



General Services Agency

Darlene A. Smith, Director

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June 21, 1994

Ms. Eva Chu
Hazardous Materials Specialist
Department of Environmental Health
80 Swan Way, Room 350
Oakland, California 94621

**SUBJECT: SITE ASSESSMENT REPORT FOR KNOWN DIESEL IMPACTED SOIL
ADJACENT TO FORMER ABOVE GROUND STORAGE TANK AGT-5,
STAPLES RANCH PROPERTY, EL CHARRO ROAD, PLEASANTON**

Dear Ms. Chu:

Please review the enclosed copy of the signed Site Assessment Report for the known diesel impacted soil adjacent to the former above ground storage tank AGT-5, Staples Ranch, Pleasanton, California. This report was prepared by Environmental Science & Engineering, Inc. (ES&E). If you have any questions concerning this report, please call either me at Extension 3-6277 or Bart Miller, ES&E, at (510) 685-4053.

I am currently in the process of reviewing/evaluating a couple of corrective action alternatives for this impacted soil. I will shortly have ES&E prepare the Corrective Action Plan for your review and comments.

Again, thank you for your continued co-operation and quick turnaround of the workplans, etc. for this exciting project.

Sincerely,

ENGINEERING & ENVIRONMENTAL
MANAGEMENT DEPARTMENT

Andrew B. Garcia, REA

ABG:abg:HZM00583
93-7075 Bldg. #1262

enclosure

cc: Mr. Bart Miller, ES&E

ALCO
HAZMAT

94 JUN 23 PM 3:33

JUN 21 1994

SITE ASSESSMENT REPORT
ALAMEDA COUNTY
GENERAL SERVICES AGENCY
ENGINEERING AND ENVIRONMENTAL MANAGEMENT
DEPARTMENT
STAPLES RANCH PROPERTY, EL CHARRO ROAD
PLEASANTON, CALIFORNIA

(ESE PROJECT #6-94-5228)

PRESENTED TO:

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY
DIVISION OF HAZARDOUS MATERIALS
DEPARTMENT OF ENVIRONMENTAL HEALTH
80 SWAN WAY, ROOM 350
OAKLAND, CALIFORNIA 94621

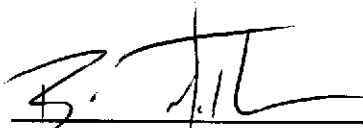
PREPARED BY:

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
4090 NELSON AVENUE, SUITE J
CONCORD, CALIFORNIA 94520
(510) 685-4053

JUNE 15, 1994

This site assessment report has been prepared by Environmental Science and Engineering, Inc. (ESE) for the exclusive use of the Alameda County General Services Agency as it pertains to their site known as the Staples Ranch Property located at El Charro Road, Pleasanton, California. This report was prepared with that degree of care and skill ordinarily exercised by other geologists and engineers practicing in this field. No other warranty, either express or implied, is made as to professional advice in this workplan.


REPORT PREPARED BY:



Bart S. Miller
Project Geologist

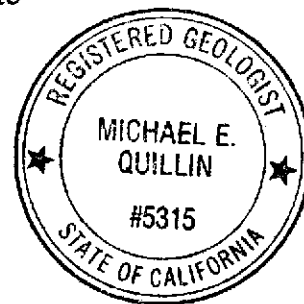
JUNE 15, 1994
Date

UNDER THE PROFESSIONAL SUPERVISION OF:



Michael E. Quillin
Senior Hydrogeologist
Registered California Geologist No. 5315

JUNE 15, 1994
Date



May 31, 1994

ESE Project No. 6-94-5228

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**SITE ASSESSMENT REPORT
STAPLES RANCH PROPERTY, EL CHARRO ROAD
PLEASANTON, CALIFORNIA**

1.0 INTRODUCTION

This report presents the results of a site assessment conducted by Environmental Science & Engineering, Inc. (ESE) for the Alameda County General Services Agency (GSA) at the Staples Ranch Property ("site") on April 28 and 29, 1994 (Figure 1 - Location Map). ESE submitted a workplan dated April 7, 1994 to the GSA and the Alameda County Health Care Services Agency (HCSA) describing the tasks to be performed during this site assessment (ESE, 1994).

The primary objectives of the site assessment were to determine if petroleum hydrocarbons occur in the formational soil adjacent to a former aboveground storage tank (AGT) identified as AGT-5 (Figure 2 - Site Map) and, if so, to identify potential product migration routes in the sedimentary stratigraphy of the unsaturated zone and to estimate the volume of soil potentially impacted with petroleum hydrocarbons. Additional objectives of the site assessment were to determine the local approximate depth to ground water and identify whether petroleum hydrocarbons have impacted the local ground water.

Site history, regional geology and regional hydrology, methods for sampling and testing, and results are described in the following sections. In addition, this report also discusses the findings, presents conclusions, and provides recommendations for future site activities.

2.0 SITE HISTORY

The County of Alameda owned and operated two AGTs (AGT-4 and AGT-5) of 250-gallon-capacity. One UST (UST-2) of 500-gallon capacity was also identified at the site. The AGTs and the UST were of single-wall, carbon steel construction and their installation dates are reportedly unknown. Heating oil was reportedly stored in AGT-4 and diesel fuel was reportedly stored in AGT-5 and UST-2.

A Phase I Preliminary Site Assessment was performed by Harza Kaldveer Consulting Engineers (Harza Kaldveer) at the site during 1993 (Harza Kaldveer, 1993). Soil samples collected from one soil boring, EB-5, located approximately five feet west of AGT-5 were reported to contain concentrations of total petroleum hydrocarbons as diesel fuel (TPH-D), ranging from 1.5 to 1,900 milligrams per kilogram (mg/Kg), to a depth of 40-feet below grade. The sediments in the unsaturated zone at EB-5 were reported to be comprised of a sequence of clays, silts, and sands. Ground water was reported to occur at a depth of 35-feet below grade. No other soil borings were drilled in the vicinity of AGT-5. Soil samples collected from borings drilled at the other AGT and UST locations were reported not to contain detectable concentrations of TPH-D.

Under permit from the HCSA and the Alameda County Fire Department, ESE directed the removal and disposal of the AGTs and UST on April 26, 1994. The AGTs and UST were noted to be in good condition based on visual observations made during removal. An AGT/UST closure report is presently being prepared by ESE for submittal to the GSA and the HCSA.

3.0 REGIONAL GEOLOGY AND REGIONAL HYDROLOGY

3.1 REGIONAL GEOLOGY

The site is located within the Coast Ranges geomorphic province (Norris and Webb, 1976) at the western boundary of the Livermore Valley depression, located midway between the southern part of San Francisco Bay and the San Joaquin Valley. The Livermore Valley is approximately 13 miles long in an east-west direction and approximately 4 miles wide and is completely surrounded by hills of the Diablo Range.

The site is situated within an alluviated lowland portion of the Livermore Valley referred to as the Amador Sub-basin (State of California Department of Water Resources, 1974). Unconsolidated alluvial sediments, also referred to as valley fill materials, in this basin are reported to be greater than 500 feet in thickness and are underlain by semi-consolidated to consolidated sedimentary rocks of Tertiary age.

The Livermore Valley fill materials are comprised of alluvial sediments of Quaternary age (State of California Department of Water Resources, 1974). Alluvium of Pleistocene to Holocene age has also been deposited in the gently sloping central area of the Livermore Valley and adjacent to active streams in the ravines and canyons tributary to Livermore Valley. The alluvium consists of unconsolidated deposits of interbedded clay, silt, fine sand, and lenses of clayey gravel. These sediments overlie the finer-grained sedimentary rocks of the Livermore Formation.

The Livermore Valley is bisected by six major faults or fault groups and at least five other faults of a more local nature (State of California Department of Water Resources, 1974). The major faults are the Carnegie, Tesla, Mocho, Livermore, Pleasanton, and Calaveras Faults. The minor faults include the Parks, Verona, and several unnamed faults. The site is located on a downdropped block of land bounded by the Parks Fault to the north, the Verona Fault to the south, the Pleasanton Fault to the west, and the Livermore Fault to the east.

3.2 REGIONAL HYDROLOGY

The water-bearing sediment series in the Livermore Valley are multi-layered systems having an unconfined upper aquifer over a sequence of leaky or semi-confined aquifers (State of California Department of Water Resources, 1974). The Livermore Valley Ground Water Basin has been divided into approximately 12 hydrologic sub-basins on the basis of fault traces and hydrologic discontinuities. The northern boundary of the Amador sub-basin is a permeability barrier formed by the interfingering of alluvial deposits and the southern boundary of the sub-basin is formed partly by the contact of the water-bearing Livermore Formation with nonwater-bearing rocks and partly by the drainage divide between Livermore Valley and Sunol Valley.

Regional ground water flow maps indicate that water in the uppermost aquifer beneath the site flow toward the southwest (Alameda County Flood Control and Water Conservation District, 1990; 1991). Ground water in the sub-basin has been analyzed by the State of California Department of Water Resources (1974) and is classified as sodium carbonate water of irrigation Class II quality.

The northern portion of the site is crossed by the east-southeast flowing Arroyo Las Positas and the southern portion of the site is crossed by the east-southeast flowing Arroyo Michon. Both streams are considered to be major drainages for the Livermore Valley and are located in modified earth channels which converge just west of the site.

4.0 FIELD METHODOLOGY

Prior to beginning fieldwork, ESE obtained all necessary permits for drilling soil borings at the site. In addition, ESE reviewed the site specific Health and Safety Plan (HASP) prepared for this investigation with all onsite personnel, subcontractors, and qualified visitors. ESE performed all fieldwork in accordance with Tri-Regional Water Quality Control Board guidelines (RWQCB, 1990) and other applicable State regulations and standards.

4.1 SOIL BORING AND SOIL SAMPLE COLLECTION

ESE supervised the drilling and sampling of eight soil borings (B1, B2, B3, B4, B5, B6, B7, and B8) at locations surrounding the former AGT-5 (Figure 3 - Soil Boring Locations). Drilling activities were performed by Exploration Geoservices, Inc. (EGI) of San Jose, California using a mobile B-61 hollow-stem auger drill rig. Soil samples were collected continuously in boring B1 and at five-foot intervals, at distinct lithologic contacts, and at zones of obvious petroleum hydrocarbon impact in borings B2 through B8. Soil boring and sampling was conducted in accordance with ESE Standard Operating Procedure (SOP) No. 1 for Soil Borings and Soil Sampling with Hollow-Stem Augers in Unconsolidated Formations (Appendix A - ESE SOP No. 1).

Boring B1 was drilled to a depth of 23.5 feet below grade, borings B2 through B7 were drilled to a depth of 36 feet below grade, and boring B8 was drilled to a depth of 40.5 feet below grade. ~~Water saturation was observed at a depth of approximately 35 feet below~~ grade in all borings. All boring logs are presented as Appendix B.

A total of 15 soil samples were collected and placed in a cooler with ice and transported under chain of custody documentation to McCampbell Analytical, Inc. (a State-certified laboratory) of Pacheco, California. These samples were selected for analysis based on field observations and preliminary screening for relative volatile organic compound (VOC) vapors utilizing a photoionization detector (PID). All soil samples were analyzed for total petroleum hydrocarbons as diesel fuel (TPH-D) using EPA Method 8015 (modified per CA

LUFT) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method 8020.

4.2 HYDROPUNCH® GROUND WATER SAMPLE COLLECTION

One "grab" ground water sample (B2-HP) was collected from soil boring B2 using a Hydropunch® sampler. After boring B2 had been drilled to the depth of 35.5 feet where water saturation was detected, the Hydropunch® sampler was mechanically advanced through the center of the hollow-stem augers into the relatively undisturbed soil beneath the lower extent of the augers. The outer sheath of the Hydropunch® was then retracted approximately 36 inches to expose an unused Teflon® screen. The Teflon® screen was exposed to the subsurface for a period of approximately 45 minutes after which a clean stainless steel bailer was lowered into the screened interval. Ground water collected was decanted into appropriate laboratory supplied glassware, labeled, and placed in a cooler with ice for transport under chain of custody documentation to Coast-to-Coast Analytical Services, Inc. (a State-certified laboratory) of San Jose, California.

The ground water sample was submitted for fuel fingerprint analysis using EPA Method 8260 modified. For quality assurance/quality control (QA/QC) purposes, ESE also submitted a trip blank supplied by the laboratory for BTEX analysis using EPA Method 8260 modified. A trip blank consists of deionized water, and is analyzed to provide a check on ESE sample handling and transport procedures.

4.3 WASTE MANAGEMENT

As a result of this subsurface investigation, various waste materials were generated. These wastes include soil as drill cuttings from the boring activities and rinsates from the decontamination of drilling and sampling equipment. Eight soil stockpiles of approximately one yard volume each were placed on and under plastic adjacent to their respective boring locations. A total of two 55-gallon-capacity, Department of Transportation (DOT)-rated steel drums containing rinsates were also generated by ESE during this fieldwork and left at the site pending proper disposal.

5.0 RESULTS OF INVESTIGATION

5.1 SOIL

Sediments of the unsaturated zone at the site are comprised of an interbedded sequence of gravelly sandy silt, gravelly silty sand, clay, and gravelly sand (Appendix B). The gravelly sand layer was observed to be water saturated and occur in all borings at a depth interval of 35 to 36 feet below grade. The gravelly sand layer described above was observed to be underlain by a moist, moderately plastic clay layer to a depth of 40.5 feet below grade in boring B8.

Sample screening with a PID indicated elevated concentrations of VOCs in soil samples collected from borings B2 and B8 (see Attachment B). Consistent with these observations, five soil samples collected from boring B2 (B2-5', B2-15', B2-20', B2-25', and B2-30') and two soil samples collected from boring B8 (B8-35' and B8-40') were reported to contain TPH-D concentrations ranging from 28 to 3,100 mg/Kg (Table 1 - Analytical Results of Soil Samples Collected From Soil Borings: 04/28/94 - 04/29/94). The TPH-D chromatograms generated during the laboratory analysis for all of the samples containing detectable concentrations of TPH-D were reported to indicate significant proportions of unmodified or weakly modified diesel fuel. Six soil samples (B1-20', B2-5', B2-20', B2-30', B8-35', and B8-40') were also reported to contain detectable concentrations of BTEX constituents (Table 1). Analytical reports with chain of custody documentation are presented as Appendix C.

5.2 GROUND WATER

Ground water was encountered in borings B1 through B8 at a depth of approximately 35 feet below grade. The Hydropunch® ground water sample collected from boring B2 (B2-HP) was reported to contain 1,700 micrograms per liter ($\mu\text{g/L}$) TPH-D and detectable concentrations of BTEX constituents (Table 2 - Analytical Results of Hydropunch® Ground Water Sample: 04/28/94). No free phase product was observed in the sample.

6.0 DISCUSSION AND SUMMARY

NW!
Analytical results of soil samples collected from the borings drilled at the site indicate the presence of diesel impacted soil at the west end of the former AGT extending toward the northeast beyond the location of boring B-8 (Figure 4 - Diesel Plume in Unsaturated Zone). The lateral extent of the diesel plume in the unsaturated zone from grade to a depth of approximately 20 feet is restricted to an estimated diameter of six feet (Figure 5 - North-South Oriented Schematic Cross-Section). From a depth of 20 feet below grade to the occurrence of ground water at approximately 35 feet below grade, the diameter of the diesel plume in the unsaturated zone increases to an estimated diameter of 27 feet (Figure 5). This increase in plume diameter may be attributed to capillary forces in the fine grained clay unit. The vertical extent of diesel impact to the moderately plastic clay unit underlying the water-bearing gravelly sand unit is unknown. However, field observations indicated no discoloration, only a slight petroleum hydrocarbon odor, and lower relative VOC concentrations in samples of the clay collected approximately five feet beneath the gravelly sand unit.

Utilizing the dimensions described above, ESE estimates the volume of impacted soil above the occurrence of water saturation to be approximately 200 cubic yards.

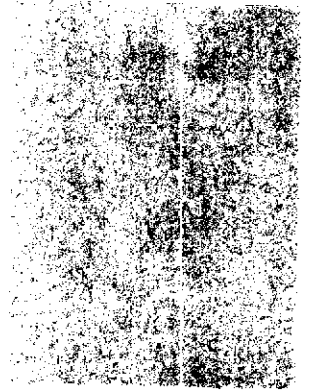
The lateral extent of the diesel plume in ground water is unknown.

In summary, the results indicate that diesel fuel has apparently been released to the surface at the west end of the former AGT location. The diesel fuel has migrated downward through the unsaturated zone and has impacted the upper zone of ground water. The dimensions of the diesel plume in the unsaturated zone are well defined and the volume of impacted soil above ground water is estimated to be 200 cubic yards. The dimensions of the diesel plume in ground water beneath the site are unknown.

7.0 RECOMMENDATIONS

Based on the results of this field investigation at the Staples Ranch site, ESE recommends the following:

1. The GSA proceed to evaluate corrective action alternatives for the impacted soil and prepare a Corrective Action Plan (CAP) for presentation to the HCSA.
2. Upon completion of corrective action activities, the GSA install ground water monitoring wells to define the lateral extent of dissolved diesel in ground water beneath the site.



8.0 REFERENCES

Alameda County Flood Control and Water Conservation District (Zone 7), 1990 - 1991.
Regional Ground Water Flow Maps of the Livermore Valley.

Environmental Science & Engineering, Inc., Workplan for Site Investigation, Alameda
County

General Services Agency, Staples Ranch Property; April 7, 1994.

Harza Kaldveer Consulting Engineers, 1993. Unpublished Phase I Preliminary Site
Assessment Report For Proposed Community Park Site, Pleasanton, California; November
9, 1993.

Norris, R.M., and Webb, R.W., 1976. Geology of California; John Wiley & Sons, Inc., New
York. 365pp.

State of California Department of Water Resources (DWR), 1974. Evaluation of Ground
Water Resources: Livermore and Sunol Valleys; Bull. 118-2, pp.153.

State of California Regional Water Quality Control Board (RWQCB), 1990. Tri-Regional
Board Staff Recommendations for Preliminary Evaluation and Investigation of
Underground Tank Sites; August 10, 1990.

TABLE 1

**ANALYTICAL RESULTS OF SOIL SAMPLES COLLECTED FROM SOIL BORINGS
(04/28/94 - 04/29/94)**

Alameda County General Services Agency
Staples Ranch Property, El Charro Road
Pleasanton, California

Sample No.	Depth (feet)	TPH-D (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/Kg)
B1-20'	20	ND	ND	ND	0.008	ND
B2-5'	5	ND	ND	ND	ND	0.018
B2-10'	10	ND	ND	ND	ND	ND
B2-15'	15	ND	ND	ND	ND	ND
B2-20'	20	ND	0.010	0.032	0.19	0.64
B2-25'	25	28	ND	ND	ND	ND
B2-30'	30	ND	0.008	ND	ND	0.055
B2-35'	35	ND	ND	ND	ND	ND
B3-35'	35	ND	ND	ND	ND	ND
B4-35'	35	ND	ND	ND	ND	ND
B5-35'	35	ND	ND	ND	ND	ND
B6-35'	35	ND	ND	ND	ND	ND
B7-35'	35	ND	ND	ND	ND	ND
B8-35'	35	100	ND	ND	0.037	0.036
B8-40'	40	ND	ND	ND	ND	0.024

Notes:

- TPH-D (Total Petroleum Hydrocarbons as Diesel) analyzed using EPA Method 8015 (modified per CA LUFT);
- Benzene, Toluene, Ethylbenzene, and Total Xylenes analyzed using EPA Method 8020;
- mg/Kg refers to milligrams per Kilogram;
- ND indicates not detected at method detection limit.

TABLE 2

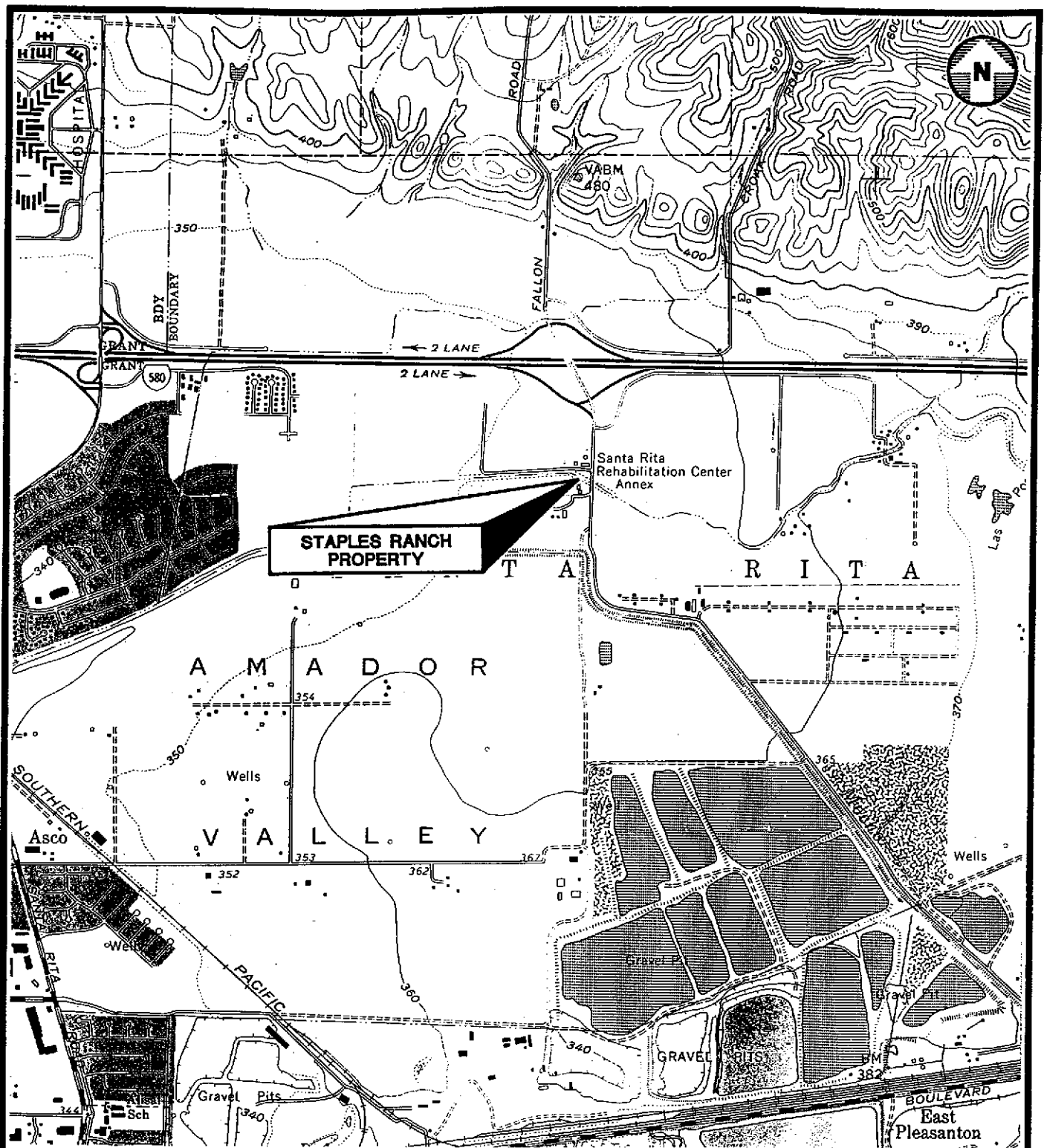
**ANALYTICAL RESULTS OF HYDROPUNCH® GROUND WATER SAMPLE
(04/28/94)**

**Alameda County General Services Agency
Staples Ranch Property, El Charro Road
Pleasanton, California**

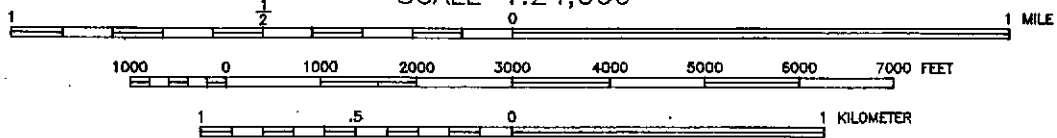
Sample No.	TPH-D (µg/L)	TPH-G (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
B2-HP	1,700	ND	ND	ND	0.5	ND	ND	7.9

Notes:

- TPH-D/TPH-G refers to Total Petroleum Hydrocarbons as Gasoline/Diesel;
- 1,2-DCA refers to 1,2-Dichloroethane
- EDB refers to Ethylene dibromide;
- All analytes analyzed using EPA Method 8260 modified;
- µg/L refers to micrograms per Liter;
- ND indicates not detected at method detection limit.



SCALE 1:24,000



ADAPTED FROM U.S.G.S. LIVERMORE, CALIFORNIA 7.5 MINUTE TOPOGRAPHIC QUADRANGLE MAP, 1961, PHOTOREVISED 1980.



**Environmental
Science &
Engineering, Inc.**

DATE
4/94

REVISED

CAD FILE
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LOCATION MAP

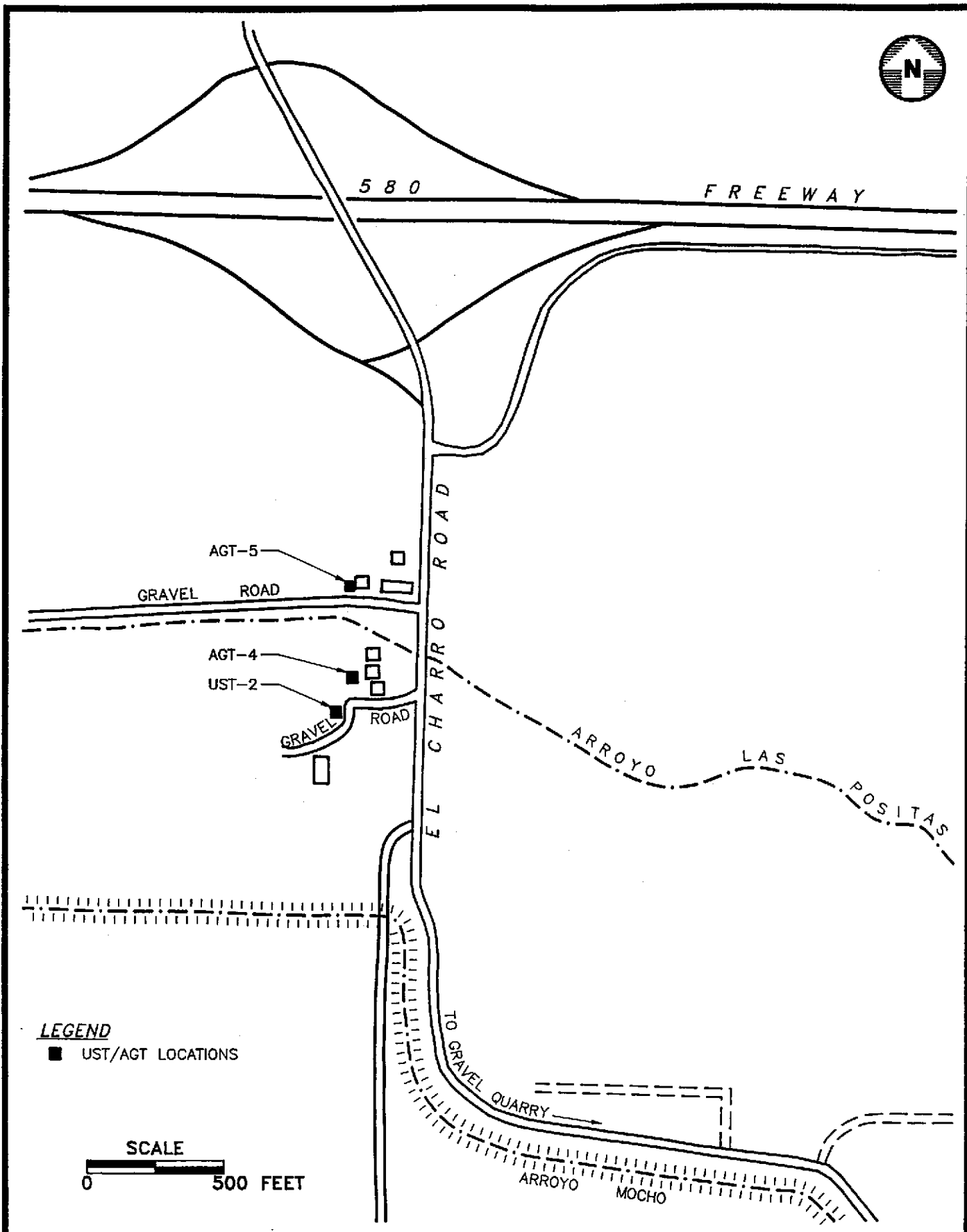
FIGURE NO.

1

4090 NELSON AVENUE, SUITE J
CONCORD, CA 94520

ALAMEDA COUNTY GENERAL SERVICES AGENCY
STAPLES RANCH PROPERTY
EL CHARRO ROAD, PLEASANTON, CALIFORNIA

PROJ. NO.
6-94-5228



**Environmental
Science &
Engineering, Inc.**

4090 NELSON AVENUE, SUITE J
CONCORD, CA 94520

DATE

4/94

REVISED

CAD FILE

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SITE MAP

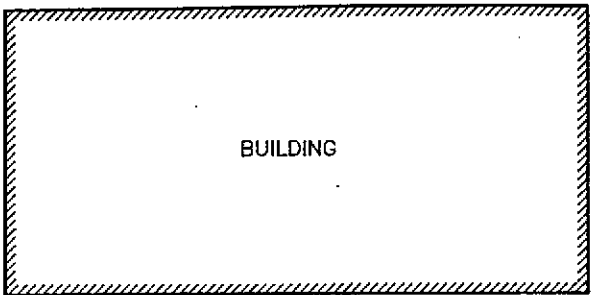
ALAMEDA COUNTY GENERAL SERVICES AGENCY
STAPLES RANCH PROPERTY
EL CHARRO ROAD, PLEASANTON, CALIFORNIA

FIGURE NO.

2

PROJ. NO.

6-94-5228



BUILDING

⊕ B3

⊕ B7

⊕ B8

⊕ B1

⊕ B2

⊕ B4

⊕ B6

⊕ B5



WOODEN STRUCTURE FOR FORMER ABOVE GROUND STORAGE TANK

GRAVEL ROAD

GRASSY AREA

GRASSY AREA



ARROYO LAS POSITAS

BRIDGE

LEGEND

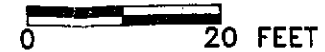


SOIL BORING LOCATION WITH NUMBER



SURFACE WATER FLOW DIRECTION

SCALE



Environmental Science & Engineering, Inc.

4090 NELSON AVENUE, SUITE J
CONCORD, CA 94520

DATE

5/34

REVISED

CAD FILE

52281004

SOIL BORING LOCATIONS

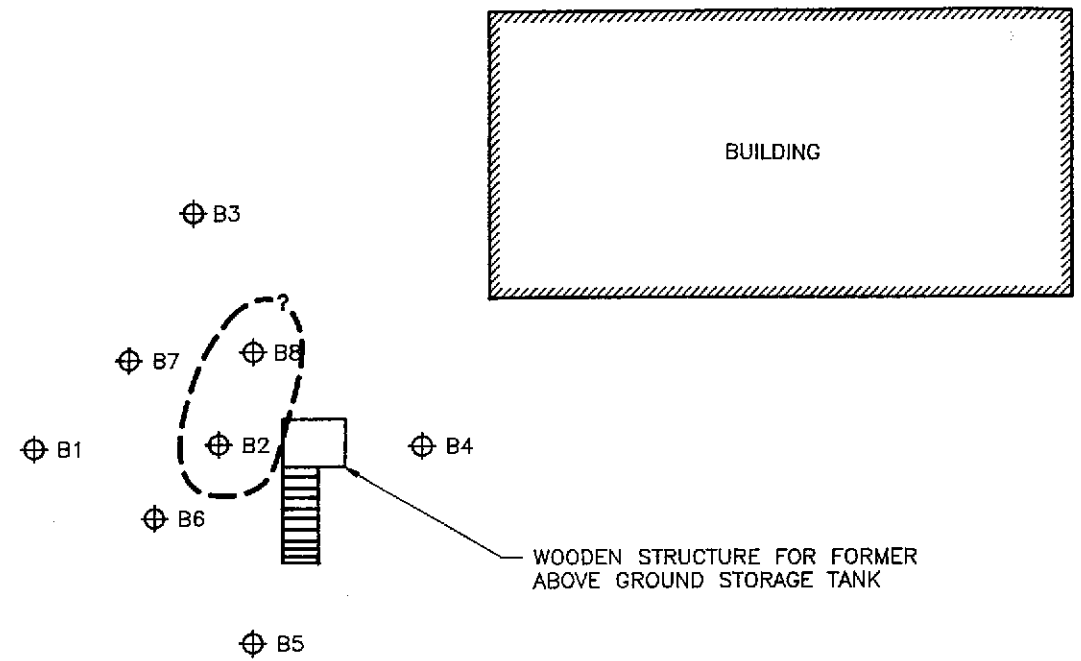
ALAMEDA COUNTY GENERAL SERVICES AGENCY
STAPLES RANCH PROPERTY
EL CHARRO ROAD, PLEASANTON, CALIFORNIA

FIGURE NO.

3

PROJ. NO.

6-94-5228



WOODEN STRUCTURE FOR FORMER ABOVE GROUND STORAGE TANK

GRAVEL ROAD

GRASSY AREA

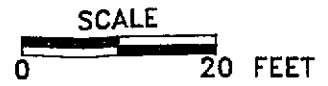
GRASSY AREA

BRIDGE

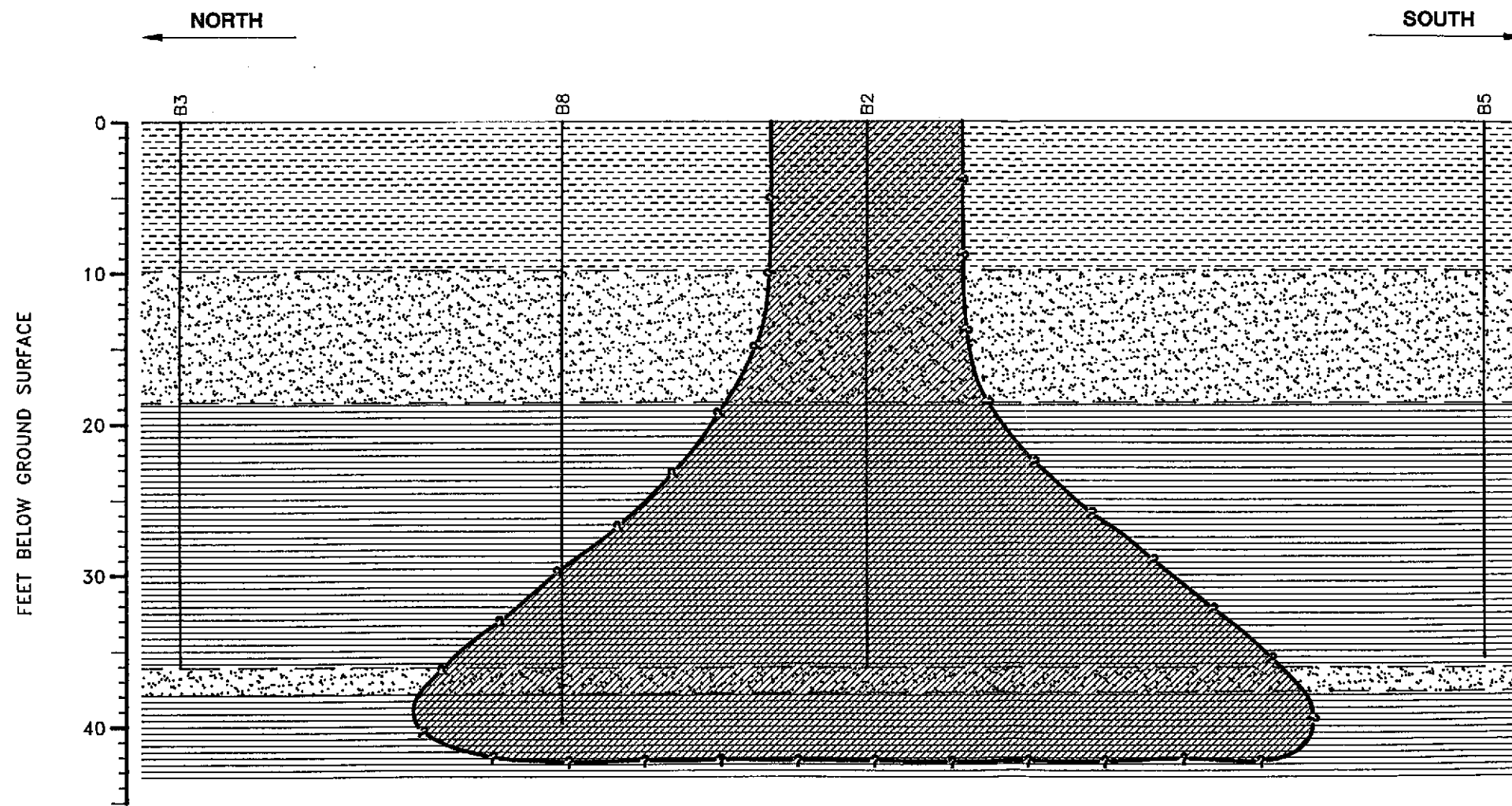
ARROYO LAS POSITAS

LEGEND

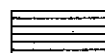

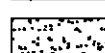
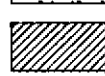
- SOIL BORING LOCATION WITH NUMBER
- SURFACE WATER FLOW DIRECTION
- APPROXIMATE AREAL LIMIT OF DIESEL PLUME IN UNSATURATED ZONE



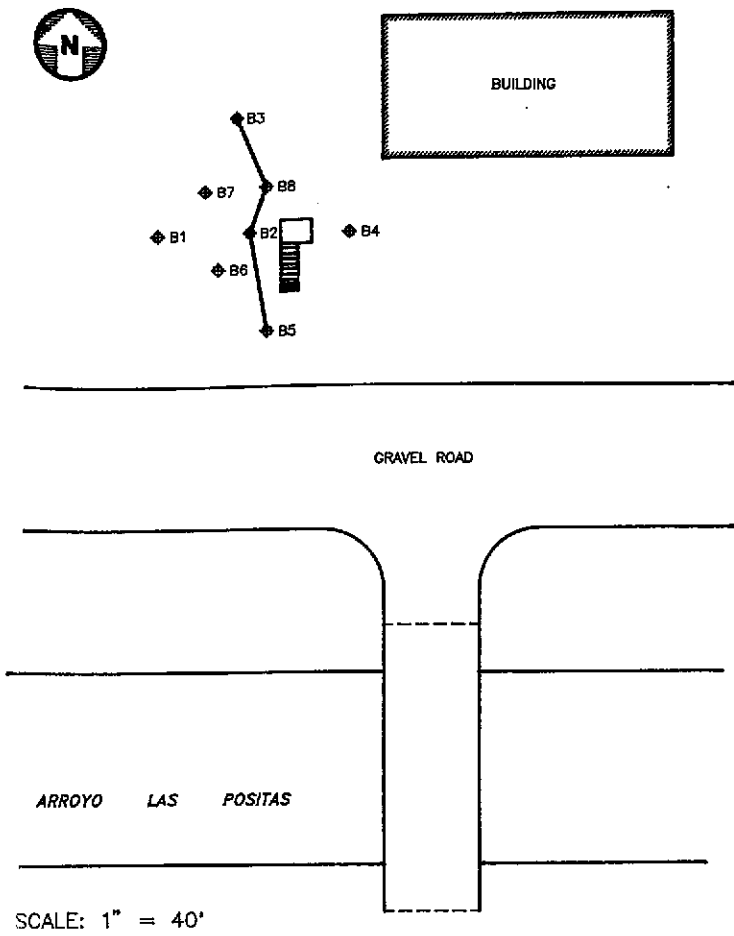
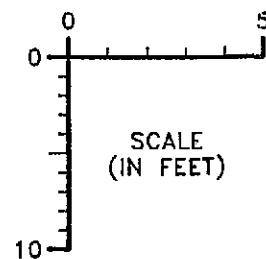
	DATE 5/94	DIESEL PLUME IN UNSATURATED ZONE	FIGURE NO. 4
	REVISED		PROJ. NO. 6-94-5228
4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	CAD FILE 52281005	ALAMEDA COUNTY GENERAL SERVICES AGENCY STAPLES RANCH PROPERTY EL CHARRO ROAD, PLEASANTON, CALIFORNIA	




LEGEND

-  SANDY CLAY TO CLAY (CL)
-  GRAVELLY, SANDY SILT (ML)
-  GRAVELLY, SILTY SAND (SP)
-  ZONE OF PETROLEUM HYDROCARBON CONTAMINATION

--- APPROXIMATE BOUNDARY OF DIESEL PLUME



SCALE: 1" = 40'

 Environmental Science & Engineering, Inc. <small>A GILDORP Company</small>	DATE 5/94	NORTH-SOUTH ORIENTED SCHEMATIC CROSS-SECTION ALAMEDA COUNTY GENERAL SERVICES AGENCY STAPLES RANCH PROPERTY EL CHARRO ROAD, PLEASANTON, CALIFORNIA	FIGURE NO. 5
	REVIS		PROJ. NO. 6-94-5228
4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	CAD FILE 52281006		

APPENDIX A
ESE STANDARD OPERATING PROCEDURE NO. 1

**ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
CONCORD, CALIFORNIA OFFICE**

**STANDARD OPERATING PROCEDURE NO. 1
FOR SOIL BORINGS AND SOIL SAMPLING WITH HOLLOW-STEM AUGERS
IN UNCONSOLIDATED FORMATIONS**

Environmental Science & Engineering, Inc. (ESE) typically drills soil borings using a truck-mounted, continuous-flight, hollow-stem auger drill rig. The drill rig is owned and operated by a drilling company possessing a valid State of California C-57 license. The soil borings are conducted under the direct supervision and guidance of an experienced ESE geologist. The ESE geologist logs each borehole during drilling in accordance with the Unified Soil Classification System (USCS). Additionally, the ESE geologist observes and notes the soil color, relative density or stiffness, moisture content, odor (if obvious) and organic content (if present). The ESE geologist will record all observations on geologic boring logs.

Soil samples are collected during drilling at a minimum of five-foot intervals by driving an 18-inch long Modified California Split-spoon sampler (sampler), lined with new, thin-wall brass sleeves, through the center of and ahead of the hollow stem augers, thus collecting a relatively undisturbed soil sample core. The brass sleeves are typically 2-inches in diameter and 6-inches in length. The sampler is driven by dropping a 140-pound hammer 30-inches onto rods attached to the top of the sampler. Soil sample depth intervals and the number of hammer blows required to advance the sampler each six-inch interval are recorded by the ESE geologist on geologic boring logs. The ends of one brass sleeve are covered with Teflon sheeting, then covered with plastic end caps. The end caps are sealed to the brass sleeve using duct tape. Each sample is then labeled and placed on ice in a cooler for transport under chain of custody documentation to the designated analytical laboratory. A portion of the remaining soil in the sampler is placed in either a new Ziploc® bag or a clean Mason Jar® and set in direct sunlight to enhance the volatilization of any Volatile Organic Compounds (VOCs) present in the soil. After approximately 15-minutes that sample is screened for VOCs using a photoionization detector (PID). The PID measurements will be noted on the geologic boring logs. The PID provides qualitative data for use in selecting samples for laboratory analysis. Soil samples from the saturated zone (beneath the ground-water table) are collected as described above, are not screened with the PID, and are not submitted to the analytical laboratory. The samples from the saturated zone are used for descriptive purposes. Soil samples from the saturated zone may be retained as described above for physical analyses (grain size, permeability and porosity testing).

If the soil boring is not going to be completed as a well, then the boring is typically terminated upon penetrating the saturated soil horizon or until a predetermined interval of soil containing no evidence of contamination is penetrated. This predetermined interval is typically based upon site specific regulatory or client guidelines. The boring is then backfilled using either neat cement, neat cement and bentonite powder mixture (not exceeding 5% bentonite), bentonite pellets, or a sand and cement mixture (not exceeding a 2:1 ratio of sand to cement). However, if the boring is to be completed as a monitoring well, then the boring is continued until either a competent, low estimated-permeability, lower confining soil layer is found or 10 to 15-feet of the saturated soil horizon is penetrated, whichever occurs first. If a low estimated-permeability soil layer is found, the soil boring will be advanced approximately five-feet into that layer to evaluate its competence as a lower confining layer, prior to the termination of that boring.

All soil sampling equipment is cleaned between each sample collection event using an Alconox® detergent and tap water solution followed by a tap water rinse. Additionally, all drilling equipment and soil sampling equipment is cleaned between borings, using a high pressure steam cleaner, to prevent cross-contamination. All wash and rinse water is collected and contained onsite in Department of Transportation approved containers (typically 55-gallon drums) pending laboratory analysis and proper disposal/recycling.



**Environmental
Science &
Engineering, Inc.**

BORING LOG AND WELL COMPLETION SUMMARY

B1

WELL COMPLETION

Completion Depth: _____
 Size/Type _____ From _____ To _____

Casing: _____
 Screen: **N/A**
 Filter: _____
 Seal: _____

Well Cap or Box: _____

Project Name: Alameda County GSA Project No: 6-84-5228

Location: Staples Ranch Property
 El Charro Road
 Pleasanton, California

Driller: Exploration Geoservices, Inc.
 Method: Mobile B-61 Hollow-Stem Auger
 Hole Diameter: 8 Inches Total Depth: 23.5 Feet
 Ref. Elevations:
 Logged By: Bart Miller

Page 1 of 1

Dates:
 Start: 4-28-94
 Finish: 4-28-94

Depth (ft)	Lithologic Description	USC	Graphic Log			Vapor	Remarks
			Sample/Blows	Lithology	Well Installation		
0	GRAVELLY, SANDY SILT, brown, low plasticity, dry, no odor, gravel fragments average one-inch diameter.	ML					START 7:42
5			10 12 14 7 8 12 3 4 7 9			0.8	
10	GRAVELLY, SILTY SAND, brown, friable, dry, no odor, gravel fragments average one-inch diameter.	SP	10 11 5 7 15 13 20 22 10 18 21 30 29			1.0	
15	As above, becoming moist.		13 9 14			0.8	
20	CLAY, brown, moderate plasticity, moist, no odor.	CL	13 2 3 4 7 5 10 9 5 7 12			0	SAMPLE @ 20 FEET* 8:24
25						0	COMPLETE 8:35
30							* Sample submitted for analysis.
35							Boring backfilled with cement grout.



**Environmental
Science &
Engineering, Inc.**

BORING LOG AND WELL COMPLETION SUMMARY

B2

WELL COMPLETION

Completion Depth:

Size/Type From To

Casing: _____
Screen: _____
Filter: **N/A**
Seal: _____

Well Cap or Box: _____

Project Name: Alameda County GSA Project No: 6-94-5228

Location: Staples Ranch Property
El Charro Road
Pleasanton, California

Driller: Exploration Geoservices, Inc.
Method: Mobile B-61 Hollow-Stem Auger
Hole Diameter: 8 inches Total Depth: 36 Feet
Ref. Elevations:
Logged By: Bart Miller

Page 1 of 2

Dates:
Start: 4-28-94
Finish: 4-28-94

Depth (ft)	Lithologic Description	USC	Graphic Log			Vapor	Remarks Water, drilling/completion, summary, sample type
			Sample/Blows	Lithology	Well Installation		
0	GRAVELLY, SANDY SILT, brown, low plasticity, dry, no odor, gravel fragments average one-inch diameter.	ML					START 8:55
5			7 9 11			16.0	SAMPLE @ 5 FEET* 8:57
10	GRAVELLY, SILTY SAND, brown, friable, dry, no odor, gravel fragments average one-inch diameter.	SP	4 5 6			1.0	SAMPLE @ 10 FEET* 9:03
15	As above, becoming moist, petroleum hydrocarbon odor		10 15 19			9.8	SAMPLE @ 15 FEET* 9:06
20	CLAY, brown, moderate plasticity, moist, petroleum hydrocarbon odor	CL	3 3 4			457	SAMPLE @ 20 FEET* 9:11
25			4 6 8			2.8	SAMPLE @ 25 FEET* 9:18
30	SANDY CLAY, brown, moderate plasticity, moist, petroleum hydrocarbon odor.	CL	3 5 7			68.7	SAMPLE @ 30 FEET* 9:41
35			4			257	SAMPLE @ 35 FEET* 9:58



**Environmental
Science &
Engineering, Inc.**

**BORING LOG AND
WELL COMPLETION SUMMARY**

B2

WELL COMPLETION

Completion Depth: _____ From _____ To _____

Casing: _____
Screen: **N/A**
Filter: _____
Seal: _____

Well Cap or Box: _____

Project Name: Alameda County GSA Project No: 6-94-5228
Location: Staples Ranch Property
El Charro Road
Pleasanton, California

Driller: Exploration Geoservices, Inc.
Method: Mobile B-61 Hollow-Stem Auger
Hole Diameter: 8 Inches Total Depth: 36 Feet
Ref. Elevations: _____
Logged By: Bart Miller

Page 2 of 2

Dates:
Start: 4-28-94
Finish: 4-28-94

Depth (ft)	Lithologic Description	USC	Graphic Log		Vapor	Remarks Water, drilling/completion, summary, sample type
			Sample/Blows	Lithology		
35	GRAVELLY SAND, brown, friable, wet, petroleum hydrocarbon odor.	SP	5 13			Water Saturation COMPLETE 11:15 * Samples submitted for laboratory analysis. Collected ground water sample with hydropunch. Boring backfilled with cement grout.
40						
45						
50						
55						
60						
65						
70						



**Environmental
Science &
Engineering, Inc.**

BORING LOG AND WELL COMPLETION SUMMARY

B3

WELL COMPLETION

Completion Depth: _____
Size/Type _____ From _____ To _____

Casing: _____
Screen: **N/A**
Filter: _____
Seal: _____

Well Cap or Box: _____

Project Name: Alameda County GSA Project No: 6-94-5228

Location: Staples Ranch Property
El Charro Road
Pleasanton, California

Page 1 of 2

Driller: Exploration Geoservices, Inc.
Method: Mobile B-61 Hollow-Stem Auger
Hole Diameter: 8 Inches Total Depth: 36 Feet
Ref. Elevations: _____
Logged By: Bart Miller

Dates:
Start: 4-28-94
Finish: 4-28-94

Depth (ft)	Lithologic Description	USC	Graphic Log			Vapor	Remarks Water, drilling/completion, summary, sample type
			Sample/Blows	Lithology	Well Installation		
0	GRAVELLY, SANDY SILT, brown, low plasticity, dry, no odor, gravel fragments average one-inch diameter.	ML					START 11:37
5			8 13 15			0	SAMPLE @ 5 FEET 11:43
10	GRAVELLY, SILTY SAND, brown, friable, dry, no odor, gravel fragments average one-inch diameter.	SP	13 18 22			0	SAMPLE @ 10 FEET 11:48
15	As above, moist.		3 4 5			0	SAMPLE @ 15 FEET 11:57
20	CLAY, brown, moderate plasticity, moist, no odor.	CL	1 1 2			0	SAMPLE @ 20 FEET 12:01
25			5 7 10			0	SAMPLE @ 25 FEET 12:14
30	SANDY CLAY, brown, moderate plasticity, moist, no odor.	CL	4 5 6			0	SAMPLE @ 30 FEET 12:23
35			7			0	SAMPLE @ 35 FEET* 12:30



**Environmental
Science &
Engineering, Inc.**

**BORING LOG AND
WELL COMPLETION SUMMARY**

B3

WELL COMPLETION

Completion Depth: _____ From _____ To _____

Casing: _____
Screen: **N/A**
Filter: _____
Seal: _____

Well Cap or Box: _____

Project Name: Alameda County GSA Project No: 6-94-5228
Location: Staples Ranch Property
El Charro Road
Pleasanton, California

Driller: Exploration Geoservices, Inc.
Method: Mobile B-61 Hollow-Stem Auger
Hole Diameter: 8 Inches Total Depth: 36 Feet
Ref. Elevations:
Logged By: Bart Miller

Page 2 of 2

Dates:
Start: 4-28-94
Finish: 4-28-94

Depth (ft)	Lithologic Description	USC	Graphic Log			Vapor	Remarks Water, drilling/completion, summary, sample type
			Sample/ Blows	Lithology	Well Installation		
35	GRAVELLY SAND, brown, friable, wet, non-cohesive	SP	11 5				Water Saturation COMPLETE 14:00 * Samples submitted for laboratory analysis. Attempted to collect ground water sample with hydropunch. No ground water infiltration observed. Boring backfilled with cement grout.
40							
45							
50							
55							
60							
65							
70							



**Environmental
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BORING LOG AND WELL COMPLETION SUMMARY

B4

WELL COMPLETION

Completion Depth: _____
Size/Type _____ From _____ To _____

Casing: _____
Screen: **N/A**
Filter: _____
Seal: _____

Well Cap or Box: _____

Project Name: Alameda County GSA Project No: 6-94-5228
Location: Staples Ranch Property
El Charro Road
Pleasanton, California

Driller: Exploration Geoservices, Inc.
Method: Mobile B-61 Hollow-Stem Auger
Hole Diameter: 8 Inches Total Depth: 36 Feet
Ref. Elevations: _____
Logged By: Bart Miller

Page 1 of 2

Dates:
Start: 4-28-94
Finish: 4-28-94

Depth (ft)	Lithologic Description	USC	Graphic Log			Vapor	Remarks <small>Water, drilling/completion, summary, sample type</small>
			Sample/Blows	Lithology	Well Installation		
0	GRAVELLY, SANDY SILT, brown, low plasticity, dry, no odor, gravel fragments average one-inch diameter.	ML					START 14:12
5			9 12 15			0	SAMPLE @ 5 FEET 14:14
10	GRAVELLY, SILTY SAND, brown, friable, dry, no odor, gravel fragments average one-inch diameter.	SP	17 20 12			0	SAMPLE @ 10 FEET 14:19
15	As above, moist.		12 19 21			0	SAMPLE @ 15 FEET 14:23
20	CLAY, brown, moderate plasticity, moist, no odor.	CL	4 5 6			0	SAMPLE @ 20 FEET 14:31
25			5 7 9			0	SAMPLE @ 25 FEET 14:37
30	SANDY CLAY, brown, moderate plasticity, moist, no odor.	CL	6 8 10			0	SAMPLE @ 30 FEET 14:45
35			3			0	SAMPLE @ 35 FEET* 14:54



**Environmental
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Engineering, Inc.**

**BORING LOG AND
WELL COMPLETION SUMMARY**

B4

WELL COMPLETION

Completion Depth: _____ From _____ To _____

Casing: _____
Screen: _____
Filter: **N/A**
Seal: _____

Well Cap or Box: _____

Project Name: Alameda County GSA Project No: 6-94-5228
Location: Staples Ranch Property
El Charro Road
Pleasanton, California

Driller: Exploration Geoservices, Inc.
Method: Mobile B-61 Hollow-Stem Auger
Hole Diameter: 8 Inches Total Depth: 36 Feet
Ref. Elevations:
Logged By: Bart Miller

Page 2 of 2

Dates:
Start: 4-28-94
Finish: 4-28-94

Depth (ft)	Lithologic Description	USC	Graphic Log			Vapor	Remarks Water, drilling/completion, summary, sample type
			Sample/ Blows	Lithology	Well Installation		
35	GRAVELLY SAND, brown, friable, wet, gravelly	SP	5 7				▼ Water Saturation COMPLETE 17.05 * Samples submitted for laboratory analysis. Boring backfilled with cement grout.
40							
45							
50							
55							
60							
65							
70							



**Environmental
Science &
Engineering, Inc.**

**BORING LOG AND
WELL COMPLETION SUMMARY**

B5

WELL COMPLETION

Completion Depth: _____ From _____ To _____

Casing: _____
Screen: **N/A**
Filter: _____
Seal: _____

Well Cap or Box: _____

Project Name: Alameda County GSA Project No: 6-94-5228
Location: Staples Ranch Property
El Charro Road
Pleasanton, California

Driller: Exploration Geoservices, Inc.
Method: Mobile B-61 Hollow-Stem Auger
Hole Diameter: 8 Inches Total Depth: 36 Feet
Ref. Elevations: _____
Logged By: Bart Miller

Page 2 of 2

Dates:
Start: 4-29-94
Finish: 4-29-94

Depth (ft)	Lithologic Description	USC	Graphic Log		Vapor	Remarks Water, drilling/completion, summary, sample type
			Sample/ Blows	Lithology		
35	GRAVELLY SAND, brown, friable, wet, no odor.	SP	11 5			Water Saturation COMPLETE 10:05 * Samples submitted for laboratory analysis. Boring backfilled with cement grout.
40						
45						
50						
55						
60						
65						
70						



**Environmental
Science &
Engineering, Inc.**

BORING LOG AND WELL COMPLETION SUMMARY

B6

WELL COMPLETION

Completion Depth:
Size/Type _____ From _____ To _____

Casing:
Screen:
Filter: **N/A**
Seal:

Well Cap or Box:

Project Name: Alameda County GSA Project No: 6-94-5228
Location: Staples Ranch Property
El Charro Road
Pleasanton, California

Driller: Exploration Geoservices, Inc.
Method: Mobile B-61 Hollow-Stem Auger
Hole Diameter: 8 Inches Total Depth: 36 Feet
Ref. Elevations:
Logged By: Bart Miller

Page 1 of 2

Dates:
Start: 4-29-94
Finish: 4-29-94

Depth (ft)	Lithologic Description	USC	Graphic Log			Vapor	Remarks Water, drilling/completion, summary, sample type
			Sample/Blows	Lithology	Well Installation		
0	GRAVELLY, SANDY SILT, brown, low plasticity, dry, no odor, gravel fragments average one-inch diameter.	ML					START 10:12
5			5 8 9				0 SAMPLE @ 5 FEET 10:16
10	GRAVELLY, SILTY SAND, brown, friable, dry, no odor, gravel fragments average one-inch diameter.	SP	8 12 7				0 SAMPLE @ 10 FEET 10:20
15	As above, moist.		10 17 20				0 SAMPLE @ 15 FEET 10:24
20	CLAY, brown, moderate plasticity, moist, no odor.	CL	1 2 3				0 SAMPLE @ 20 FEET 10:30
25			1 1 7				0 SAMPLE @ 25 FEET 10:37
30	SANDY CLAY, brown, moderate plasticity, moist, no odor.	CL	1 2 2				0 SAMPLE @ 30 FEET 10:44
35			2				0 SAMPLE @ 35 FEET* 10:50



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A QILDORP Company

BORING LOG AND WELL COMPLETION SUMMARY

B7

WELL COMPLETION

Completion Depth: _____
Size/Type _____ From _____ To _____

Casing: _____
Screen: **N/A**
Filter: _____
Seal: _____

Well Cap or Box: _____

Project Name: Alameda County GSA Project No: 6-94-5228
Location: Staples Ranch Property
El Charro Road
Pleasanton, California

Driller: Exploration Geoservices, Inc.
Method: Mobile B-61 Hollow-Stem Auger
Hole Diameter: 8 Inches Total Depth: 36 Feet
Ref. Elevations: _____
Logged By: Bart Miller

Page 1 of 2

Dates:
Start: 4-29-94
Finish: 4-29-94

Depth (ft)	Lithologic Description	USC	Graphic Log			Vapor	Remarks
			Sample/ Blows	Lithology	Well Installation		
0	GRAVELLY, SANDY SILT, brown, low plasticity, dry, no odor, gravel fragments average one-inch diameter.	ML					START 11:54
5			7 9 11			0	SAMPLE @ 5 FEET 11:57
10	GRAVELLY, SILTY SAND, brown, friable, dry, no odor, gravel fragments average one-inch diameter.	SP	12 17 13			0	SAMPLE @ 10 FEET 12:02
15			11 13 16			0	SAMPLE @ 15 FEET 12:10
	As above, moist.						
20	CLAY, brown, moderate plasticity, moist, no odor.	CL	2 1 2			0	SAMPLE @ 20 FEET 12:16
25			2 4 8			0	SAMPLE @ 25 FEET 12:22
30	SANDY CLAY, brown, moderate plasticity, moist, no odor.	CL	5 7 9			0	SAMPLE @ 30 FEET 12:27
35			7			0	SAMPLE @ 35 FEET* 12:33



**Environmental
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BORING LOG AND WELL COMPLETION SUMMARY

B8

WELL COMPLETION

Completion Depth: _____
Size/Type _____ From _____ To _____

Casing: _____
Screen: **N/A**
Filter: _____
Seal: _____

Well Cap or Box: _____

Project Name: Alameda County GSA Project No: 6-94-5228

Location: Staples Ranch Property
El Charro Road
Pleasanton, California

Driller: Exploration Geoservices, Inc.
Method: Mobile B-61 Hollow-Stem Auger
Hole Diameter: 8 Inches Total Depth: 40.5 Feet
Ref. Elevations: _____
Logged By: Bart Miller

Page 1 of 2

Dates:
Start: 4-29-94
Finish: 4-29-94

Depth (ft)	Lithologic Description	USC	Graphic Log			Vapor	Remarks
			Sample/Blows	Lithology	Well Installation		
0	GRAVELLY, SANDY SILT, brown, low plasticity, dry, no odor, gravel fragments average one-inch diameter.	ML					START 12:58
5			13 15 12			0.2	SAMPLE @ 5 FEET 13:03
10	GRAVELLY, SILTY SAND, brown, friable, dry, no odor, gravel fragments average one-inch diameter.	SP	17 19 15			0.9	SAMPLE @ 10 FEET 13:12
15			20 15 17			1.3	SAMPLE @ 15 FEET 13:18
	As above, moist.						
20	CLAY, brown, moderate plasticity, moist, no odor.	CL	1 2 3			1.1	SAMPLE @ 20 FEET 13:27
25			4 5 5			1.5	SAMPLE @ 25 FEET 13:33
30	SANDY CLAY, brown, moderate plasticity, moist, no odor.	CL	3 4 5			43.9	SAMPLE @ 30 FEET 13:38
35			3			251	SAMPLE @ 35 FEET* 13:43

APPENDIX C
ANALYTICAL REPORTS WITH CHAIN OF CUSTODY DOCUMENTS

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

05/06/94

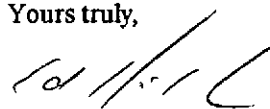
Dear Bart:

Enclosed are:

- 1). the results of 15 samples from your # 6-94-5228; Staples Ranch, Pleasanton project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,



Edward Hamilton

Environmental Science & Eng. 4090 Nelson Avenue, Suite J Concord, CA 94520	Client Project ID: # 6-94-5228; Staples Ranch, Pleasanton	Date Sampled: 04/28-04/29/94
	Client Contact: Bart Miller	Date Received: 04/29/94
	Client P.O: 042994	Date Extracted: 05/01-05/04/94
		Date Analyzed: 05/01-05/06/94

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g) ⁺	Benzene	Toluene	Ethylbenzene	Xylenes	% Rec. Surrogate
35437	B1-20'	S	---	ND	ND	0.008	ND	89
35438	B2-5'	S	---	ND	ND	ND	0.018	95
35439	B2-10'	S	---	ND	ND	ND	ND	97
35440	B2-15'	S	---	ND	ND	ND	ND	102
35441	B2-20'	S	---	0.010	0.032	0.19	0.64	103
35442	B2-25'	S	---	ND	ND	ND	ND	97
35443	B2-30'	S	---	0.008	ND	ND	0.055	98
35444	B2-35'	S	---	ND	ND	ND	ND	104
35445	B3-35'	S	---	ND	ND	ND	ND	102
35446	B4-35'	S	---	ND	ND	ND	ND	106
35447	B5-35'	S	---	ND	ND	ND	ND	107
35448	B6-35'	S	---	ND	ND	ND	ND	95
35449	B7-35'	S	---	ND	ND	ND	ND	109
35450	B8-35'	S	---	ND	ND	0.037	0.036	103
35451	B8-40'	S	---	ND	ND	ND	0.024	94
Detection Limit unless otherwise stated; ND means Not Detected		W	50 ug/L	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.005	0.005	0.005	0.005	

*water samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

cluttered chromatogram; sample peak co-elutes with surrogate peak

⁺ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds are significant; no recognizable pattern; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible phase is present.

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Environmental Science & Eng. 4090 Nelson Avenue, Suite J Concord, CA 94520	Client Project ID: # 6-94-5228; Staples Ranch, Pleasanton	Date Sampled: 04/28-04/29/94
	Client Contact: Bart Miller	Date Received: 04/29/94
	Client P.O: 042994	Date Extracted: 05/01/94
		Date Analyzed: 05/01/94

Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel *

EPA methods modified 8015, and 3550 or 3510; California RWQCB (SF Bay Region) method GCFID(3550) or GCFID(3510)

Lab ID	Client ID	Matrix	TPH(d) ⁺	% Recovery Surrogate
35437	B1-20'	S	ND	84
35438	B2-5'	S	300,a	90
35439	B2-10'	S	ND	85
35440	B2-15'	S	450,a	85
35441	B2-20'	S	3100,a	108
35442	B2-25'	S	28,a	86
35443	B2-30'	S	330,a	88
35444	B2-35'	S	ND	86
35445	B3-35'	S	ND	85
35446	B4-35'	S	ND	85
35447	B5-35'	S	ND	85
35448	B6-35'	S	ND	86
35449	B7-35'	S	ND	85
35450	B8-35'	S	100,a	86
35451	B8-40'	S	920,a	87
Detection Limit unless otherwise stated; ND means Not Detected		W	50 ug/L	
		S	10 mg/kg	

*water samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L.

cluttered chromatogram; surrogate and sample peaks co-elute or surrogate peak is on elevated baseline.

⁺ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) modified diesel?; light (CL) or heavy (CH) diesel compounds are significant; d) gasoline range compounds are significant; e) medium boiling point pattern that does not match diesel(?); f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible phase is present.

QC REPORT FOR HYDROCARBON ANALYSES

Date: 05/01/94

Matrix: Soil

Analyte	Concentration (mg/kg)			Amount Spiked	% Recovery		
	Sample	MS	MSD		MS	MSD	RPD
TPH (gas)	0.000	1.897	1.862	2.03	93	92	1.9
Benzene	0.000	0.188	0.174	0.2	94	87	7.7
Toluene	0.000	0.190	0.176	0.2	95	88	7.7
Ethylbenzene	0.000	0.196	0.180	0.2	98	90	8.5
Xylenes	0.000	0.598	0.566	0.6	100	94	5.5
TPH (diesel)	0	336	328	300	112	109	2.6
TRPH (oil & grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

QC REPORT FOR HYDROCARBON ANALYSES

Date: 05/06-05/08/94

Matrix: Soil

Analyte	Concentration (mg/kg)			Amount Spiked	% Recovery		
	Sample	MS	MSD		MS	MSD	RPD
TPH (gas)	0.000	1.762	1.827	2.03	87	90	3.7
Benzene	0.000	0.180	0.182	0.2	90	91	1.1
Toluene	0.000	0.184	0.186	0.2	92	93	1.1
Ethylbenzene	0.000	0.188	0.190	0.2	94	95	1.1
Xylenes	0.000	0.572	0.582	0.6	95	97	1.7
TPH (diesel)	0	341	343	300	114	114	0.7
TRPH (oil & grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

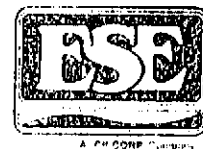
$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

CHAIN OF CUSTODY RECORD

2349 AESE 58

PROJECT NAME AL. CO. GSA
 ADDRESS STAPLES RANCH
PLEASANTON, CA
 PROJECT NO. 6-44-5228
 SAMPLED BY [Signature] BAET MILLER
 LAB NAME McCAMPBELL ANALYTICAL



Environmental
Science &
Engineering, Inc

1000 Nelson Avenue
Suite 1
Pleasanton, CA 94566

Phone (510) 685-4053

Fax (510) 685-5023

SAMPLE #	DATE	TIME	LOCATION	ANALYSES TO BE PERFORMED										MATRIX	NUMBER OF CONTAINERS	REMARKS (CONTAINER, SIZE, ETC.)		
				TAM-D (2015m)	BTEX													
81-20'	4/28/94	8:24		✓	✓										SOIL	1	2-INCH DIA. BRASS SLEEVE	35437
32-5'	4/28/94	8:57		✓	✓										"	1	"	35438
32-10'	4/28/94	9:03		✓	✓										"	1	"	35439
B2-15'	4/28/94	9:06		✓	✓										"	1	"	35440
32-20'	4/28/94	9:11		✓	✓										"	1	"	35441
B2-25'	4/28/94	9:18		✓	✓										"	1	"	35442
B2-30'	4/28/94	9:41		✓	✓										"	1	"	35443
32-35'	4/28/94	9:58		✓	✓										"	1	"	35444
B3-35'	4/28/94	12:30		✓	✓										"	1	"	35445
B4-35'	4/28/94	14:50		✓	✓										"	1	"	35446
35-35'	4/29/94	9:51		✓	✓										"	1	"	35447
36-35'	4/29/94	10:50		✓	✓										"	1	"	35448

RELINQUISHED BY: (signature) <u>[Signature]</u>	RECEIVED BY: (signature) <u>[Signature]</u>	date <u>4/29/94</u>	time <u>1746</u>	12	TOTAL NUMBER OF C
<u>[Signature]</u>	<u>[Signature]</u>	<u>4/29/94</u>	<u>1810</u>	REPORT RESULTS TO: <u>BAET MILLER</u> <u>ESE</u>	SPECIAL SHIPMENT REQUIREMENTS <u>COLD TRANSPORT</u>

INSTRUCTIONS TO LABORATORY (handling, analyses, storage, etc.):
 NOTICE TO ESE. NORMAL T.A.T.

ICE/T PRESERVATIVE VOAS U & G METALS OTHER

CHAIN OF CUSTODY SEALS	
REC'D GOOD CONDTN/COLD	
CONFORMS TO RECORD	



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: Bart Miller
Environmental Science & Engineering
4090 Nelson Avenue Suite J
Concord, CA 94520

Lab Number : JK-1427-1
Project : 6-94-5228, Al.Co. GSA
Analyzed : 05/06/94
Analyzed by: ON
Method : As Listed

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
B2-HP	Groundwater	Bart Miller	04/28/94 1125	05/02/94
CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
FUEL FINGERPRINT ANALYSIS				1,2
Benzene		0.5	0.5	
Toluene		0.5	ND	
Ethylbenzene		0.5	ND	
Xylenes		0.5	7.9	
1,2-Dichloroethane		0.5	ND	
Ethylene dibromide		0.5	ND	
Total Petroleum Hydrocarbons (Gasoline)		50.	ND	
Total Petroleum Hydrocarbons (Diesel 2)		50.	1700.	
Percent Surrogate Recovery			86.	

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)

(2) ANALYZED by CAL DHS DRAFT TPH, EPA 8260 modified (GC/MS)

05/10/94
MSD1/2AP28A
DT/et/on
MSD1-050694

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


Dudley Torres
Organics Manager

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EXCELLENCE
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CLIENT: Bart Miller
Environmental Science & Engineering
4090 Nelson Avenue Suite J
Concord, CA 94520

Lab Number : JK-1427-2
Project : 6-94-5228, Al.Co. GSA
Analyzed : 05/06/94
Analyzed by: ON
Method : As Listed

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
Trip Blank	Aqueous	Bart Miller	04/28/94	05/02/94
CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
FUEL FINGERPRINT ANALYSIS				1,2
Benzene		0.5	ND	
Toluene		0.5	ND	
Ethylbenzene		0.5	ND	
Xylenes		0.5	ND	
Percent Surrogate Recovery			86.	

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)
- (2) ANALYZED by CAL DHS DRAFT TPH, EPA 8260 modified (GC/MS)

05/11/94
MSD1/2AP29A
DT/et/on
MSD1-050694

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


Dudley Torres
Organics Manager

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