ES
ENGINEERING-SCIENCE, INC.

Noted E. P. SO. SEP 17 1991

1730 MARINA VILLAGE PARKWAY
SUITE 200
ALAMEDA, CALIFORNIA 94501
TEL: (510) 769-0100
FAX: (510) 769-9244

13 September 1991
Ref: NC290.05

Mr. Eddy So
Regional Water Quality Control Board
2101 Webster Street, Suite 500
Oakland, California 94612

Subject: Corrections to Soil and Groundwater Investigation Report for the Lake Merritt Towers, Tower 2 Project

this is a correction + supplementary document for the above site

Dear Mr. So:

In response to your request in our telephone conversation on 12 September 1991 the following corrections to the April 1991 Soil and Groundwater Investigation report for Lake Merritt Towers Project have been prepared:

1) On Figure 1.2 the parcel designations are incorrect. Parcel A should read parcel B and parcel B should read parcel A (This error also was included on Figure 2 of the June 1991 Groundwater Monitoring Event report). This figure will be corrected in future reports.

2) On page 6-1, second paragraph, line 4, the word southern should be eastern and on line 8 the word south should be east.

(21)

Your review and comments of reports for the Lake Merritt Towers Project are appreciated. Please call if you have additional questions.

Very Truly Yours,

John Bridenbaugh

John Bridenbaugh, PE, REA
Project Manager

cc: Mr. Dennis Byrne, Alameda County Health Agency
Mr. Richard Makdisi, Enginrrging-Science

HARKON STREET
GARAGE
1432 HARRISON ST.

ES ENGINEERING-SCIENCE
1301 Marina Village Parkway, Suite 200
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LETTER OF TRANSMITTAL

DATE	JOB NO.
12 September 91	NC290.07

ATTENTION: Mr. Eddy So

RE:

TO

Regional Water Quality Control Board

2101 Webster Street, Suite 500

Oakland, California 94612

GENTLEMEN:

WE ARE SENDING YOU THE FOLLOWING ITEMS: ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of Letter ☐ Change order ☐ _____

Dated 9/12/91

COPIES	DATE	NO.	DESCRIPTION
1	11/6/87		Environmental Assessment of Harrison Street-Lakefront Properties in Oakland, California

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ For checking ☐ Resubmit _____ copies for approval

☐ For your use ☐ Approved as submitted ☐ Design only, not for construction

☒ As requested ☐ Approved as noted ☐ Return _____ corrected prints

☐ For review and comment ☐ Returned for corrections ☐ _____

☐ For Your Action

REMARKS: _____

COPY TO _____

SIGNED: _____ for

John R. Bridenbaugh, Project Manager

If enclosures are not as noted, please notify us at once.

211.0470/YO

JB's Copy

'Bw

ENGINEERING-SCIENCE, INC.

600 BANCROFT WAY
BERKELEY, CALIFORNIA 947
(415) 548-7970

6 November 1987
Ref: NC073.02

Ahmanson Commercial Development Company
11111 Santa Monica Boulevard
Suite 2127
Los Angeles, California 90025

Attention: Mr. Kenne Reizes

Subject: Environmental Assessment of Harrison Street-Lakefront Properties in Oakland, California

INTRODUCTION

This report describes the Phase II investigation of possible hazardous waste contamination on the 21st and Harrison Streets property, as recommended in the Phase I letter report submitted by Engineering-Science (ES) 25 November 1986 and proposed in a letter proposal dated 9 October 1987 to Ahmanson Commercial Development Company.

The purpose of this work is to further characterize the vertical and lateral extent of subsurface waste oil contamination identified in the Phase I study, and to the the extent possible, determine if the underground storage tank responsible for the contamination still exists underground. The Phase I study is contained in Appendix A.

SITE BACKGROUND

The property under study in this report is one of two parcels that was investigated and identified as Parcel B in the Phase I study. The parcel is bounded by Harrison Street on the east, 21st Street on the south, the Ordway Building on the west, and 22nd Street on the north. The northern portion of the parcel is presently used as a parking lot; the southern portion of the parcel is landscaped, with grass covering much of the ground, shrubbery along the northern and western borders, and sidewalks on the south and east sides adjacent to 21st and Harrison Streets, respectively. This investigation focused on the southern portion of the parcel, particularly with respect to the area in the vicinity of the underground waste oil storage tank (see Figures 1 and 2).

Most of the near surface soils, which consists of clays, silts and sand fill materials, have been profoundly affected by development since the turn of the century, including construction of the nearby Ordway Building and grading associated with landscaping, so that it can be assumed that the soils no longer constitute native soils. In the western half of the parcel, the near surface soils are underlain by Holocene alluvial soils of the Temescal formation, which consists primarily of stiff sandy clays with discontinuous layers of sand and gravel. In the eastern half of the parcel, the fill materials are underlain by up to 15 feet of lake and tidal flat sediments consisting of soft clays and silts. The Temescal Formation is underlain by approximately 40 feet of San Antonio formation which generally consists of very stiff to hard sandy to silty clays with occasional dense gravel layers. This is underlain by approximately 400 feet of dense Alameda Clay which overlies Franciscan Bedrock.

By the early 1900's, much of the tidal flats and marshes surrounding the northwest portion of Lake Merritt had been filled, and commercial development was taking place. In 1928 the Murphy Buick Dealership was built on the parcel, which for the next four decades would operate as an auto dealership. A 1,500-gallon waste oil storage tank buried beneath the sidewalk was associated with the dealership. The site of the Ordway Building was in part occupied by a car wash, which included a gasoline pumping island and associated underground storage tanks. Sometime between 1964 and 1972, the Murphy Buick Dealership changed hands (to become known as the Herrera Buick dealership) and the Ordway Building highrise was built to the west. By 1973 records indicate that Herrera Buick had been demolished, the 1,500-gallon waste oil tank beneath the sidewalk had been removed and the area landscaped with grass and shrubbery. The history of the site is described in greater detail in the Phase I report (see Appendix A).

SITE CHARACTERIZATION

To obtain accurate geologic logs and collect samples of the subsurface soils, a hand-held, gas-driven borehole sampler was employed. This sampling device operates by driving 1-1/4-inch steel pipes lined with clean brass tubes into the ground which enables the discrete sampling of soil samples at desired locations.

A total of eighteen (18) boreholes were bored. Eleven (11) boreholes hit refusal at a depth of between 1-1/2 feet and 2-1/2 feet. This fact as well as similar results in the Phase I study indicates that there is some solid material, possibly a concrete slab, beneath this section of the parcel.

Seven (7) boreholes were bored to a depth of nine feet or more. all of these boreholes were bored immediately north of the sidewalk adjacent to 21st Street and downgradient of the underground storage tank. The location of the underground storage tank was obtained from old blueprints of the property. In the Phase I study, two boreholes, WK-1A and WK-7, detected waste oil-contaminated soil downgradient of the underground storage tank at depths between 6 and 8 feet. The boreholes in this study were placed both upgradient and downgradient of WK-1A and WK-7 to more precisely characterize the vertical and lateral extent of contamination. Figure 2 shows the locations of the boreholes from both the Phase I study and this study.

No boreholes could be placed over the underground storage tank to determine if the tank still exists underground due to the location of a utility control box approximately one and one-half feet north of the center of the tank. California state regulations prevent drilling within ten feet of buried electrical lines, so it was not possible to place any exploratory boreholes immediately over the tank.

Three boreholes were placed within 12 feet of the underground storage tank and upgradient of WK-1A. These were: AK-7, AK-10 and AK-12. Borehole AK-7 was bored to a depth of 12 feet; the other two, 9 feet. No hydrocarbon odors were detected in any of these boreholes. In all three, a dark brown clay was encountered in the upper 2 to 3 feet. In boreholes AK-7 and AK-10 a light brown sand and gravel fill mixture was observed below 3 feet to the bottom of the boreholes, while in AK-12 a gravel, a brown silty clay and a brown clay were observed below 3 feet.

Four boreholes were bored downgradient of WK-7 (which had the highest concentration of waste oil detected in the Phase I study). These were, from upgradient to downgradient: AK-18, AK-14, AK-6 and AK-17. All four boreholes were bored to 9 feet and had hydrocarbon odor detected to some degree between 6 and 9 feet; however, borehole AK-18, which was the closest

to WK-7, had the strongest hydrocarbon odor. Borehole AK-17, the farthest and most downgradient from the underground storage tank, had the least noticeable hydrocarbon odor. Complete borehole logs are contained in Appendix B.

ANALYTICAL RESULTS

Soil samples were collected in clean brass tubes, one inch in diameter and six inches in length. The tubes were sealed at both ends with aluminum foil and capped with inert plastic caps. The samplers were placed in a refrigerated cooler until delivery to the Berkeley ES Laboratory. This sampling protocol is in accordance with standards established by the Department of Health Services (DOHS) and the Regional Water Quality Control Board (RWQCB).

A total of five samples from five boreholes were collected and analyzed for total petroleum hydrocarbons at depths which had the greatest evidence of hydrocarbon contamination based on smell and appearance in the field. The samples were from boreholes AK-6 (a composite of three samples taken between 6 and 9 feet), AK-8 (samples collected at 2 feet, immediately overlying the concrete slab), AK-14 (8 feet), AK-17 (7.5 feet) and AK-18 (7.5 feet). The samples were analyzed by the Gas Chromatography/Flame Ionization Detection (GC/FID) method, which identifies and quantifies compounds by comparing the retentive time ranges of the analysis with standards of known composition. For all the samples collected, total petroleum hydrocarbons were below the detection limit of 10 ppm (see Table 1). Chain of custody records and analytical results are contained in Appendix C.

TABLE 1

Sample Identification	Type of Sample	Depth (ft)	Total Petroleum Hydrocarbon (ppm)
AK6-6.5,7.5,8.5	composite	6.5-8.5	<10
AK8-2.0	discrete	2.0	<10
AK14-8.0	discrete	8.0	<10
AK17-7.5	discrete	7.5	<10
AK18-7.5	discrete	7.5	<10

CONCLUSIONS

These conclusions are based on data and interpretations developed in the body of this report. The data analyzed were collected by Engineering-Science on 18 November 1986 and 28 November 1987. These conclusions will address the primary concerns of this study, that is: whether the underground storage tank is still present underground, and to what extent there has been waste oil contamination on the 21st and Harrison Streets property. *

A total of eighteen boreholes were bored. The geology and hydrogeologic conditions encountered during boring operations were consistent with what was found in the Phase I report: the project site is underlain by generally medium stiff to stiff silts and clay fill materials; the water level was approximately 6 feet in the boreholes at the time of drilling. Eleven boreholes hit a concrete slab at a depth of 2 feet suggesting that a concrete slab underlies much of the parcel.

Measurements taken from old blueprints indicate that the underground storage tank would have a surface-projected dimension of 4 feet by 9 feet and the center would be located one (1) foot into 21st Street, 81 feet west of the Ordway property line. The blueprints show the tank parallel with and underlying the sidewalk on the blueprints; however, according to verbal communication with long-time residents, 21st Street was widened in the early 1970's, which would account for the tank partially underlying the street at this time.

Samples collected from boreholes located both upgradient and downgradient of the underground storage tank indicate that relatively minor concentrations of hydrocarbon contamination exists in an area confined to between 10 to 60 feet downgradient of the tank and between 6 and 9 feet in depth. All samples analyzed, which were selected from locations with the greatest evidence of hydrocarbon contamination, had concentrations below detection limits for total petroleum hydrocarbons.

* Data collected suggests that the underground storage tank was probably removed. The sandy fill noted in boreholes AK-7 and AK-10 are the type of fill common to a backfilled excavation. No hydrocarbon odors were noted in these fill materials as would be expected given that the tank was still in

place. also, the location of the underground utility control box immediately overlying the tank, coupled with evidence of road widening which took place indicate the tank would have most likely been removed at that time.

RECOMMENDATIONS

- Soils contaminated with hydrocarbon concentration above 100 ppm should be excavated and treated and/or disposed of to a Class I hazardous waste landfill by a State of California certified hazardous waste hauler. This would be accomplished during the initial construction phase. During this phase it should be verified that the underground storage tank has been removed.

- ES recommends installation of one groundwater well to monitor for fuel hydrocarbons. This could be installed at the completion of the project construction phase. The Regional Water Quality Control Board recommends the installation of a groundwater well in areas where soil concentration exceeds 100 ppm total hydrocarbons. 350 ppm waste oil was indicated in sample WK-7.

It has been a pleasure to provide Ahmanson Commercial Development Company with the requested technical services. If you have any questions regarding this submittal, please call.

Very truly yours,

Wayne Hauck

Wayne Hauck
Project Manager

Dan McCullar

D. B. McCullar, R.G.
Senior Hydrogeologist

RSM/WH/dkm/352.22

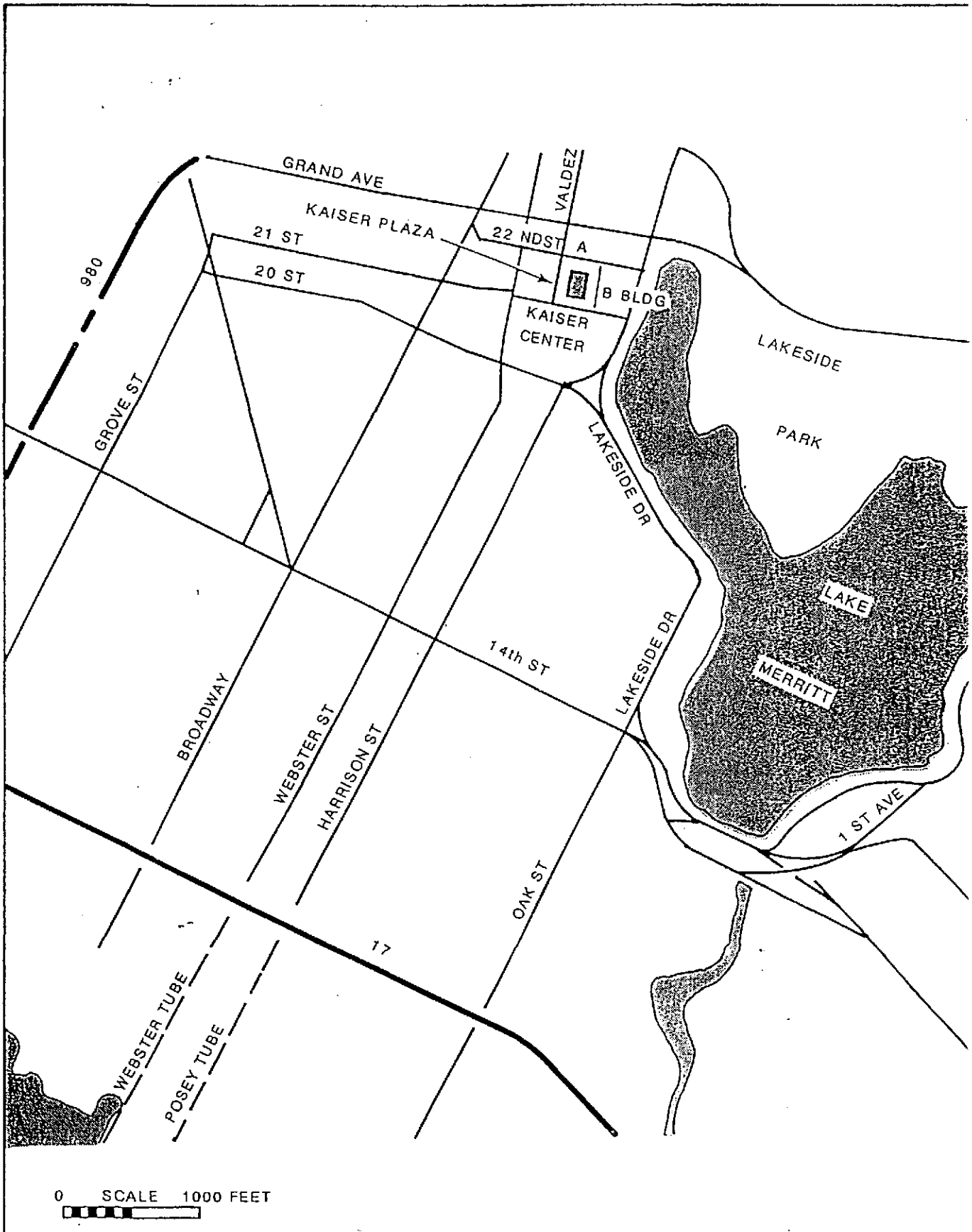


FIGURE 1: LOCATION MAP OF DOWNTOWN OAKLAND

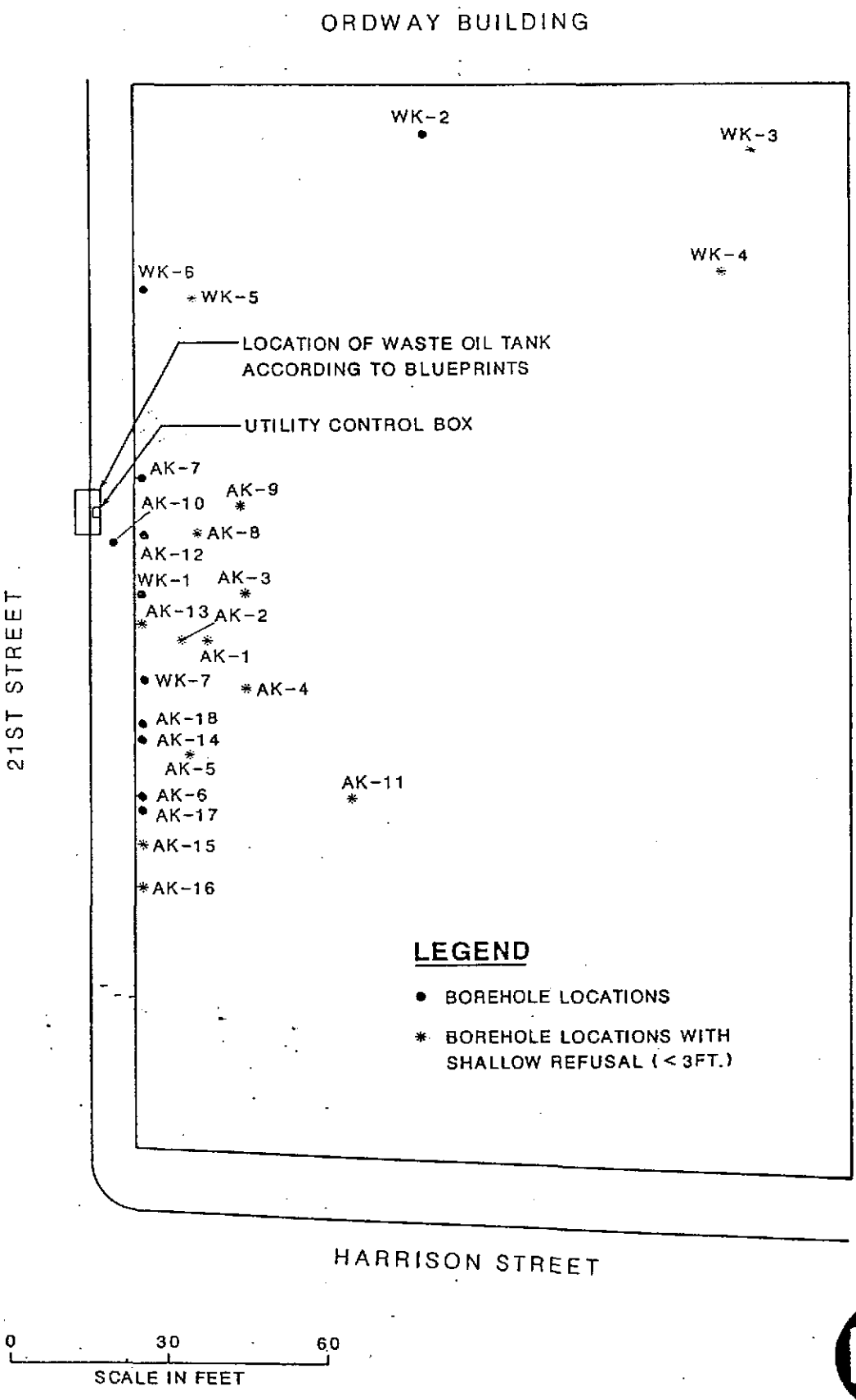
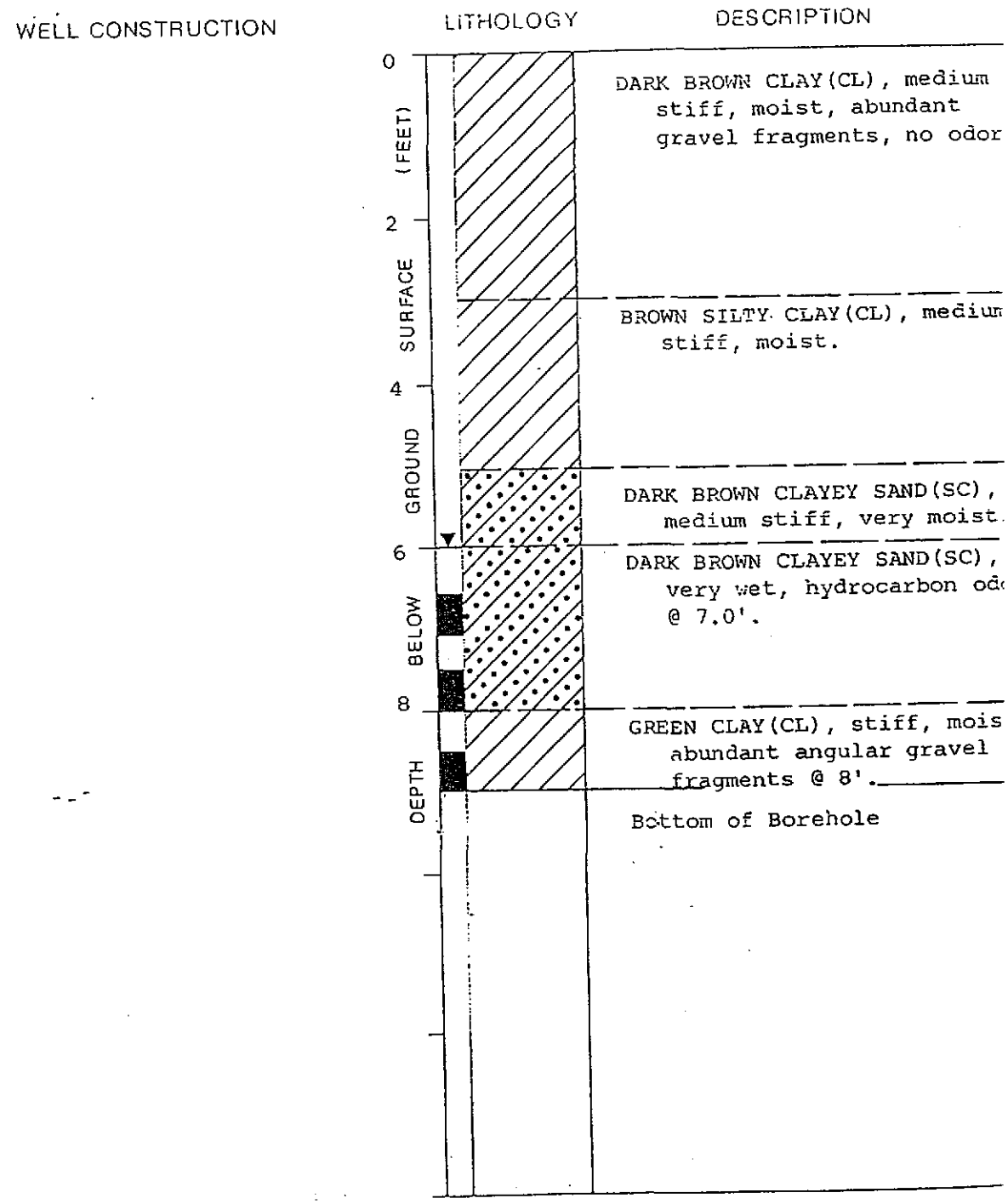


FIGURE 2: MAP OF BOREHOLE LOCATIONS

ES ENGINEERING-SCIENCE

CLIENT Ahmanson Development
LOCATION 21st & Harrison Streets Oakland, California
DATE 28 October 1987
GEOLOGIST W. Hauck

TEST HOLE NUMBER AK-6
DRILLER Handdriven Sampling
DRILLING METHOD Hand Held Driver
HOLE DIAMETER 1.25"



ES ENGINEERING - SCIENCE

CLIENT Ahmanson Development

LOCATION 21st & Harrison Streets Oakland, California

DATE 28 October 1987

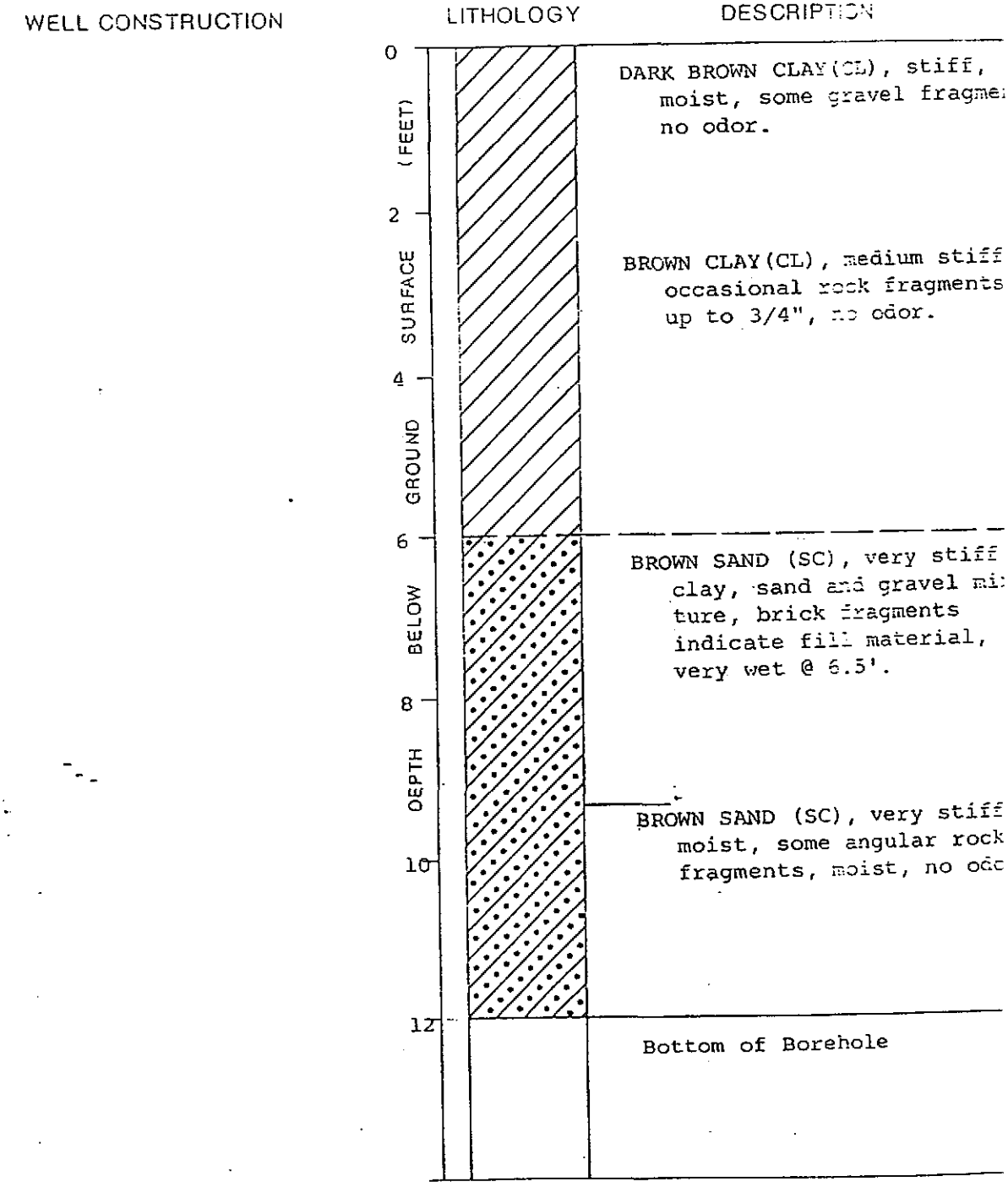
GEOLOGIST W. Hauck

TEST HOLE NUMBER AK-7

DRILLER Handdriven Sampling

DRILLING METHOD Hand Held Driver

HOLE DIAMETER 1.25"



EXPLANATION

Water level during drilling

Contact (dashed where approximate)

Location of sample

ES ENGINEERING-SCIENCE

CLIENT Ahmanson Development
21st & Harrison Streets
LOCATION Oakland, California

DATE 28 October 1987

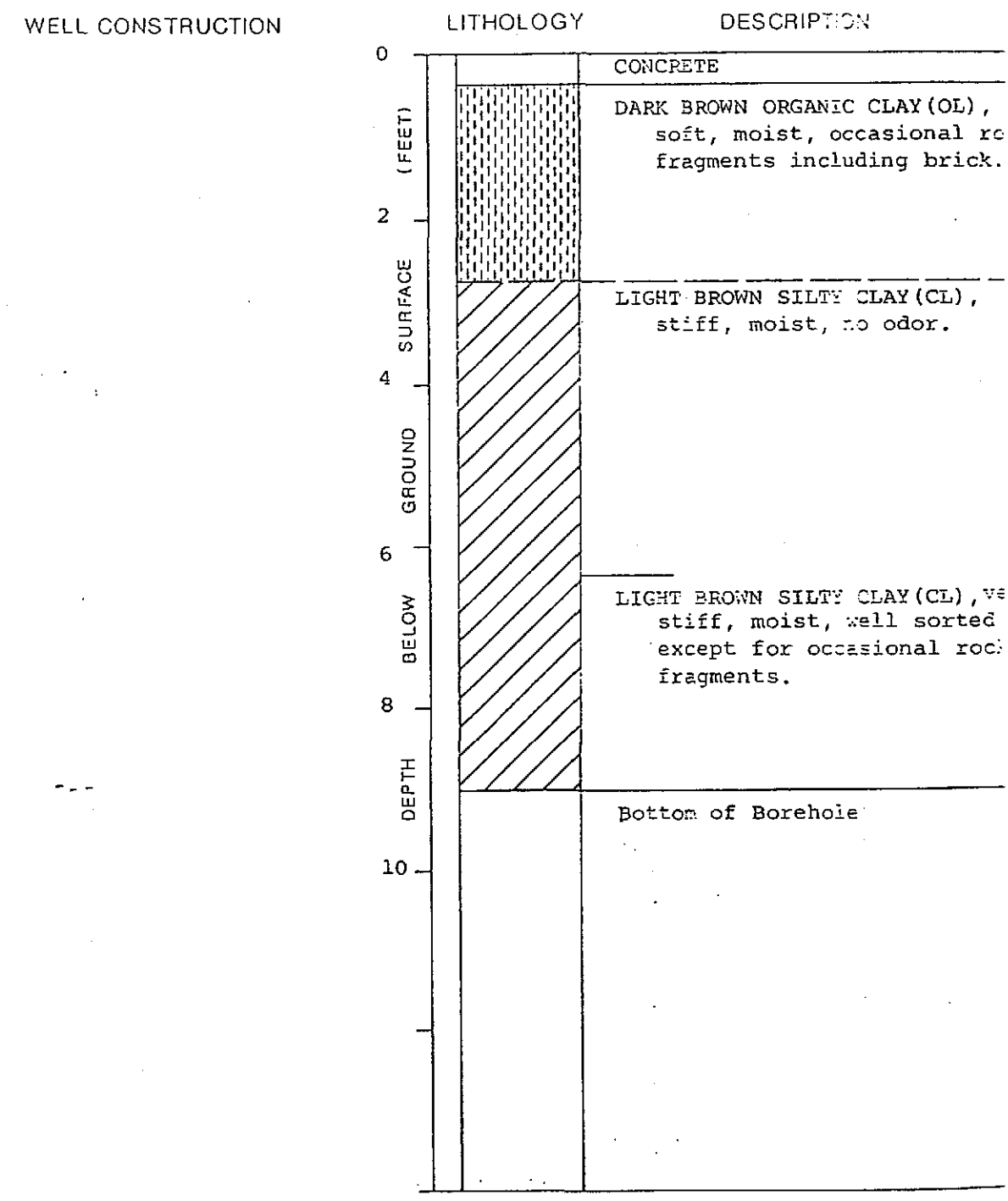
GEOLOGIST W. Hauck

TEST HOLE NUMBER AK-10

DRILLER Handdriven Sampling

DRILLING METHOD Hand Held Driver

HOLE DIAMETER 1.25"



EXPLANATION

Water level during drilling

Contact (dashed where approximate)

Location of sample

ES ENGINEERING-SCIENCE

CLIENT Ahmanson Development
21st and Harrison Streets
LOCATION Oakland, California

DATE 28 October 1987

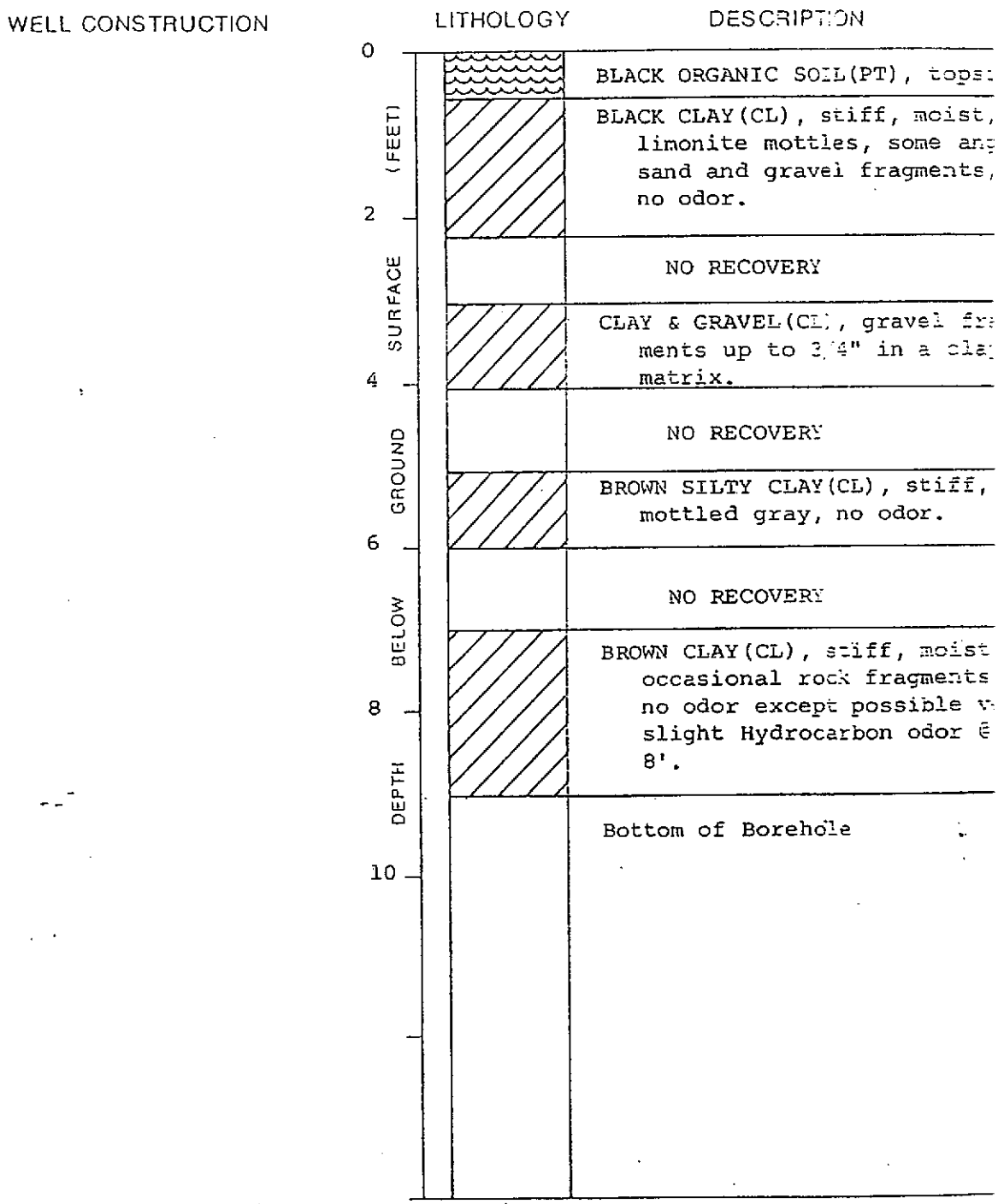
GEOLOGIST W. Hauck

TEST HOLE NUMBER AK-12

DRILLER Handdriven Sampling

DRILLING METHOD Hand Held Driver

HOLE DIAMETER 1.25"



EXPLANATION

Water level during drilling

Contact (dashed where approximate)

Location of sample

ES ENGINEERING - SCIENCE

CLIENT Ahmanson Development
21st & Harrison Streets
LOCATION Oakland, California

DATE 28 October 1987

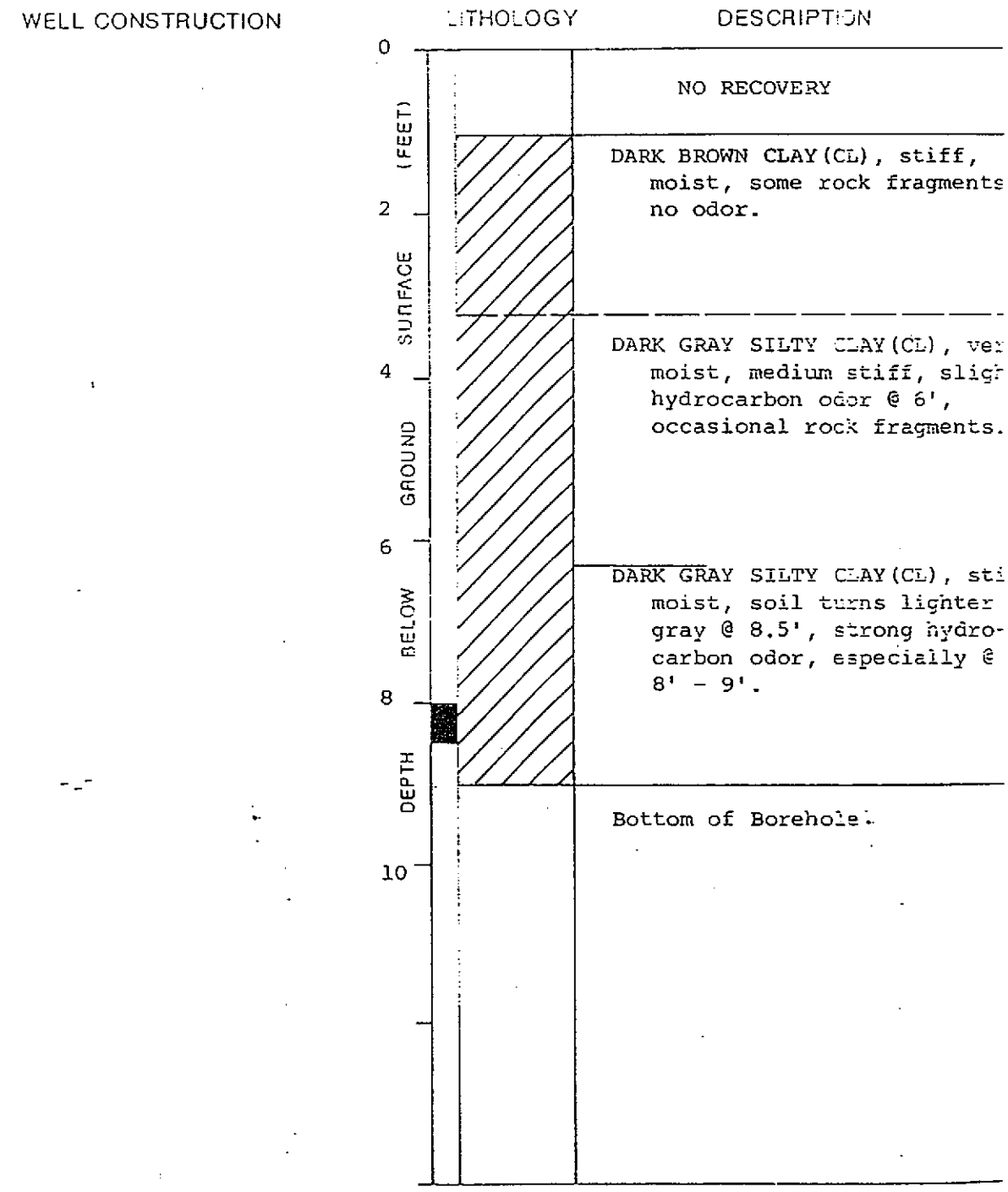
GEOLOGIST W. Hauck

TEST HOLE NUMBER AK-14

DRILLER Handdriven Sampling

DRILLING METHOD Hand Held Driver

HOLE DIAMETER 1.25"



EXPLANATION

Water level during drilling

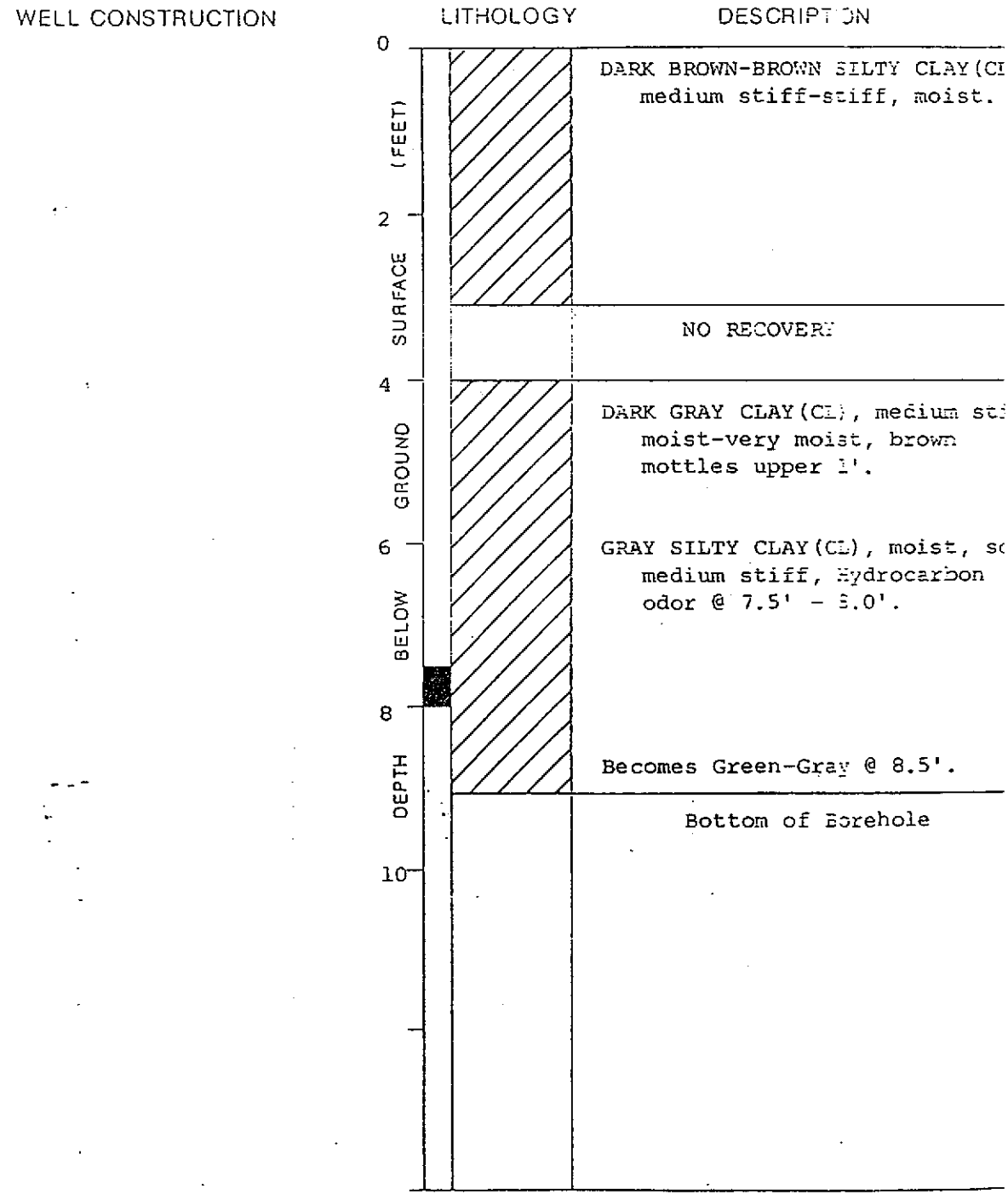
Contact (dashed where approximate)

Location of sample

ES ENGINEERING-SCIENCE

CLIENT Ahmanson Development
LOCATION 21st & Harrison Streets Oakland, California
DATE 28 October 1987
GEOLOGIST W. Hauck

TEST HOLE NUMBER AK-17
DRILLER Handdriven Sampling
DRILLING METHOD Hand Held Driver
HOLE DIAMETER 1.25"



EXPLANATION

Water level during drilling

Contact (dashed where approximate)

Location of sample

ES ENGINEERING - SCIENCE

CLIENT Ahmanson Development
21st & Harrison Streets
LOCATION Oakland, California

DATE 28 October 1987

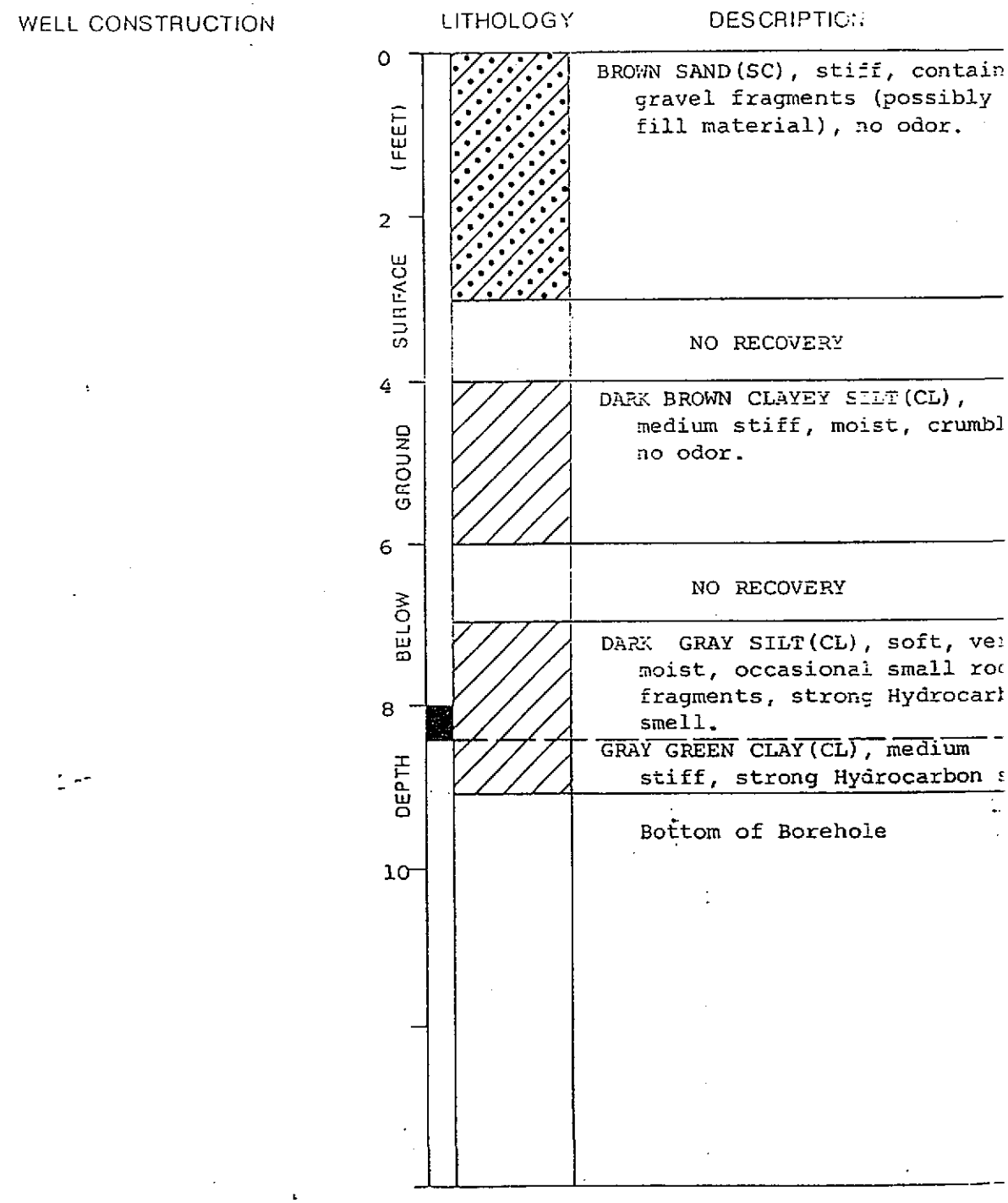
GEOLOGIST W. Hauck

TEST HOLE NUMBER AK-18

DRILLER Handdriven Sampling

DRILLING METHOD Hand Held Driver

HOLE DIAMETER 1.25"



EXPLANATION

Water level during drilling

Contact (dashed where approximate)

Location of sample

ES ENGINEERING-SCIENCE

CLIENT WIP

LOCATION 21st/ Harrison, Oakland

DATE 11/18/86

GEOLOGIST DBM

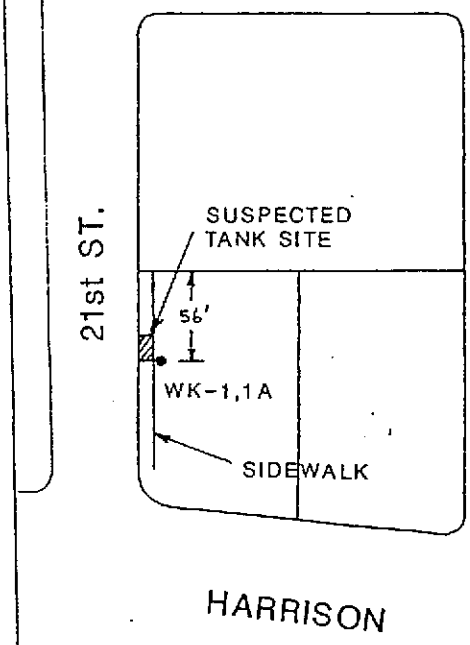
TEST HOLE NUMBER WK-1

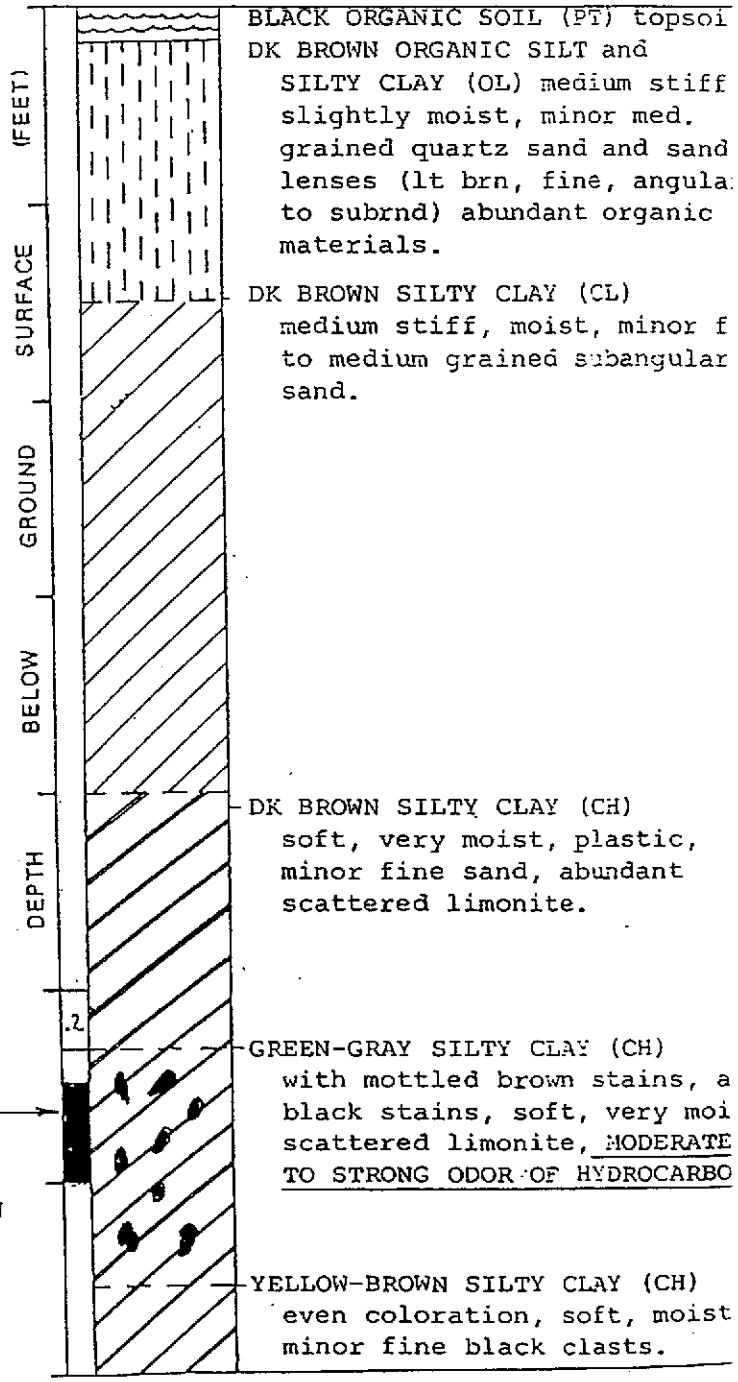
DRILLER Handriven

DRILLING METHOD

HOLE DIAMETER 1"

BORING LOCATION





EXPLANATION

▼ Water level during drilling

——— Contact (dashed where approximate)

■ Location of sample

ES ENGINEERING-SCIENCE

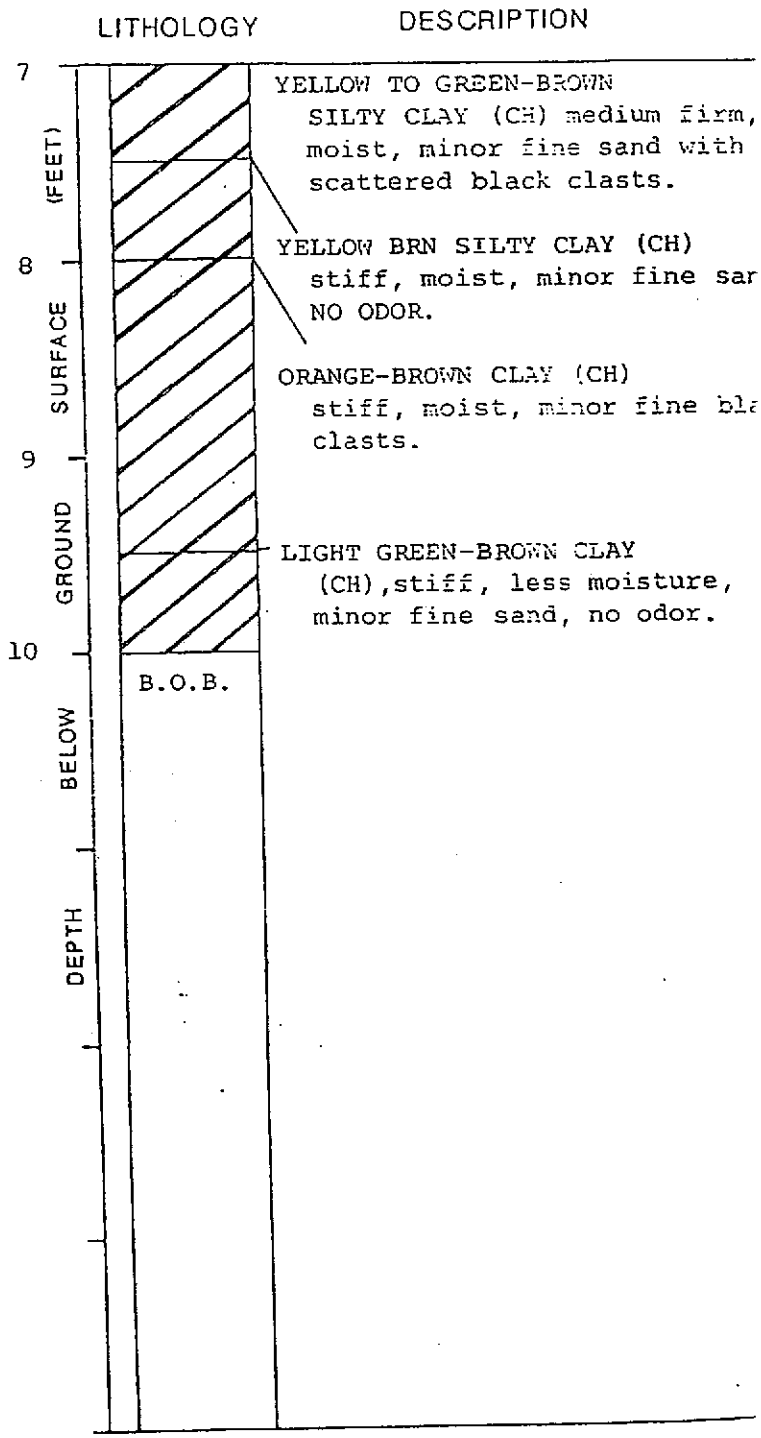
CLIENT _____ TEST HOLE NUMBER WK-1

LOCATION _____ DRILLER _____

DATE _____ DRILLING METHOD _____

GEOLOGIST _____ HOLE DIAMETER _____

BORING LOCATION



EXPLANATION

▼ Water level during drilling

—— Contact (dashed where approximate)

■ Location of sample

ES ENGINEERING-SCIENCE

CLIENT WIP

LOCATION 21st/Harrison, Oakland

DATE 11/19/86

GEOLOGIST DBM

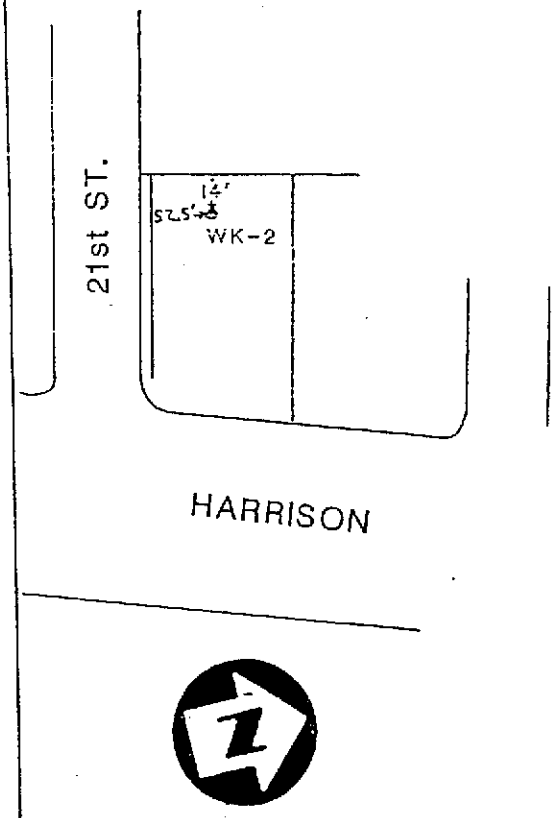
TEST HOLE NUMBER WK-2

DRILLER Handriven

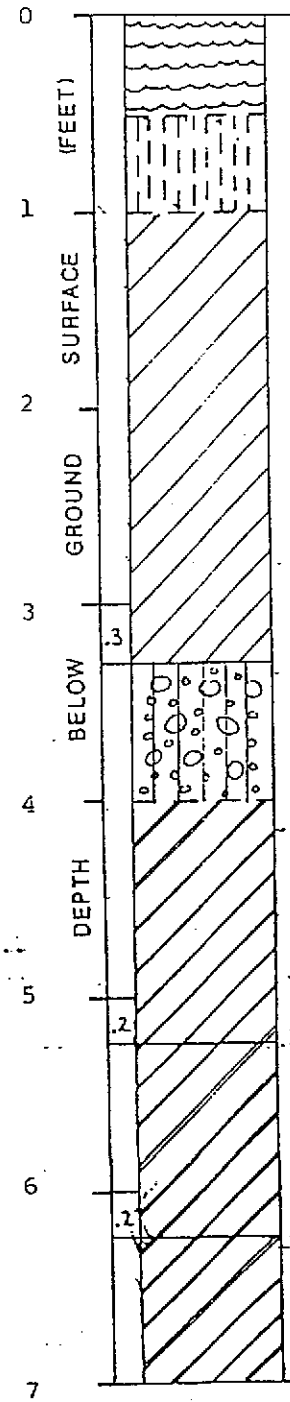
DRILLING METHOD

HOLE DIAMETER 1"

BORING LOCATION



LITHOLOGY DESCRIPTION



DK BROWN ORGANIC SOIL (Pt) Stiff, Dry, loamy soil, minor angular gravel

DK BROWN ORGANIC SILT and SILTY CLAY (OL), medium stiff slightly moist, scattered limonite

DK BROWN SILTY CLAY (CL) med. stiff, moist, lensed w/mi pockets of fine lt. brn. sand minor angular gravel and debris (brick)

SILTY (YELLOW-BROWN) GRAVEL (GRAY) (GM), loose, moist, angular, probably constructi fill or "lift"

YELLOW-BROWN to GREEN-GRAY CLAY (CH), mottled, med stiff moist, minor fine black clas no odor.

BROWN-GREEN SILTY CLAY (CH), med. stiff, moist, ra angular gravel, (engineered fill?)

YELLOW-BROWN SILTY-CLAY (CH) medium stiff, moist, minor scattered limonite and fine black clasts.

EXPLANATION

▼ Water level during drilling

—— Contact (dashed where approximate)

■ Location of sample

ES ENGINEERING-SCIENCE

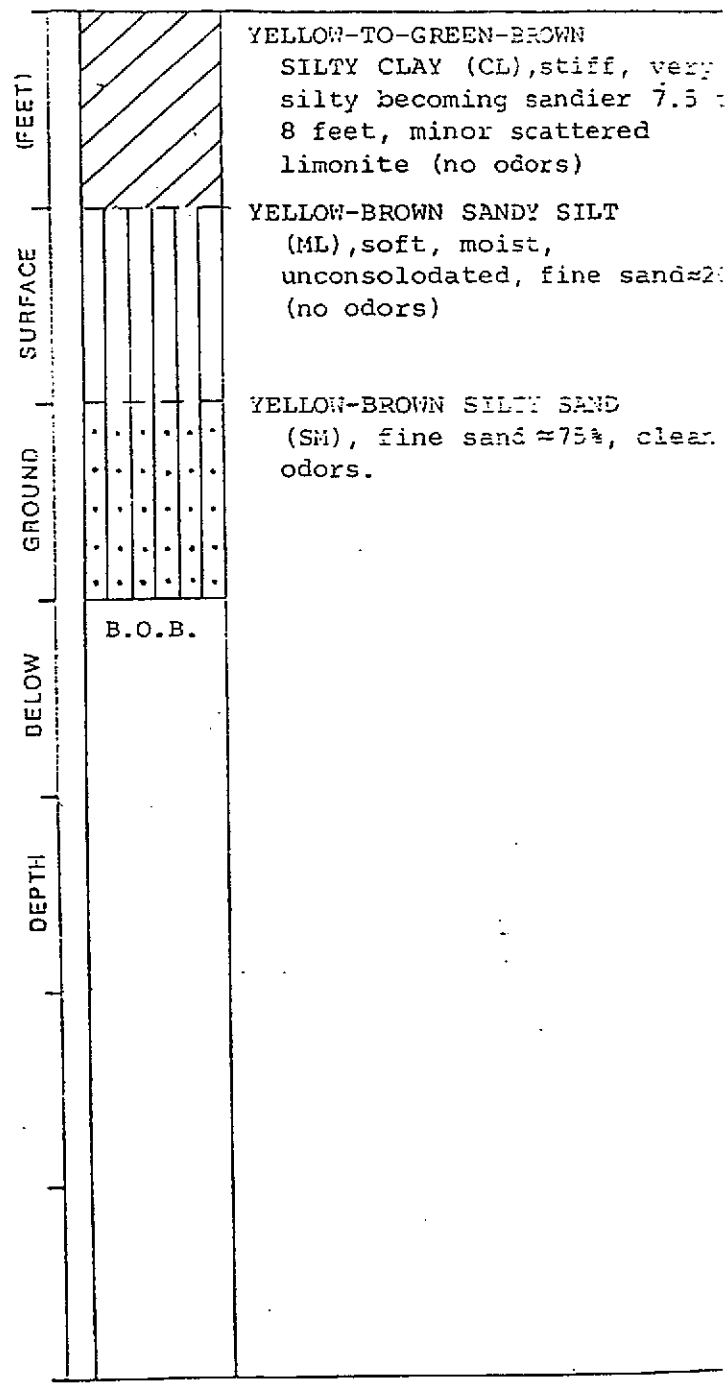
CLIENT _____ TEST HOLE NUMBER WK-2

LOCATION _____ DRILLER _____

DATE _____ DRILLING METHOD _____

GEOLOGIST _____ HOLE DIAMETER _____

BORING LOCATION



EXPLANATION

▼ Water level during drilling

——— Contact (dashed where approximate)

■ Location of sample

ES ENGINEERING-SCIENCE

CLIENT WIP

LOCATION 21st/Harrison, oakland

DATE 11/18/86

GEOLOGIST DBM

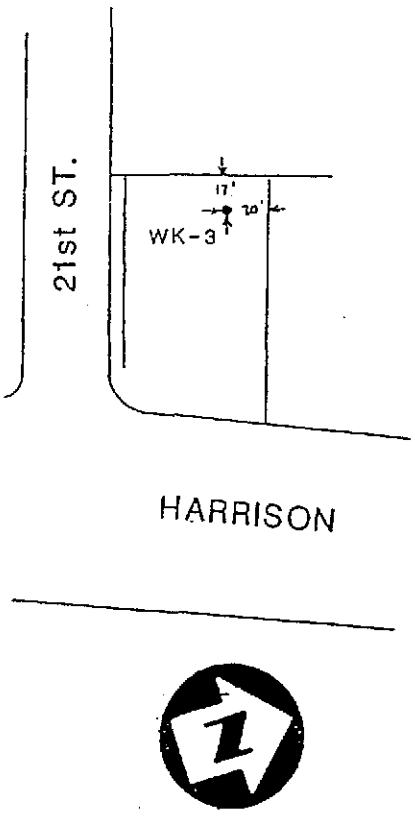
TEST HOLE NUMBER WK-3

DRILLER Handriven

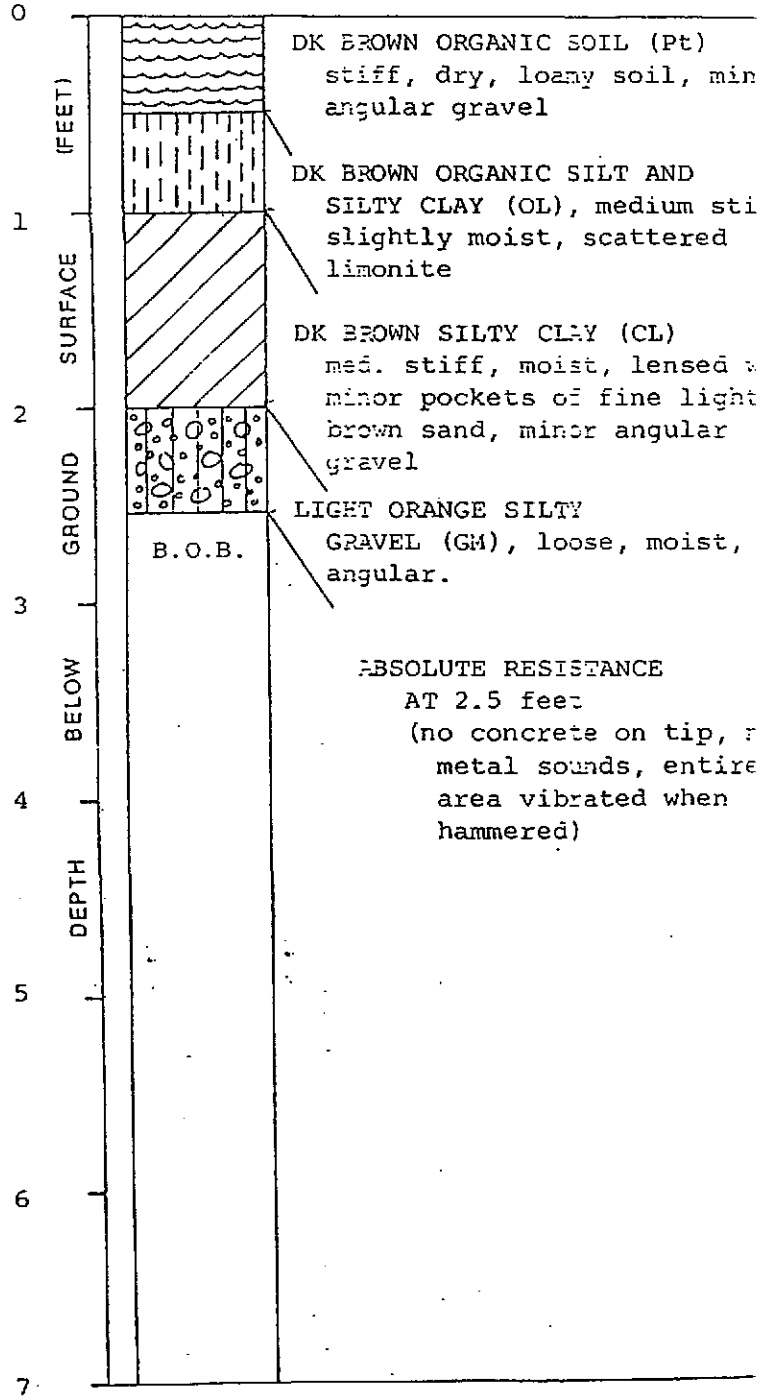
DRILLING METHOD

HOLE DIAMETER 1"

BORING LOCATION



LITHOLOGY DESCRIPTION



DK BROWN ORGANIC SOIL (Pt) stiff, dry, loamy soil, min angular gravel

DK BROWN ORGANIC SILT AND SILTY CLAY (OL), medium sti slightly moist, scattered limonite

DK BROWN SILTY CLAY (CL) med. stiff, moist, lensed w minor pockets of fine light brown sand, minor angular gravel

LIGHT ORANGE SILTY GRAVEL (GM), loose, moist, angular.

ABSOLUTE RESISTANCE AT 2.5 feet (no concrete on tip, r metal sounds, entire area vibrated when hammered)

EXPLANATION

▼ Water level during drilling

——— Contact (dashed where approximate)

■ Location of sample

ES ENGINEERING-SCIENCE

CLIENT WIP

LOCATION 21st/Harrison, Oakland

DATE 11/18/86

GEOLOGIST DBM

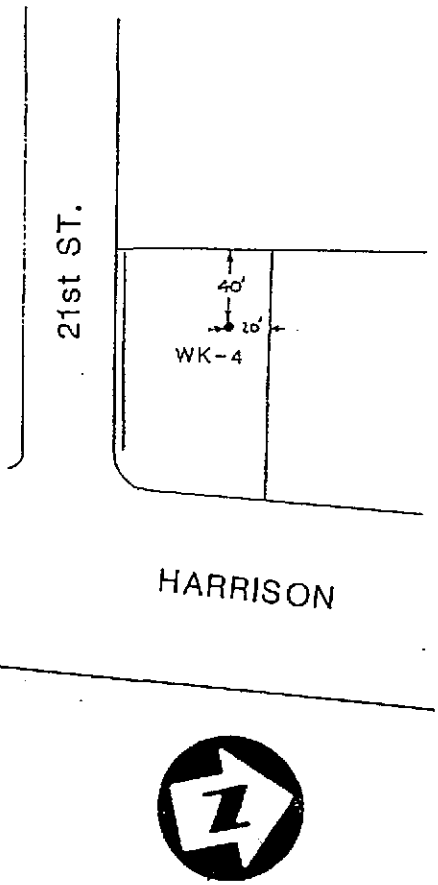
TEST HOLE NUMBER WK-4

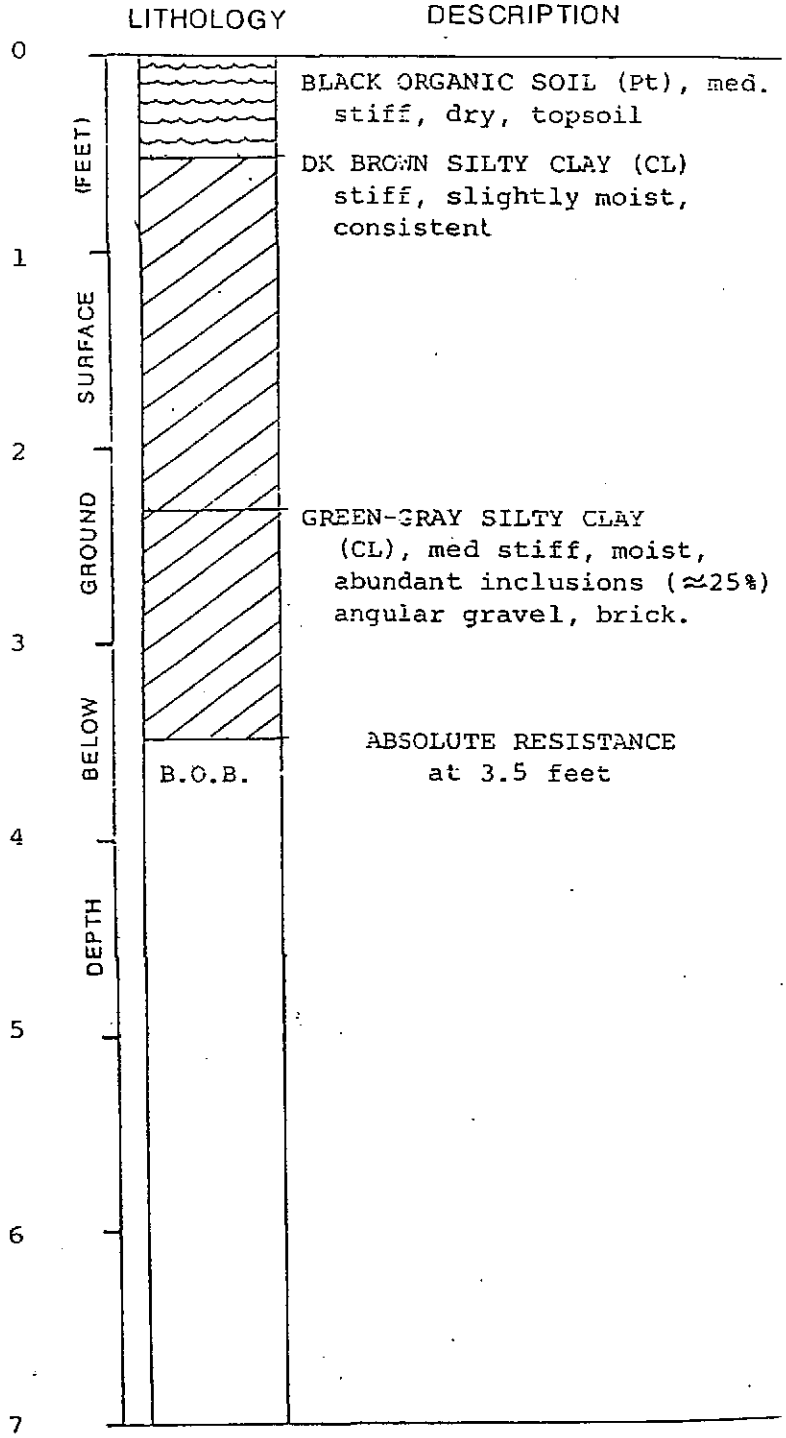
DRILLER Handriven

DRILLING METHOD

HOLE DIAMETER 1"

BORING LOCATION





EXPLANATION

▼ Water level during drilling

—— Contact (dashed where approximate)

■ Location of sample

ES ENGINEERING-SCIENCE

CLIENT WIP

LOCATION 21st/Harrison,Oakland

DATE 11/18/86

GEOLOGIST DBM

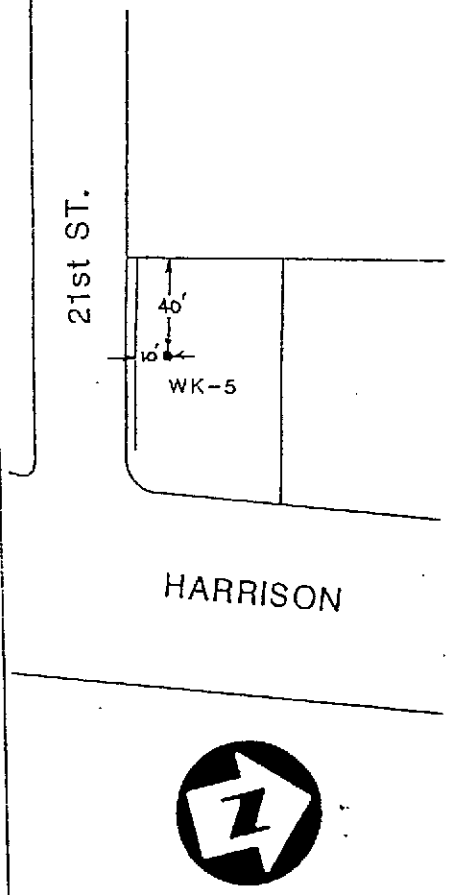
TEST HOLE NUMBER WK-5

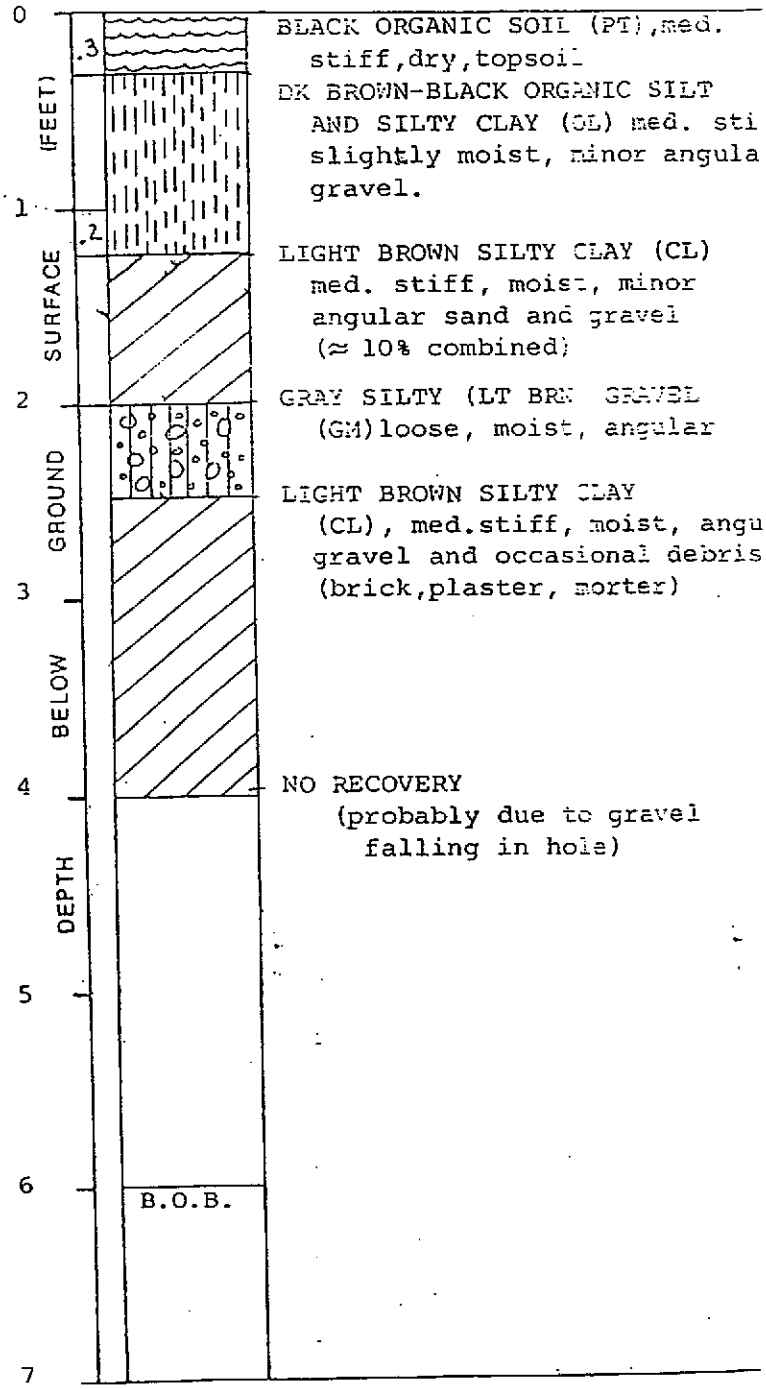
DRILLER Handriven

DRILLING METHOD

HOLE DIAMETER 1"

BORING LOCATION





EXPLANATION

▼ Water level during drilling

——— Contact (dashed where approximate)

■ Location of sample

ES ENGINEERING-SCIENCE

CLIENT WIP

LOCATION 21st/Harrison, Oakland

DATE 11/18/86

GEOLOGIST DBM

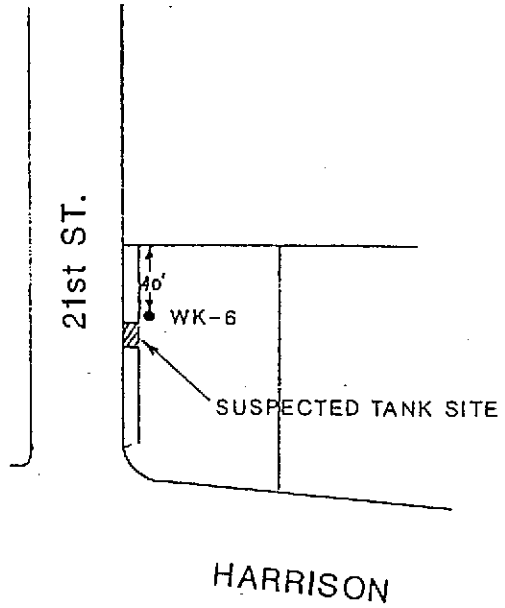
TEST HOLE NUMBER WK-6

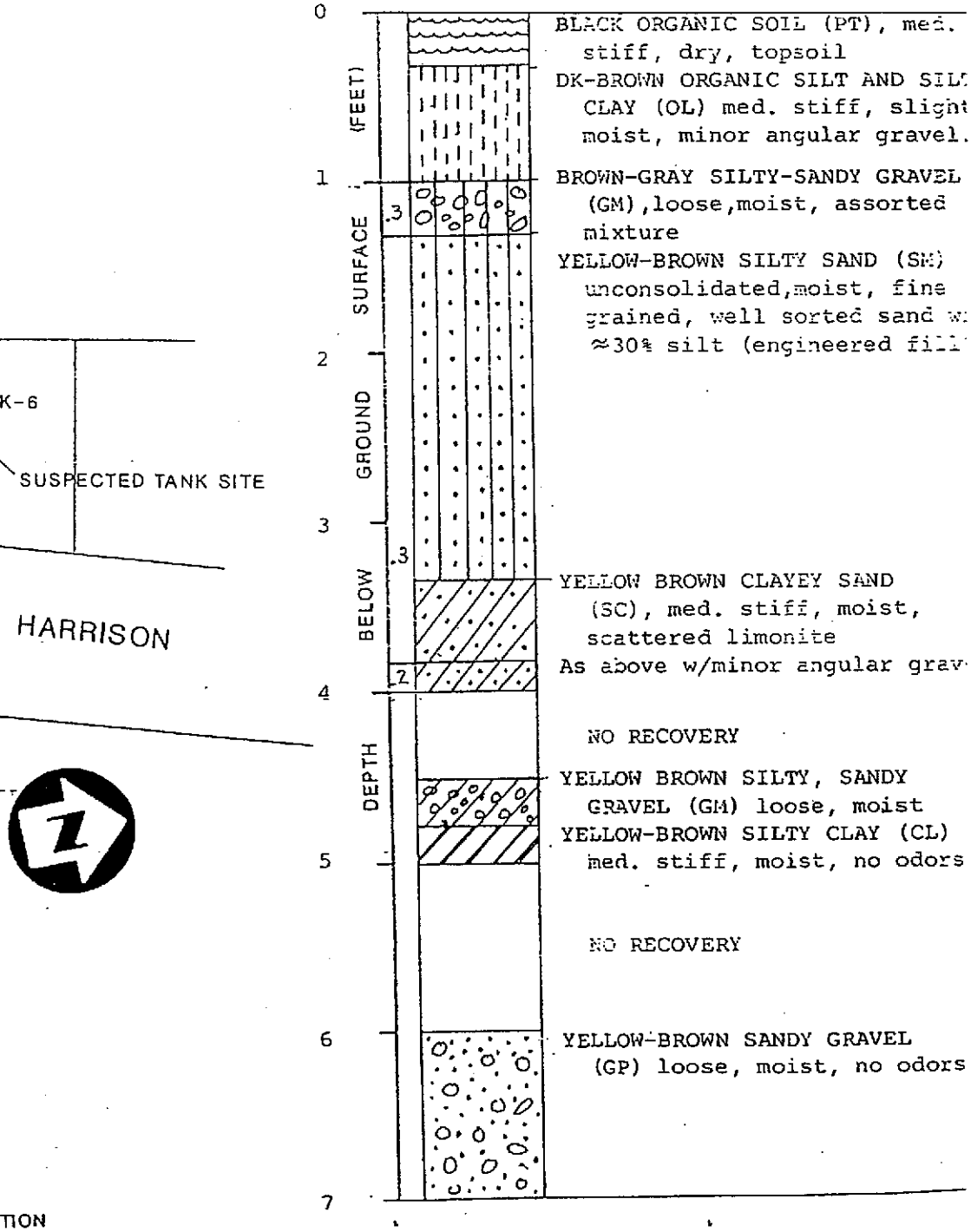
DRILLER Handriven

DRILLING METHOD

HOLE DIAMETER 1"

BORING LOCATION





EXPLANATION

▼ Water level during drilling

—— Contact (dashed where approximate)

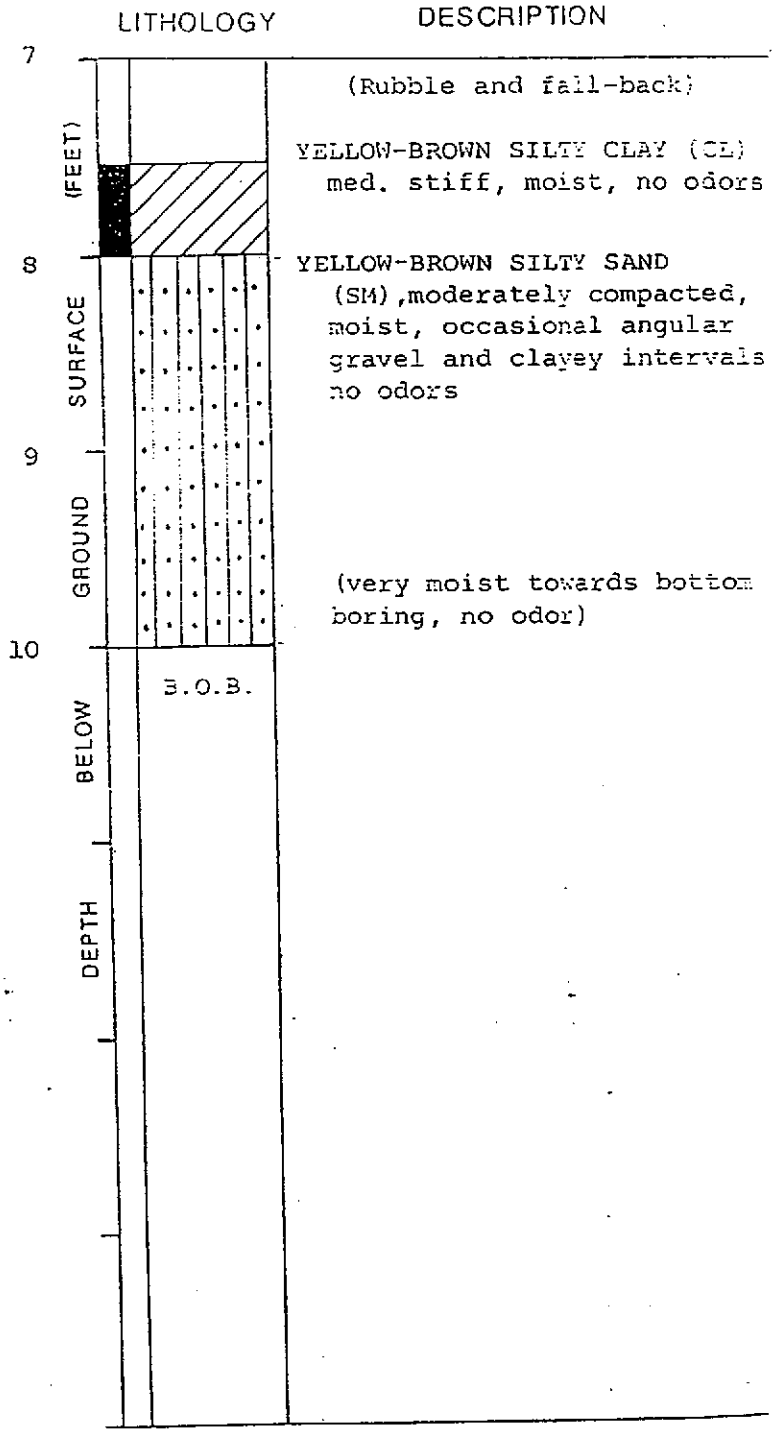
■ Location of sample

CLIENT _____ TEST HOLE NUMBER WK-6

LOCATION _____ DRILLER _____

DATE _____ DRILLING METHOD _____

GEOLOGIST _____ HOLE DIAMETER _____



EXPLANATION

▼ Water level during drilling

—— Contact (dashed where approximate)

■ Location of sample

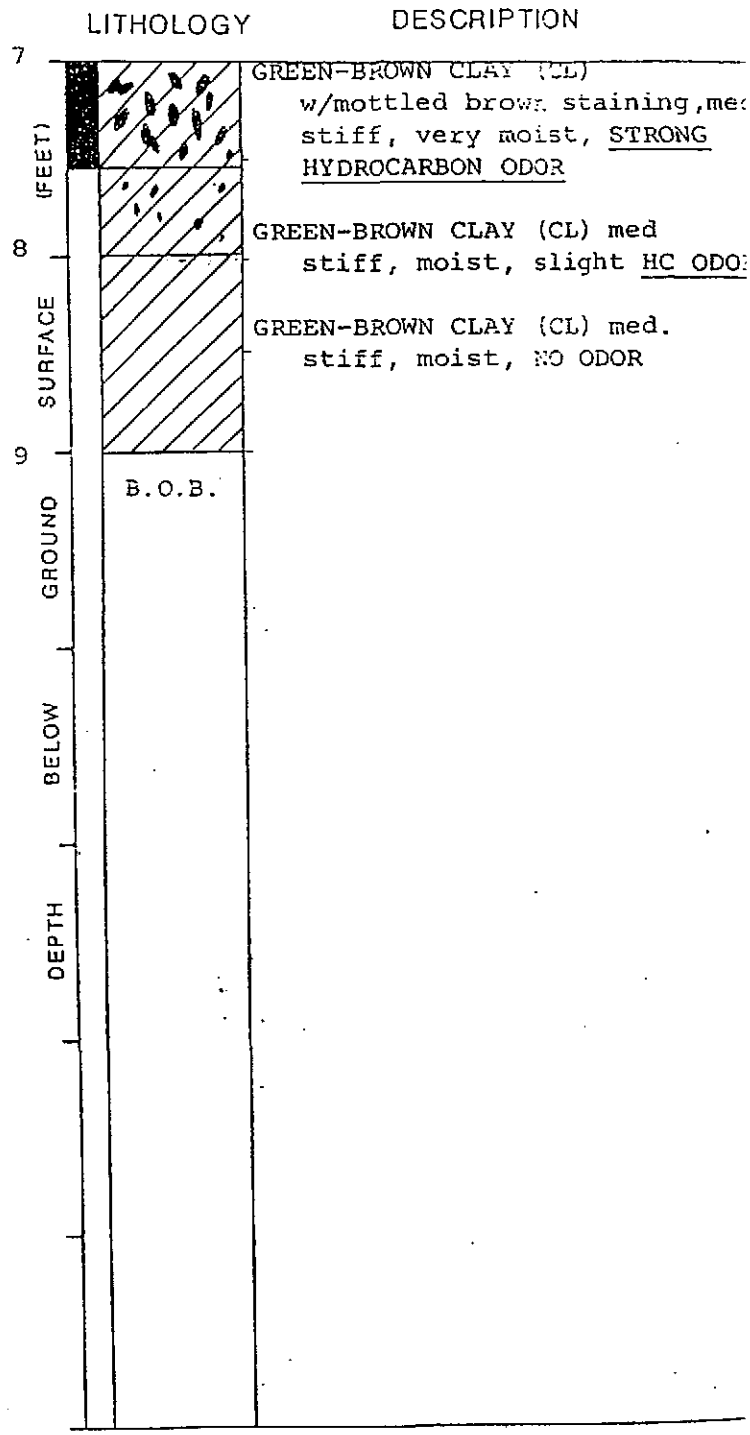
ES ENGINEERING-SCIENCE

CLIENT _____ TEST HOLE NUMBER WK-7

LOCATION _____ DRILLER _____

DATE _____ DRILLING METHOD _____

GEOLOGIST _____ HOLE DIAMETER _____



EXPLANATION

▼ Water level during drilling

——— Contact (dashed where approximate)

■ Location of sample

ES ENGINEERING-SCIENCE

CLIENT WIP

LOCATION 22nd/VALDEZ, OAKLAND

DATE 11/18/86

GEOLOGIST DBM

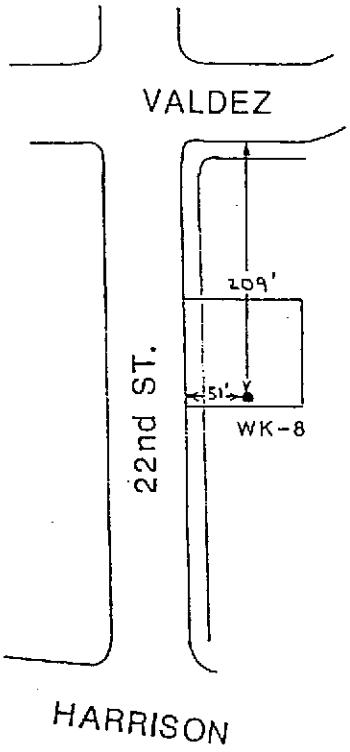
TEST HOLE NUMBER WK-8

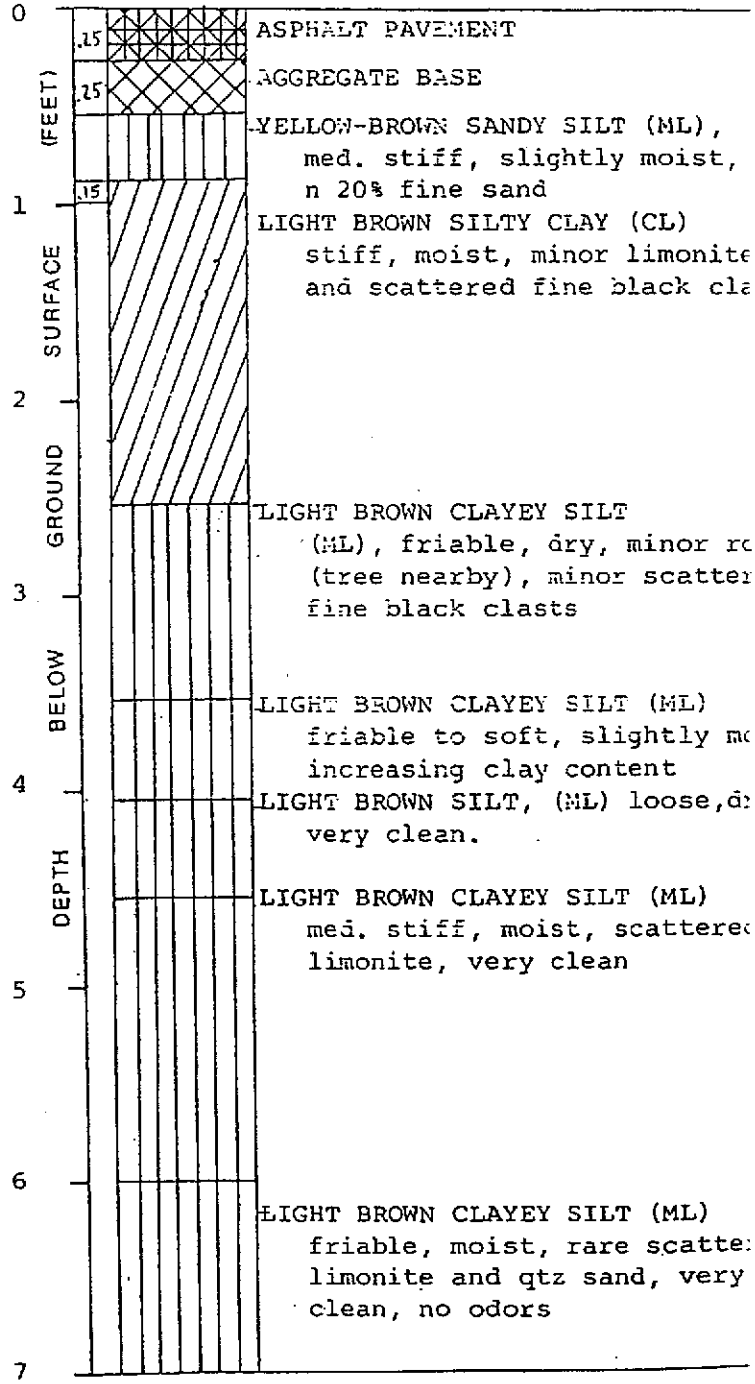
DRILLER HANDRIVEN

DRILLING METHOD

HOLE DIAMETER 1"

BORING LOCATION





EXPLANATION

▼ Water level during drilling

—— Contact (dashed where approximate)

■ Location of sample

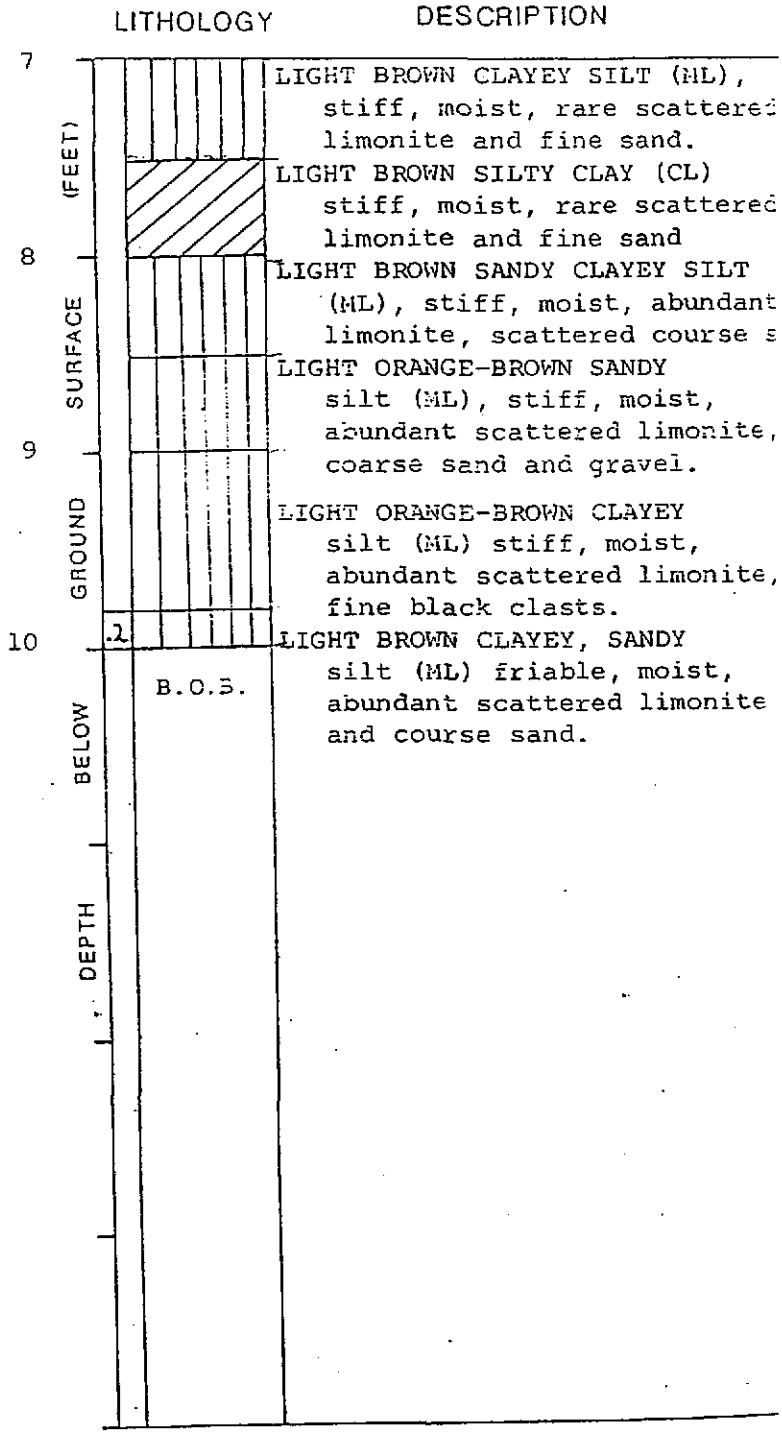
ES ENGINEERING-SCIENCE

CLIENT _____ TEST HOLE NUMBER WK-8

LOCATION _____ DRILLER _____

DATE _____ DRILLING METHOD _____

GEOLOGIST _____ HOLE DIAMETER _____



EXPLANATION

▼ Water level during drilling

—— Contact (dashed where approximate)

■ Location of sample

ENGINEERING-SCIENCE INC. PAG
11/02/87

ANALYSIS REPORT

WORK ORDER NUMBER: 179
JOB NUMBER : ZB0000000378
WORK ORDER DATE : 10/29/87

APPROVED BY _____
Lab Supervisor

REPORT DATA:
ES BERKELEY/AHMANSON
600 BANCROFT WAY
BERKELEY, CA 94710
WAYNE HAUCK

CLIENT DATA:
ES BERKELEY/AHMANSON (50)
600 BANCROFT WAY
BERKELEY, CA 94710

OF REPORT COPIES: 1

CONTRACT / PO # : 56449.08
CONTACT : WAYNE HAUCK
(415)-548-7970

TASK: 4, UNITS: ug/KG, GROUP GCFID

	LM6-COMP.	LM8-2.0	LM4-8.0	LM17-7.5	LM18-7.5
TEST COMPOUND	87103879	87103880	87103881	87103882	87103883
GC PETROLEUM HYDROCARBONS	<10	<10	<10	<10	<10

APPENDIX B

ANALYTICAL RESULTS

(FROM 1986 REPORT)

ENVIRONMENTAL RESEARCH GROUP, INC.
1400 53rd STREET
EMERYVILLE, CA 94608

Proj. No.	Project Name					No. of containers	THC (G/FID)					Remarks
66376.05	WIP/KAISER											
Samplers: (Signature)												
Sta. No.	Date	Time	Comp.	Grab	Station Location							
WK-1A,6	11/18/86	5:25			21st/Harrison Oakland	1	✓					This is probably waste oil contamination I'd need to know if it is not.
WK-7,7	11/18/86	5:25			"	1	✓					
WK-7,7.5	11/18/86	5:25			"	1	✓					"

Relinquished by: (Signature)	Date/Time 11/18 5:30	Received by: (Signature) Debbie Fisher	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Remarks	

Chain of Custody Record

Appendix B

TMA
Thermo Analytical Inc.

TMA/ERG
1400 West 53rd Street
Suite 460
Emeryville, CA 94608-2946
(415) 652-2300

Engineering Science
600 Bancroft Way
Berkeley, CA 94710

November 21, 1986
Report #9714

Attention: Dan McCullar

Site Location: Wip Kaiser

RE: Three (3) soil samples submitted on November 18, 1986 for rush total hydrocarbon response analysis; also three (3) samples for waste oil analysis.

Procedure: The samples are analyzed for total hydrocarbon response by following the method described in Attachment 2, Analytical Procedures for Fuel Leak Investigations. The samples are concentrated on a Tekmar LSC-2 automatic sample concentrator prior to injection into a gas chromatograph fitted with a flame ionization detector. Quantitation is performed, as total hydrocarbon response, against known concentrations of heptane-isooctane (55/45). The limit of detection for this method of analysis is one part per million (mg/kg).

The samples are analyzed for waste oil by following a modified EPA Method 3510 extraction procedure. The samples are extracted three (3) times with hexane. The solvent is removed from the combined extracts and carbon disulfide is added. The solution is injected into a gas chromatograph fitted with a flame ionization detector. Quantitation is performed, as total hydrocarbon response, against a solution made from a known concentration of light machine oil. The limit of detection for this method of analysis is seventeen parts per million (mg/kg).

The results are summarized in the table below:

		Concentration (mg/kg)	
TMA/ERG #	CLIENT ID	WASTE OIL	TOTAL HYDROCARBON
9714-1	WK-1a, 6	79	3.5
9714-2	WK-7, 7	ND(17)	1.4
9714-3	WK, 7, 7.5	350	ND(1)

ND = None detected. The limit of detection is in ( ).

Submitted by:

Robert B. Flay
Manager, Organics Department