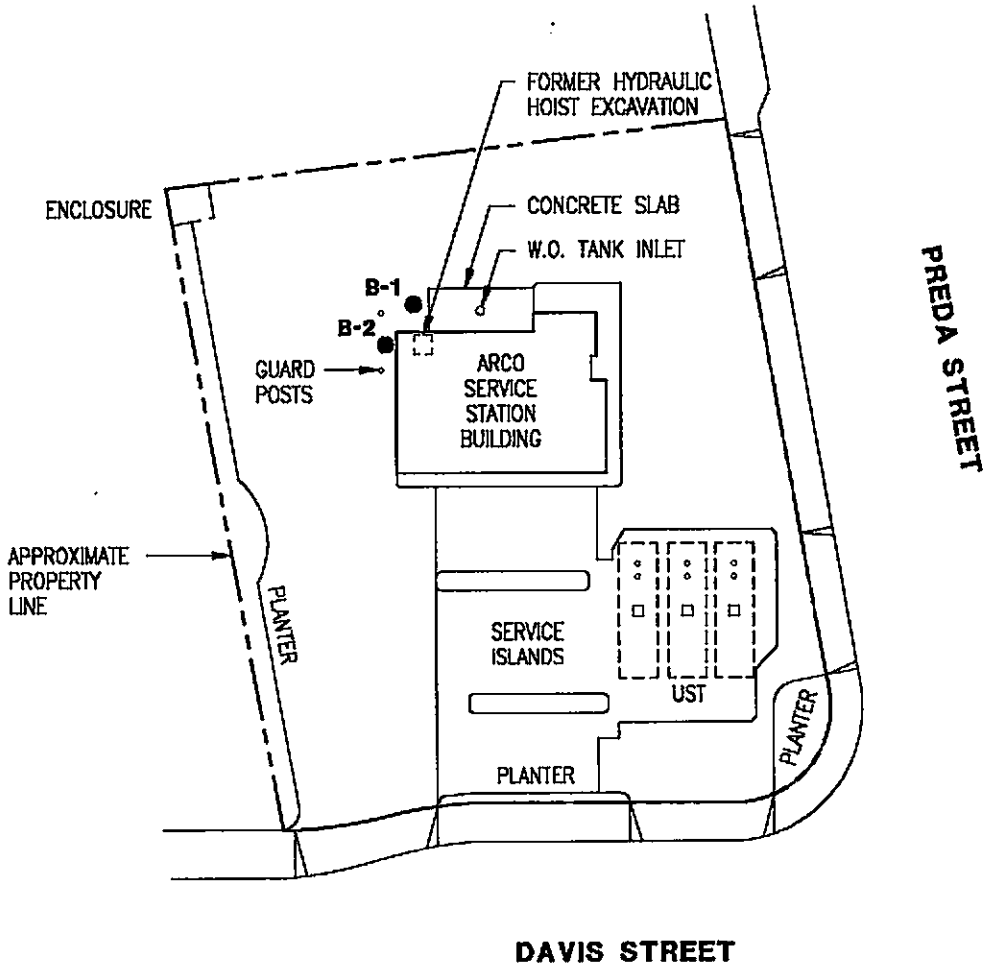


GeoStrategies Inc.

VICINITY MAP
ARCO Service Station #2111
1156 Davis Street
San Leandro, California

PLATE 1

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7940		1/94	



EXPLANATION

● Soil boring

N

0 40

Scale in Feet

Base Map: ARCO Petroleum Products Company conversion to MP & G tune-up dwg. dated 6/6/85 sht. 1 of 1

GeoStrategies Inc.

SITE PLAN
ARCO Service Station #2111
1156 Davis Street
San Leandro, California

PLATE 2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7940		3/94	

APPENDIX A

FIELD METHODS

ARCO Station 2111
Initial Subsurface Investigation
7940.03

April 13, 1994

FIELD METHODS

Site Safety Plan

The Site Safety Plan describes the safety requirements for the evaluation of hydraulic oil in the soil beneath the site. The Site Safety Plan is applicable to personnel of GSI and its subcontractors. GSI personnel and subcontractors of GSI scheduled to perform the work at the site were briefed on the contents of the Site Safety Plan before work began. The GSI Staff Geologist was Site Safety Officer for the project.

Soil Borings

Prior to the drilling of borings, permits were obtained from the appropriate regulatory agency. Copies of the permits are included in Appendix B of this report. Prior to drilling, Underground Services Alert was notified of our intent to drill, and known underground utility lines and structures were marked. The borings were drilled by a truck-mounted drill rig equipped with 8-inch-diameter, hollow-stem augers. The augers were steam-cleaned prior to drilling each boring to minimize the possibility of cross-contamination. The borings were drilled to first-encountered groundwater.

Drill Cuttings

Drill cuttings subjectively evaluated for hydrocarbons levels greater than 100 parts per million (ppm) were separated from those subjectively evaluated for hydrocarbons at levels less than 100 ppm. Evaluation was based either on subjective evidence of soil discoloration, or on measurements made using a field calibrated OVA. Readings were taken by placing a soil sample into a ziplock-type plastic bag and allowing volatilization to occur. The intake probe of the OVA was then inserted into the headspace created in the plastic bag immediately after opening it. The drill cuttings from the borings were placed on and covered with visquene. The cuttings were removed to a Sanitary Landfill by an ARCO-contracted hazardous waste hauler.

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Soil Sampling in Borings

Soil samples were collected at no greater than 5-foot intervals from the ground surface to the total depth of the borings. The soil samples were collected by advancing the boring to a point immediately above the sampling depth. Sampling was performed using a California-modified, split-spoon sampler, containing brass sleeves were laboratory-cleaned, steam-cleaned, or washed thoroughly with Alconox® and water, prior to each use. The sampler was driven with a standard 140-pound hammer repeatedly dropped 30 inches. The number of blows to drive the sampler each successive six inches was counted and recorded to evaluate the relative consistency of the soil.

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

One of the samples in brass sleeves not selected for laboratory analysis at each sampling interval was tested in the field using an OVM or OVA that was field calibrated at the beginning of each day it was used. The testing was performed by inserting the intake probe of the OVM or OVA into the headspace created in the plastic bag containing the soil sample described in the Drill Cuttings section above. The OVM or OVA readings are presented in the Logs of Borings in Appendix B included in this report.

Logging of Borings

A geologist was present to log the soil cuttings and samples using the USCS and ASTM D 2488-85. Samples not selected for laboratory analysis, and the soil in the sampler shoe, were extruded in the field for inspection. Logs include texture, color, moisture, plasticity, consistency, blow counts, and any other characteristics noted. Logs also include subjective evidence for the presence of hydrocarbons, such as soil staining, noticeable or obvious hydrocarbon odor, and OVM or OVA readings.

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Sampling Labeling and Handling

Sampling containers were labeled in the field with the job number, sample location and depth, and date, and promptly placed in iced storage for transport to the laboratory. A Chain-of-Custody Record was initiated by the field geologist and updated throughout handling of the samples, and accompanies the samples to a laboratory certified by the State of California for the analyses requested. Samples were transported to the laboratory promptly to help ensure that recommended sample holding times are not exceeded. The samples were properly disposed of after their useful life has expired.

APPENDIX B

DRILLING PERMIT

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE ♦ PLEASANTON, CALIFORNIA 94566 ♦ (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

CATION OF PROJECT 1156 Davis Street
San Leandro, CA
(Arco Station 7111)

IENT
me Arco Products Company
dress P.O. Box 5811 Phone (415) 571-2449
ty San Mateo, CA Zip 94402

PLICANT
me Geo Strategies Inc.
Suite G
dress 6747 Sierra Ct Phone (510) 551-8777
ty Dublin, CA Zip 94568

PE OF PROJECT
ll Construction — Geotechnical Investigation
Cathodic Protection ___ — General ___
Water Supply ___ — Contamination X
Monitoring ___ — Well Destruction ___

OPOSED WATER SUPPLY WELL USE
mestic ___ Industrial ___ Other ___
nicipal ___ Irrigation ___

ILLING METHOD:
d Rotary ___ Air Rotary ___ Auger X
ble ___ Other ___

ILLER'S LICENSE NO. C-57 484288

LL PROJECTS
Drill Hole Diameter ___ in. Maximum
Casing Diameter ___ in. Depth ___ ft.
Surface Seal Depth ___ ft. Number ___

OTECHNICAL PROJECTS
Number of Borings 2 Maximum
Hole Diameter 8 in. Depth 40 ft.

TIMATED STARTING DATE 3/4/94
TIMATED COMPLETION DATE 3/4/94

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

PLICANT'S GNATURE Wayne D. Caudle Date 3/2/94

FOR OFFICE USE

PERMIT NUMBER 94130
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

A. GENERAL
(1.) A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
(3.) Permit is void if project not begun within 90 days of approval date.

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

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

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

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 2 Mar 94
Wyman Hong

121989

APPENDIX C

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

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

LL - Liquid Limit (%)

PI - Plastic Index (%)

PID - Volatile Vapors in ppm

MA - Particle Size Analysis

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

5 GY 5/2 - GSA Rock Color Chart

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

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

GeoStrategies Inc.

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

GeoStrategies, Inc.

Log of Boring B-1

PROJECT: *ARCO PRODUCTS COMPANY*	LOCATION: *1156 Davis Street, San Leandro, Ca.*
GSI PROJECT NO.: *7940.03*	SURFACE ELEVATION:
DATE STARTED: *3/4/94*	WL (ft. bgs): *20* DATE: *3/4/94* TIME: *10:38*
DATE FINISHED: *3/4/94*	WL (ft. bgs): *18* DATE: *3/4/94* TIME: *10:45*
DRILLING METHOD: *8 in. Hollow Stem Auger*	TOTAL DEPTH: *20 Feet*
DRILLING COMPANY: *Exploration GeoServices Inc.*	GEOLOGIST: *RDC*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SOIL CLASS	GEOLOGIC DESCRIPTION	REMARKS
				GW-GM	ASPHALT	Boring backfilled 19 to 20 feet with bentonite, surface to 19 feet with 10 sack cement/sand slurry with 5% bentonite.
				ML	GRAVEL WITH SILT AND SAND (GW-GM) – brown (10YR 5/3), damp, 60% angular gravel, 30% medium grained sand, 10% silt.	
5	0	6	B1-4.5		SILT (ML) – very dark gray (10YR 3/1), damp, low plasticity, medium stiff, 55% silt, 40% clay, 5% fine grained sand.	
10	0.1	22	B1-10		SILT (ML) – very dark grayish brown (10YR 3/2), damp, low plasticity, very stiff, 55% silt, 45% clay.	
15	0	32	B1-15		AS ABOVE	
20	3.1	21	B1-20		SILT (ML) – brown (10YR 5/3) with green mottling, very moist to wet, low plasticity, very stiff, 55% silt, 25% clay, 20% fine sand.	
25					Bottom of boring at 20 feet. 3/4/94	
30					(* = converted to equivalent standard penetration blows/ft.)	
35						

JOB NUMBER: *7940.03*

GeoStrategies, Inc.

Log of Boring B-2

PROJECT: *ARCO PRODUCTS COMPANY*	LOCATION: *1156 Davis Street, San Leandro, Ca.*
GSI PROJECT NO.: *7940.03*	SURFACE ELEVATION:
DATE STARTED: *3/4/94*	WL (ft. bgs): *20* DATE: *3/4/94* TIME: *11:30*
DATE FINISHED: *3/4/94*	WL (ft. bgs): *18.5* DATE: *3/4/94* TIME: *11:45*
DRILLING METHOD: *8 in. Hollow Stem Auger*	TOTAL DEPTH: *20 Feet*
DRILLING COMPANY: *Exploration GeoServices Inc.*	GEOLOGIST: *RDC*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	REMARKS
						GW-GM	ASPHALT	
						ML	GRAVEL WITH SILT AND SAND (GW-GM) – brown (10YR 5/3), damp, 60% angular gravel, 30% medium sand, 10% silt.	Boring backfilled 19 to 20 feet with bentonite, surface to 19 feet with 10 sack cement/sand slurry with 5% bentonite.
5	0	10	B2-5				SILT (ML) – very dark gray (10YR 3/1), damp, low plasticity, stiff, 65% silt, 25% clay, 10% fine sand.	
10	0	24	B2-10				SILT (ML) – very dark grayish brown (10YR 3/2), damp, low plasticity, very stiff, 80% silt, 5% clay, 5% fine sand.	
15	0.7	40	B2-15				SILT (ML) – very dark gray (10YR 3/2), moist, low plasticity, hard, 65% silt, 25% clay, 10% fine sand.	
20	52 45	13	B2-20				SILT (ML) –dark brown (10YR 4/3), low plasticity, stiff, 55% silt, 40% clay, 5% fine sand.	
							Bottom of boring at 20 feet. 3/4/94	
25							(* = converted to equivalent standard penetration blows/ft.)	
30								
35								

JOB NUMBER: *7940.03*

APPENDIX D

WASTE MANIFEST FORM

Dillard Environmental Services

A Division of Dillard Trucking, Inc.

P.O. Box 218 • Byron, CA 94514
Phone (510) 634-6850 • Fax (510) 634-0569
EPA #CAD981692809 • D.O.H.S. #1715 • CA LIC. #624665-A HAZ

April 12, 1994

Geo Strategies, Inc.
6747 Sierra Court, Suite G
Dublin, CA 94568

Attn: Mr. Robert Campbell

Fax: (510) 551-7888

Re: **Arco Station #2111 - 1156 Davis St., San Leandro**
Drill Cuttings - 1 cubic yard

Dear Robert:

Please be advised that the drill cuttings from the above referenced site were transported to BFI Landfill, Livermore, CA on March 18, 1994.

I trust that you will find everything in order. If you have any questions, please do not hesitate to contact the undersigned.

Respectfully yours,

DILLARD ENVIRONMENTAL SERVICES
A Division of Dillard Trucking, Inc.

Donna L. Pedersen
Project Manager

DLP/st

cc: Arco Products - Mike Whelan

APPENDIX E

LABORATORY ANALYTICAL REPORTS FOR SOIL SAMPLES AND CHAIN-OF-CUSTODY RECORDS

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Joel Coffman

RECEIVED MAR 1 8 1994

Project: Arco 2111-94-2A

Enclosed are the results from 8 soil samples received at Sequoia Analytical on March 8,1994. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
4C56501	Soil, B1-4.5	3/4/94	EPA 3550/8015 Mod.
4C56502	Soil, B1-10	3/4/94	EPA 3550/8015 Mod.
4C56503	Soil, B1-15	3/4/94	EPA 3550/8015 Mod.
4C56504	Soil, B1-20	3/4/94	EPA 3550/8015 Mod.
4C56505	Soil, B2-5	3/4/94	EPA 3550/8015 Mod.
4C56506	Soil, B2-10	3/4/94	EPA 3550/8015 Mod.
4C56507	Soil, B2-15	3/4/94	EPA 3550/8015 Mod.
4C56508	Soil, B2-20	3/4/94	EPA 3550/8015 Mod.

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Gettler Ryan/Geostrategies	Client Project ID:	Arco 2111-94-2A	Sampled:	Mar 4, 1994
6747 Sierra Court, Ste J	Sample Matrix:	Soil	Received:	Mar 8, 1994
Dublin, CA 94568	Analysis Method:	EPA 3550/8015 Mod.	Reported:	Mar 14, 1994
Attention: Joel Coffman	First Sample #:	4C56501		

FUEL FINGERPRINT AS HYDRAULIC OIL

Analyte	Reporting Limit mg/kg	Sample I.D. 4C56501 B1-4.5	Sample I.D. 4C56502 B1-10	Sample I.D. 4C56503 B1-15	Sample I.D. 4C56504 B1-20	Sample I.D. 4C56505 B2-5	Sample I.D. 4C56506 B2-10
Extractable Hydrocarbons	1.0	3.0	N.D.	N.D.	1.7	1.7	N.D.
Chromatogram Pattern:		Unidentified HC > C9	--	--	Unidentified HC C11-C15	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Extracted:	3/11/94	3/10/94	3/10/94	3/10/94	3/11/94	3/10/94
Date Analyzed:	3/11/94	3/10/94	3/10/94	3/10/94	3/11/94	3/10/94
Instrument Identification:	GCHP-4	GCHP-4	GCHP-4	GCHP-4	GCHP-4	GCHP-4

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

Sequoia Analytical

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Gettler Ryan/Geostrategies	Client Project ID:	Arco 2111-94-2A	Sampled:	Mar 4, 1994
6747 Sierra Court, Ste J	Sample Matrix:	Soil	Received:	Mar 8, 1994
Dublin, CA 94568	Analysis Method:	EPA 3550/8015 Mod.	Reported:	Mar 14, 1994
Attention: Joel Coffman	First Sample #:	4C56507		

FUEL FINGERPRINT AS HYDRAULIC OIL

Analyte	Reporting Limit mg/kg	Sample I.D. 4C56507 B2-15	Sample I.D. 4C56508 B2-20	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.
Extractable Hydrocarbons	1.0	2.0	11				
Chromatogram Pattern:		Discrete Peaks	Unidentified C11-C24				

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0
Date Extracted:	3/10/94	3/10/94
Date Analyzed:	3/11/94	3/10/94
Instrument Identification:	GCHP-4	GCHP-4

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

Sequoia Analytical

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Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Joel Coffman

Client Project ID: Arco 2111-94-2A
Matrix: Solid
QC Sample Group: 4C56501 - 07

Reported: Mar 14, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Diesel	Diesel
Method:	EPA 8015 Mod.	EPA 8015 Mod.
Analyst:	D. Tran	D. Tran
MS/MSD Batch#:	4C68201	4C25401
Date Prepared:	3/11/94	3/4/94
Date Analyzed:	3/11/94	3/6/94
Instrument I.D.#:	GCHP-5	GCHP-5
Conc. Spiked:	15 mg/kg	15 mg/kg
Matrix Spike % Recovery:	66	*
Matrix Spike Duplicate % Recovery:	64	*
Relative % Difference:	3.1	*
LCS Batch#:	BLK031194	BLK030494
Date Prepared:	3/11/94	3/4/94
Date Analyzed:	3/11/94	3/6/94
Instrument I.D.#:	GCHP-5	GCHP-5
LCS % Recovery:	67	57
% Recovery Control Limits:	38-122	38-122

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.
* Coelution Confirmed

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

ARCO Products Company ◆ Division of AtlanticRichfieldCompany

Task Order No. 2111-94-2A

Chain of Custody

ARCO Facility no. 2111	City (Facility) San Leandro	Project manager (Consultant) Joel Coffman	Laboratory name Sequoia
ARCO engineer Michael Whelan	Telephone no. (ARCO) (415) 571-2449	Telephone no. (Consultant) (510) 551-8772	Fax no. (Consultant) (510) 551-7888	Contract number 07-073
Consultant name GeoStrategies Inc.	Address (Consultant) 6747 Sierra Ct., Suite G, Dublin, CA 94568		Method of shipment

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Water	Other	Preservation: Ice	Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	HOLD	TPH as Diesel (8015 Modified)
B1-4.5		1	X			X		3-4-94											01		X	
B1-10		1	X			X													02			X
B1-15		1	X			X													03			X
B1-20		1	X			X													04			X
B2-5		1	X			X													05		X	
B2-10		1	X			X													06			X
B2-15		1	X			X													07			X
B2-20		1	X			X													08			X

Remarks

Lab number 9403565

Turnaround time

- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☒

Condition of sample		Temperature received:	
Relinquished by sampler	Date 3-7-94 Time 1400	Received by O'Phillips	3-7-94 1400
Relinquished by O'Phillips	Date 3-8-94 Time 1235	Received by	
Relinquished by	Date Time	Received by laboratory	Date 3-8-94 Time 1235

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

APPC-3292 (2-91)

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Joel Coffman

Project: 2111-94-2A, Arco San Leandro

Enclosed are the results from 1 soil sample received at Sequoia Analytical on March 8,1994. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
4C46901	Soil, (CSS-1A, 1B,1C,1D) 1A	3/4/94	Ignitability Reactivity Corrosivity EPA 5030/8015 Mod./8020 EPA 5030/8015 Mod./8020 as TCLP Extraction Lead, STLC

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Gettler Ryan/Geostrategies	Client Project ID:	2111-94-2A, Arco San Leandro	Sampled:	Mar 4, 1994
6747 Sierra Court, Ste J	Sample Matrix:	Soil	Received:	Mar 8, 1994
Dublin, CA 94568	Analysis Method:	EPA 5030/8015 Mod./8020	Reported:	Mar 15, 1994
Attention: Joel Coffman	First Sample #:	4C46901		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 4C46901 CSS-1A, 1B 1C,1D)1A	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.
Purgeable Hydrocarbons	1.0	N.D.					
Benzene	0.0050	N.D.					
Toluene	0.0050	N.D.					
Ethyl Benzene	0.0050	N.D.					
Total Xylenes	0.0050	N.D.					
Chromatogram Pattern:		--					

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Analyzed:	3/13/94
Instrument Identification:	GCHP-7
Surrogate Recovery, %: (QC Limits = 70-130%)	89

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Gettler Ryan/Geostrategies	Client Project ID:	2111-94-2A, Arco San Leandro	Sampled:	Mar 4, 1994
6747 Sierra Court, Ste J	Sample Matrix:	Soil, TCLP Extraction	Received:	Mar 8, 1994
Dublin, CA 94568	Analysis Method:	EPA 5030/8015 Mod./8020	Reported:	Mar 15, 1994
Attention: Joel Coffman	First Sample #:	4C46901		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION AS TCLP EXTRACTION

Analyte	Reporting Limit µg/L	Sample I.D. 4C46901 CSS-1A, 1B 1C,1D)1A	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.
Purgeable Hydrocarbons	50	N.D.					
Benzene	0.50	N.D.					
Toluene	0.50	N.D.					
Ethyl Benzene	0.50	N.D.					
Total Xylenes	0.50	N.D.					
Chromatogram Pattern:		--					

Quality Control Data

Report Limit Multiplication Factor:	20
Date Analyzed:	3/11/94
Instrument Identification:	GCHP-18
Surrogate Recovery, %: (QC Limits = 70-130%)	115

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Gettler Ryan/Geostrategies	Client Project ID:	2111-94-2A, Arco San Leandro	Sampled: Mar 4, 1994
6747 Sierra Court, Ste J	Sample Descript:	Soil, (CSS-1A, 1B,1C,1D) 1A	Received: Mar 8, 1994
Dublin, CA 94568			Analyzed: see below
Attention: Joel Coffman	Lab Number:	4C46901	Reported: Mar 15, 1994

LABORATORY ANALYSIS

Analyte	Date Analyzed	Detection Limit	Sample Result
Lead, STLC, mg/L	3/13/94	0.10	0.18

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

Sequoia Analytical

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Gettler Ryan/Geostrategies	Client Project ID:	2111-94-2A, Arco San Leandro	Sampled:	Mar 4, 1994
6747 Sierra Court, Ste J	Sample Descript:	Soil, (CSS-1A, 1B,1C,1D) 1A	Received:	Mar 8, 1994
Dublin, CA 94568			Analyzed:	see below
Attention: Joel Coffman	Lab Number:	4C46901	Reported:	Mar 15, 1994

CORROSIVITY, IGNITABILITY, AND REACTIVITY

Analyte	Detection Limit	Sample Results
Corrosivity:		
pH	N.A.	7.0
Ignitability:		
Flashpoint (Pensky-Martens), °C	N.A.	> 100 °C
Reactivity:		
Sulfide, mg/kg	13	N.D.
Cyanide, mg/kg	0.50	N.D.
Reaction with water	N.A.	Negative

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

Sequoia Analytical

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Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Joel Coffman

Client Project ID: 2111-94-2A, Arco San Leandro
Matrix: Solid
QC Sample Group: 4C46901
Reported: Mar 15, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	T. Costello	T. Costello	T. Costello	T. Costello
MS/MSD Batch#:	G4C52207	G4C52207	G4C52207	G4C52207
Date Prepared:	3/13/94	3/13/94	3/13/94	3/13/94
Date Analyzed:	3/13/94	3/13/94	3/13/94	3/13/94
Instrument I.D.#:	GCHP-7	GCHP-7	GCHP-7	GCHP-7
Conc. Spiked:	0.20 mg/kg	0.20 mg/kg	0.20 mg/kg	0.60 mg/kg
Matrix Spike % Recovery:	85	85	85	82
Matrix Spike Duplicate % Recovery:	85	90	85	85
Relative % Difference:	0.0	5.6	0.0	3.5
LCS Batch#:				
Date Prepared:				
Date Analyzed:				
Instrument I.D.#:				
LCS % Recovery:				
% Recovery Control Limits:	55-145	47-149	47-155	56-140

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

Sequoia Analytical

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Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Joel Coffman

Client Project ID: 2111-94-2A, Arco San Leandro
Matrix: Solid
QC Sample Group: 4C46901

Reported: Mar 15, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Beryllium	Cadmium	Chromium	Nickel
Method:	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7
Analyst:	S. O'Donnell	S. O'Donnell	S. O'Donnell	S. O'Donnell
MS/MSD Batch#:	4C72101	4C72101	4C72101	4C72101
Date Prepared:	3/11/94	3/11/94	3/11/94	3/11/94
Date Analyzed:	3/13/94	3/13/94	3/13/94	3/13/94
Instrument I.D.#:	MTJA-2	MTJA-2	MTJA-2	MTJA-2
Conc. Spiked:	1.0 mg/L	1.0 mg/L	1.0 mg/L	1.0 mg/L
Matrix Spike % Recovery:	101	102	116	282
Matrix Spike Duplicate % Recovery:	100	101	116	284
Relative % Difference:	1.0	1.0	1.0	1.0
LCS Batch#:	CCV020894	CCV020894	CCV020894	CCV020894
Date Prepared:	2/8/94	2/8/94	2/8/94	2/8/94
Date Analyzed:	3/12/94	3/12/94	3/12/94	3/12/94
Instrument I.D.#:	MTJA-2	MTJA-2	MTJA-2	MTJA-2
LCS % Recovery:	102	101	104	101
% Recovery Control Limits:	75-125	75-125	75-125	75-125

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Joel Coffman

Client Project ID: 2111-94-2A, Arco San Leandro
Matrix: Solid

QC Sample Group: 4C46901

Reported: Mar 15, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	pH	Reactive Cyanide	Reactive Sulfide	Flashpoint
Method:	EPA 9045	SW 846	SW 846	EPA 1010
Analyst:	Y.Arteaga	J.Heider	K.Newberry	K.Newberry
Date Analyzed:	3/9/94	3/11/94	3/11/94	3/9/94
Sample #:	4C24301	4C36701	4C36701	4C36701
Sample Concentration:	7.2	N.D.	N.D.	> 100 °C
Sample Duplicate Concentration:	7.9	N.D.	N.D.	> 100 °C
% RPD:	9.3	0.0	0.0	0.0
Control Limits:	0-30	0-30	0-30	0-30

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

ARCO Products Company
Division of AtlanticRichfieldCompany

Chain of Custody

Task Order No. 2111-94-2A

ARCO Facility no. 2111	City (Facility) San Leandro	Project manager (Consultant) Joel Coffman	Laboratory name Sequoia
ARCO engineer Michael Whelan	Telephone no. (ARCO) (415) 571-2449	Telephone no. (Consultant) (510) 551-8777	Fax no. (Consultant) (510) 551-7888
Consultant name Geostrategies Inc.	Address (Consultant) 6747 Sierra Ct., Ste G, Dublin, CA 94568		Contract number
			Method of shipment

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	TEX & BTEX	STLC Pb
CS-1A-1D		4	X			X		3-4-94			X										X	XX

Special detection Limit/reporting 0.01

9403469

Special QA/QC

Remarks: Please Composite the 4 Samples into 1 before analysis.

Lab number

Turnaround time

- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☒
- Standard 10 Business Days ☐

Condition of sample:		Temperature received:	
Relinquished by sampler: Robert S. Campbell	Date 3-7-94 Time 1400	Received by: D Hullig's	Date 3-7-94 Time 1400
Relinquished by: D Hullig's	Date 3-8-94 Time 1235	Received by:	
Relinquished by:	Date Time	Received by laboratory:	Date 3-8-94 Time 1235

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant