ENVIROSCIENCE

April 6, 1982

Mr. Richard Michael
Chevron U.S.A., Inc.
Marketing Division
2 Annabel Lane, Suite 200
San Ramon, CA 94582

RE: Progress Report #1
Gasoline Leakage
Chevron Service Station #2506
2630 Broadway
Oakland, CA 94612
WC58X34

Dear Mr. Michael:

The report summarizes the work performed and the findings to date at the Chevron Service Station located at the intersection of Broadway and 27th Street in Oakland, California, Figure 1.

The site was discussed by you and John Schweizer on March 17, 1982. At that meeting seven monitoring well locations were agreed upon. Three additional well locations were also proposed in the event that gasoline was detected in the first set of monitoring wells. Figure 2 shows the well locations that were initially proposed and approved.

The subsurface investigation began on Thursday, March 18. A truck-mounted drilling rig, equipped with a six-inch-diameter continuous flight auger, was used to complete eight borings for monitoring wells. Subsurface piping and concrete required that the borings for the monitoring wells be located in slightly different areas than originally proposed. Figure 3 shows the layout of the monitoring wells that were installed.

Each boring extends to a depth of 20 feet and was completed as a monitoring well, as shown in Figure 4. Soils were visually classified and recorded. The logs of the soil borings are being prepared and will be forwarded to you. Wells at a depth of 20 feet are considered a minimum in order to span the entire depth of the subsurface tanks.

2450 Stanwell Drive • Suite 100 • Concord, CA 94520 • (415) 827-4723
Division of IT Corporation

The drill cuttings from borings B-2 through B-5 had a trace odor of gasoline; however, free gasoline was never observed in either soil or water samples. The presence of gasoline odor prompted the decision to install wells B-7 and B-8. These wells had no evidence of gasoline contamination.

All of the wells were surveyed, and the groundwater elevations were recorded following their completion. The data is presented in Table 1.

On March 25 the eight groundwater monitoring wells were sampled and analyzed using a Gastech GX-3 meter. The concentration of combustible gases in each well was measured in parts per million (PPM), along with the percentage of the lower explosive limit (LEL). Groundwater samples from each well were recorded. Table 1 presents the data taken on March 25 and reports the groundwater elevations.

Further sampling is required to establish a local groundwater profile and to verify the sampling data.

We trust that the information contained herein meets your needs at this time. Please call if you have any questions.

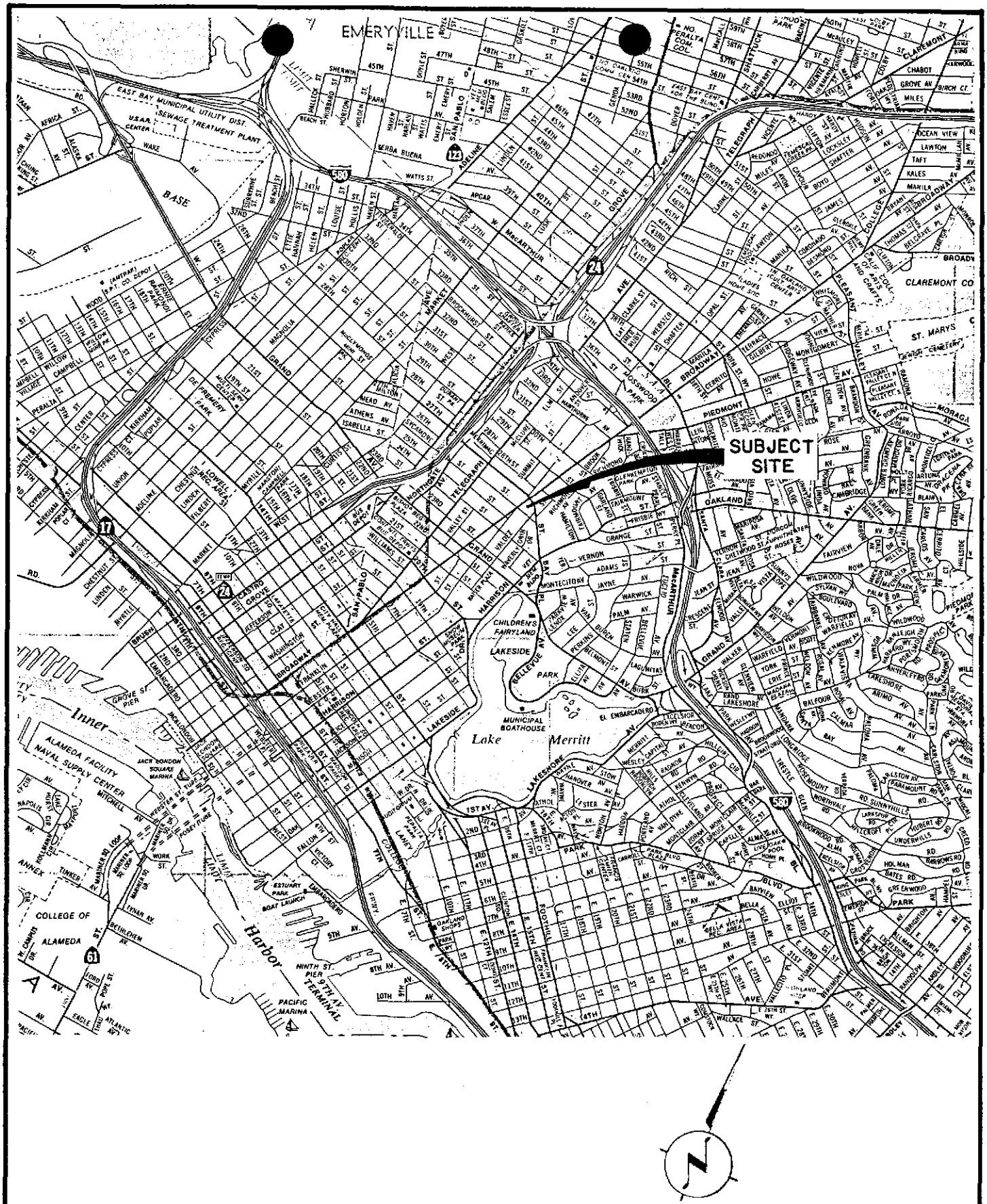
Very truly yours,

Thomas E Pearson

Thomas E. Pearson
Project Manager

TEP:jc

Attachments



ENVIROSCIENCE

LOCATION MAP

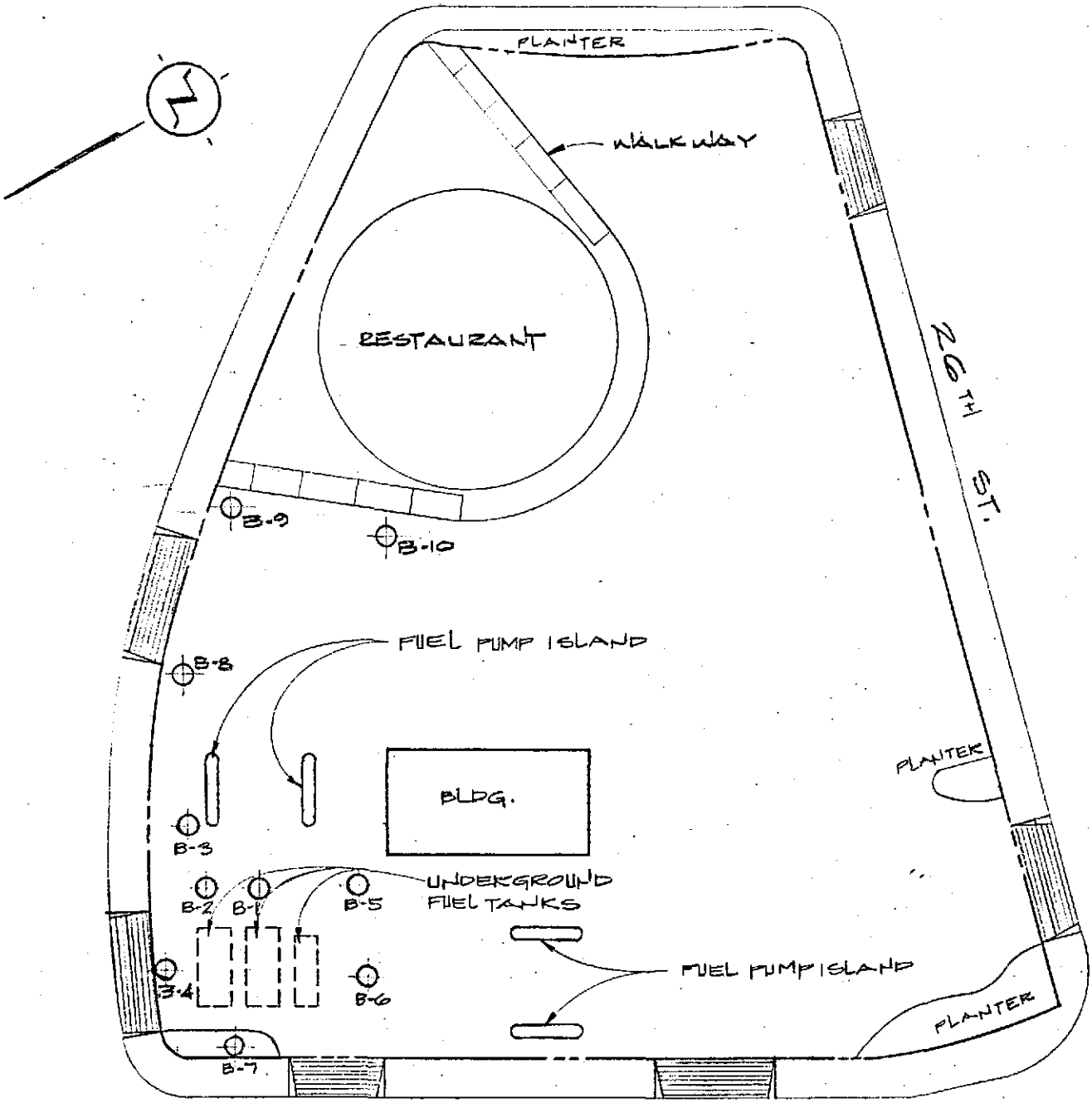
CHEVRON SERVICE STATION No 2506

2630 BROADWAY

OAKLAND, CA. 94612

FIGURE 1

DESIGNED BY: ———	DRAWN BY: ———
PROJECT NO: 1-3508	SCALE: 2"= 1 MILE
	DATE: 3-30-82

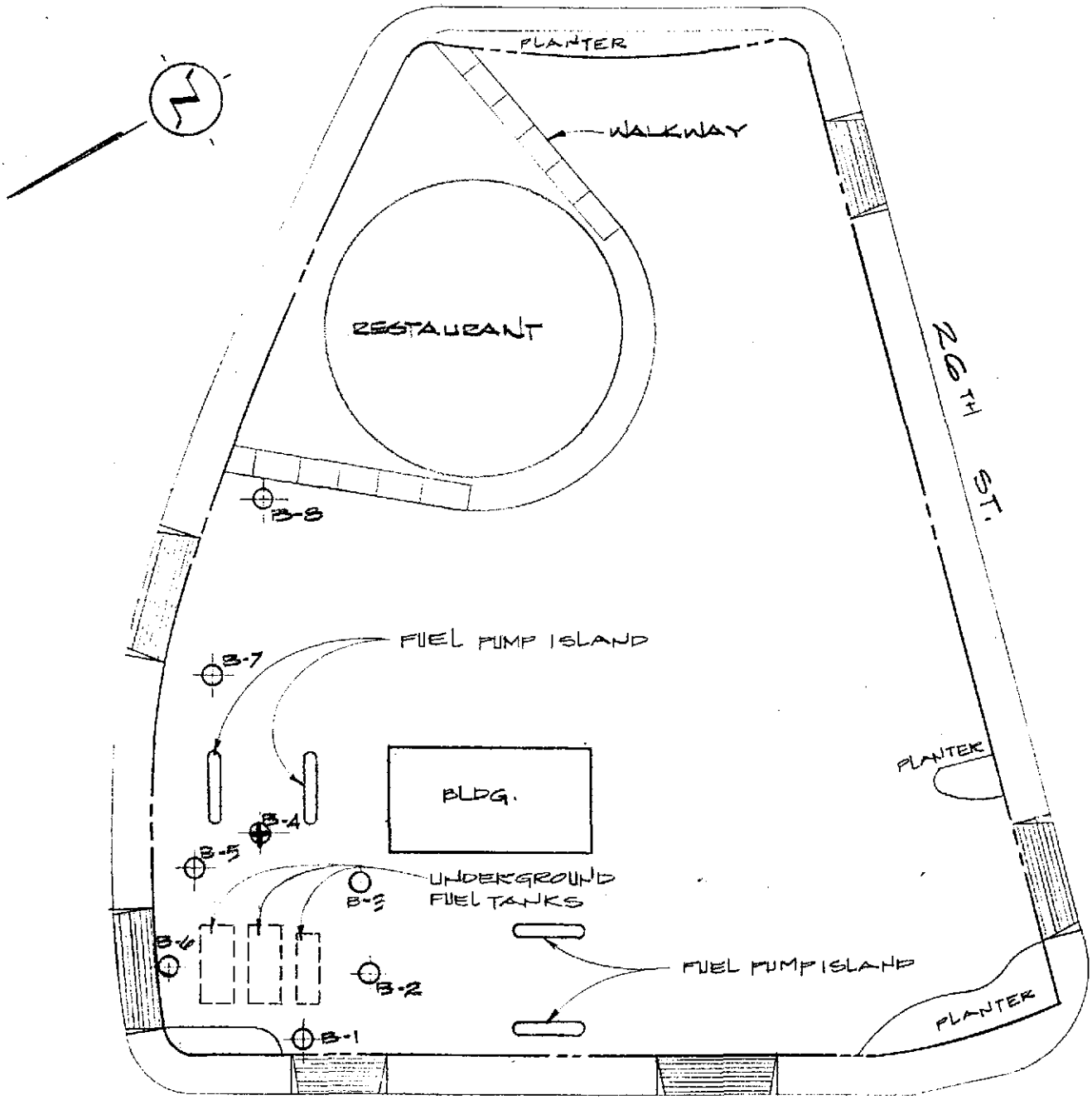


ENVIROSCIENCE

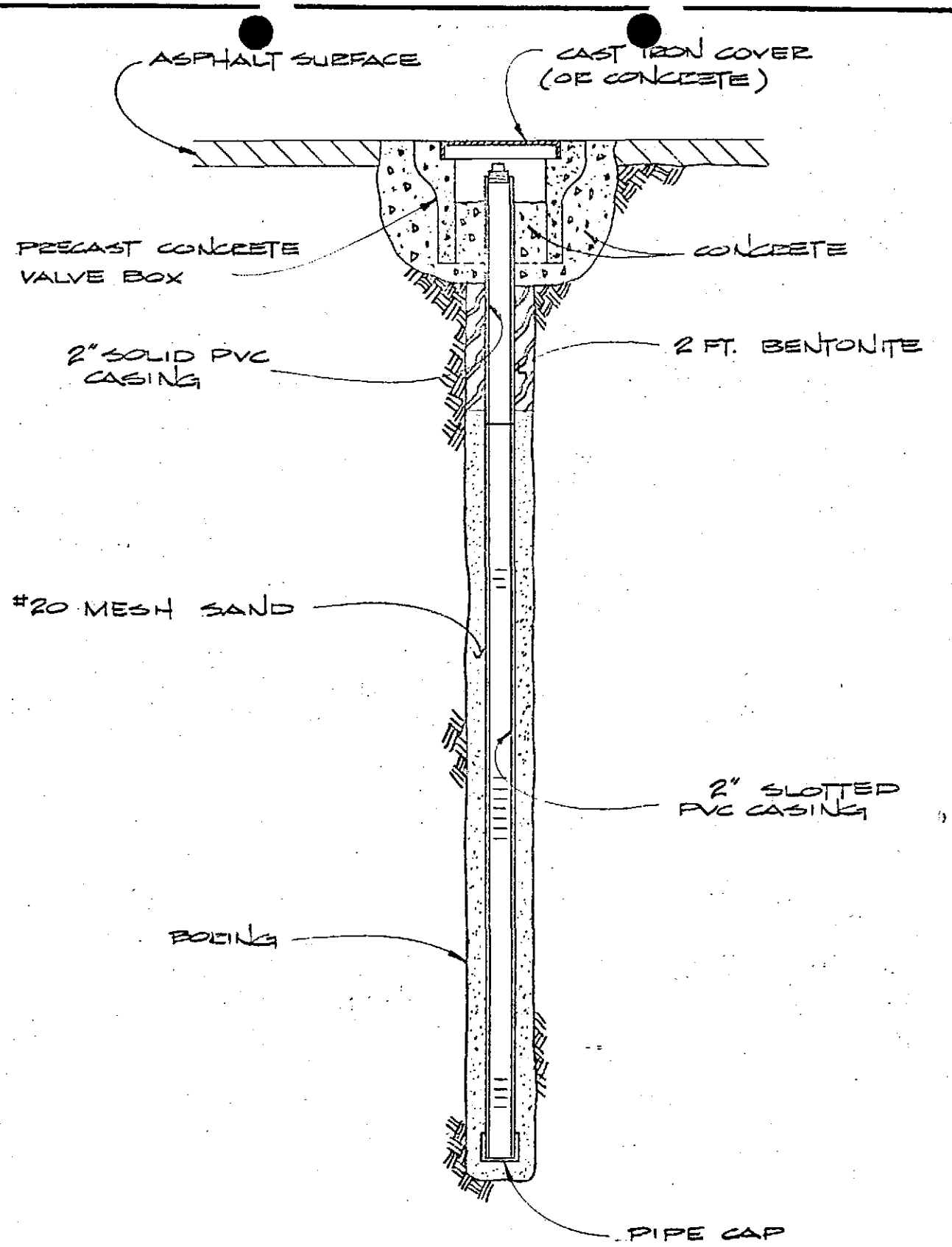
PROPOSED MONITORING WELL LOCATIONS
CHEVRON SERVICE STATION NO. 2500
2030 BROADWAY
OAKLAND, CA. 94612

FIGURE 2

DESIGNED BY :	DRAWN BY : J N SEIBOLD	
PROJECT NO : 1-3508	SCALE : 1'-40'-0"	DATE : 3-31-82



ENVIROSCIENCE	ACTUAL MONITORING WELL LOCATIONS CHEVRON SERVICE STATION No. 2506 2030 BROADWAY OAKLAND, CA. 94612	FIGURE 3
	DESIGNED BY :	DRAWN BY : J N SEIBOLD
	PROJECT NO : 1-3508	SCALE : 1'-40'-0" DATE : 3-31-82



ENVIROSCIENCE

TYPICAL MONITORING WELL PROFILE
CHEVRON SERVICE STATION #2506
2630 BROADWAY
OAKLAND, CA. 94612

FIGURE 4

DESIGNED BY: —	DRAWN BY: J N SEIBOLD	
PROJECT NO: 1-3508	SCALE: NTS	DATE: 4-7-82

TABLE 1

CHEVRON SERVICE STATION #2506

Well	Elevations (feet)	3/18/82 Groundwater Elevations (feet)	3/25/82 Groundwater Elevations (feet)	3/25/82 PPM	3/25/82 LEL	3/25/82 Remarks
B-1	23.00	15.19	14.33	0	0	Clear sample, no sheen, no odor
B-2	22.28	18.45	16.49	400	7	Clear sample, no sheen, no odor
B-3	21.78	16.13	16.03	75	0	Clear sample, no sheen, no odor
B-4	21.35	16.70	16.27	>1000	10	Clear sample, no sheen, no odor
B-5	21.53	16.40	16.26	200	5	Clear sample, no sheen, no odor
B-6	22.03	14.47	15.95	75	0	Clear sample, no sheen, no odor
B-7	19.54	15.46	15.54	75	0	Clear sample, no sheen, no odor
B-8	18.49	14.22	14.43	150	2	Clear sample, no sheen, no odor

NOTE: Elevations are above mean sea levels.

Directors:
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CYRIL M. McRAE
EARL C. KLEINFELDER
MICHAEL E. MAHONEY
RICHARD M. WARY

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WILLIAM E. ELLIS
ROBERT D. HOWELL
RON T. HEINZEN
JAMES E. McNUTT
DAVID C. MATHY
RONALD J. PERISHO

March 26, 1982
File: B-1189-1

Mr. Tom Pearson
IT Enviroscience
2450 Stanwell Drive, Suite 100
Concord, California 94520

Subject: Groundwater Monitoring Well
Installation Report
Chevron Service Station
2630 Broadway Street
Oakland, California

Dear Mr. Pearson:

The following letter report summarizes work performed by Kleinfelder & Associates at a Chevron service station in Oakland, California, as shown on Plate 1. Our investigation was performed to enable IT Enviroscience to evaluate the limits of possible gasoline leakage from an underground gasoline storage tank.

Our work consisted of drilling 8 test borings, sampling and classifying subsurface soil strata, and completing the test borings as groundwater monitoring wells. The borings were drilled within the property of the service station as shown on Plate 2.

The borings were drilled with a CME-45 truck-mounted drill rig equipped with 6-inch diameter continuous flight augers. Material encountered in each soil boring was visually classified in the field and continuously logged by a Kleinfelder engineer in accordance with the Unified Soil Classification System. Descriptions of this classification system and soils encountered in the test borings are presented on plates 3 through 11.

As indicated by the test borings which penetrated to maximum depth of 30 feet, the site is underlain by alluvial-fan deposits comprising interfingering lense of clayey sand and gravel, sandy silty clay, and sand-clay-silt mixtures. At various locations of the site, artifical fills consist of concrete, sand and gravel mixtures were encountered near surface.

Groundwater was first encountered in all borings during drilling at depths ranging from 8 to 25 feet below existing ground surface. The groundwater then rose to within 4 to 8 feet of the existing ground surface after drilling which indicating the presence of an artesian condition.

However, this groundwater condition may fluctuate depending on factors such as seasonal rainfall, groundwater pumping and aquifer recharging, seepage conditions, and construction activities. The influence of these dependent factors could be determined by a long-term monitoring program with the monitoring wells already in place.

All soil borings were completed as monitoring wells after logging for subsurface soil profile. All monitoring wells were constructed with 2-inch I.D. PVC pipes with 0.01-inch slot perforated sections. The annular space between the pipe and the wall of the boring was backfilled with #20 mesh Monterey sand to about one foot above the top of the perforated section. A one-foot bentonite plug was placed over the sand pack to provide a seal against surface water infiltration. The remaining space was then backfilled with concrete. The attached table is a summary of monitoring well construction. A typical monitoring well profile is shown on Plate 12.

We trust the information contained herein meets your needs at this time. If there are any questions regarding this report, please contact us.

Very truly yours,

J. H. KLEINFELDER & ASSOCIATES

Phillip L. Chang
Project Engineer

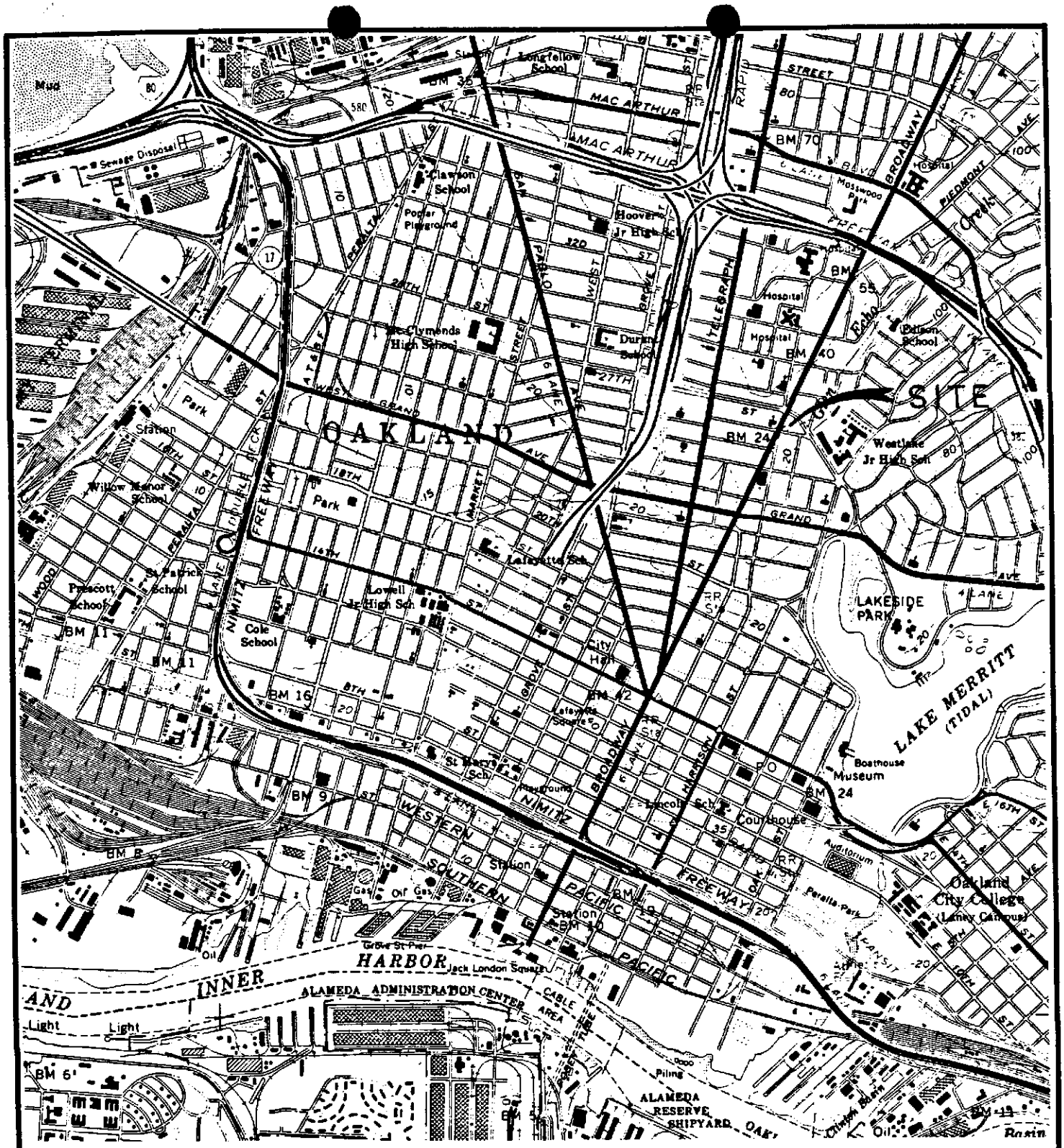
PLC:cet

Attachments

TABLE 1

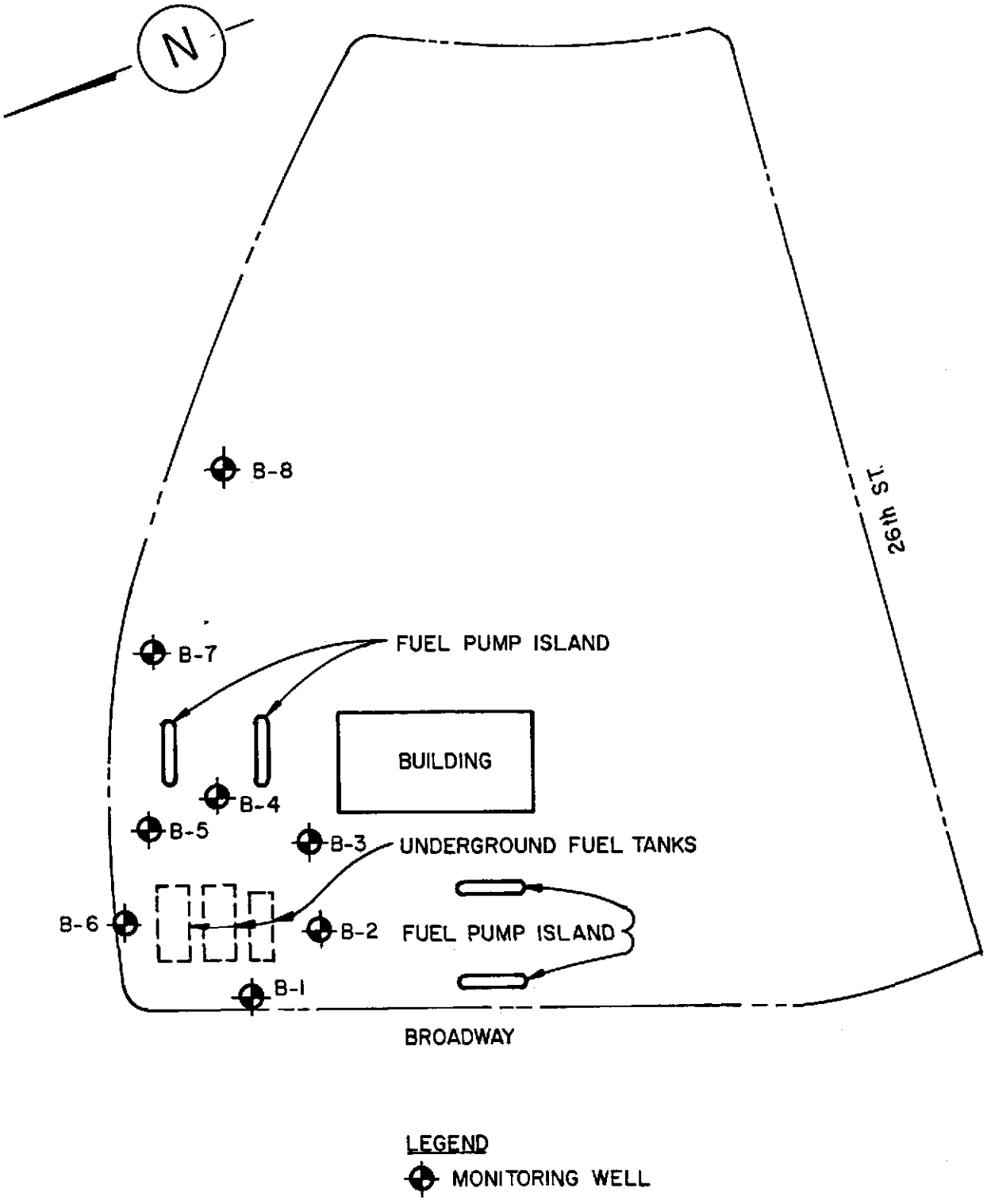
SUMMARY OF MONITORING WELL CONSTRUCTION

Well #	Date Drilled	Water Level First Encountered	Water Level At 4:00 PM 3-18-82	Perforated Section	Total Depth of Well
B-1	3-18-82	25.0'	7' 10"	5'-20'	30'
B-2	3-18-82	9.0'	3' 10"	5'-20'	20'
B-3	3-18-82	8.0'	5' 8"	5'-20'	20'
B-4	3-18-82	9.0'	7' 1"	5'-20'	20'
B-5	3-18-82	9.0'	5' 1"	5'-20'	20'
B-6	3-18-82	15.0'	7' 7"	5'-20'	20'
B-7	3-18-82	8.0'	4' 1"	5'-20'	20'
B-8	3-18-82	8.0'	4' 3"	5'-20'	20'



SCALE: 1"=2000'

J.H. KLEINFELDER & ASSOCIATES GEOTECHNICAL CONSULTANTS • MATERIALS TESTING	IT ENVIROSCIENCE/CHEVRON OAKLAND, CALIFORNIA **SITE LOCATION MAP**	PLATE **1**
PREPARED BY: PLC DATE: 3/82 CHECKED BY: DCM DATE: 3/82	PROJECT NO. B-1189-1	



LEGEND

⊕ MONITORING WELL

J.H. KLEINFELDER & ASSOCIATES GEOTECHNICAL CONSULTANTS • MATERIALS TESTING	IT ENVIROSCIENCE/CHEVRON OAKLAND, CALIFORNIA BORING LOCATION MAP	PLATE 2
PREPARED BY: PLC DATE: 3/82 CHECKED BY: DCM DATE: 3/82	PROJECT NO. B-1189-1	

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		LTR	DESCRIPTION
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	GW	Well-graded gravels or gravel sand mixtures, little or no fines.
		GP	Poorly-graded gravels or gravel sand mixture, little or no fines.
		GM	Silty gravels, gravel-sand-clay mixtures.
		GC	Clayey gravels, gravel-sand-clay mixtures.
	SAND AND SANDY SOILS	SW	Well-graded sands or gravelly sands, little or no fines.
		SP	Poorly-graded sands or gravelly sands, little or no fines.
		SM	Silty sands, sand-silt mixtures.
		SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS	SILTS AND CLAYS LL<50	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
		OL	Organic silts and organic silt-clays of low plasticity
	SILTS AND CLAYS LL>50	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays.
		OH	Organic clays of medium to high plasticity.
HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils.

Standard penetration split spoon sample

Modified California sampler

Shelby tube sample

Water level observed in boring

* No recovery

NFWE No free water encountered

NOTE: The lines separating strata on the logs represent approximate boundaries only. The actual transition may be gradual. No warranty is provided as to the continuity of soil strata between borings. Logs represent the soil section observed at the boring location on the date of drilling only.

J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PREPARED BY: PLC DATE: 3/82
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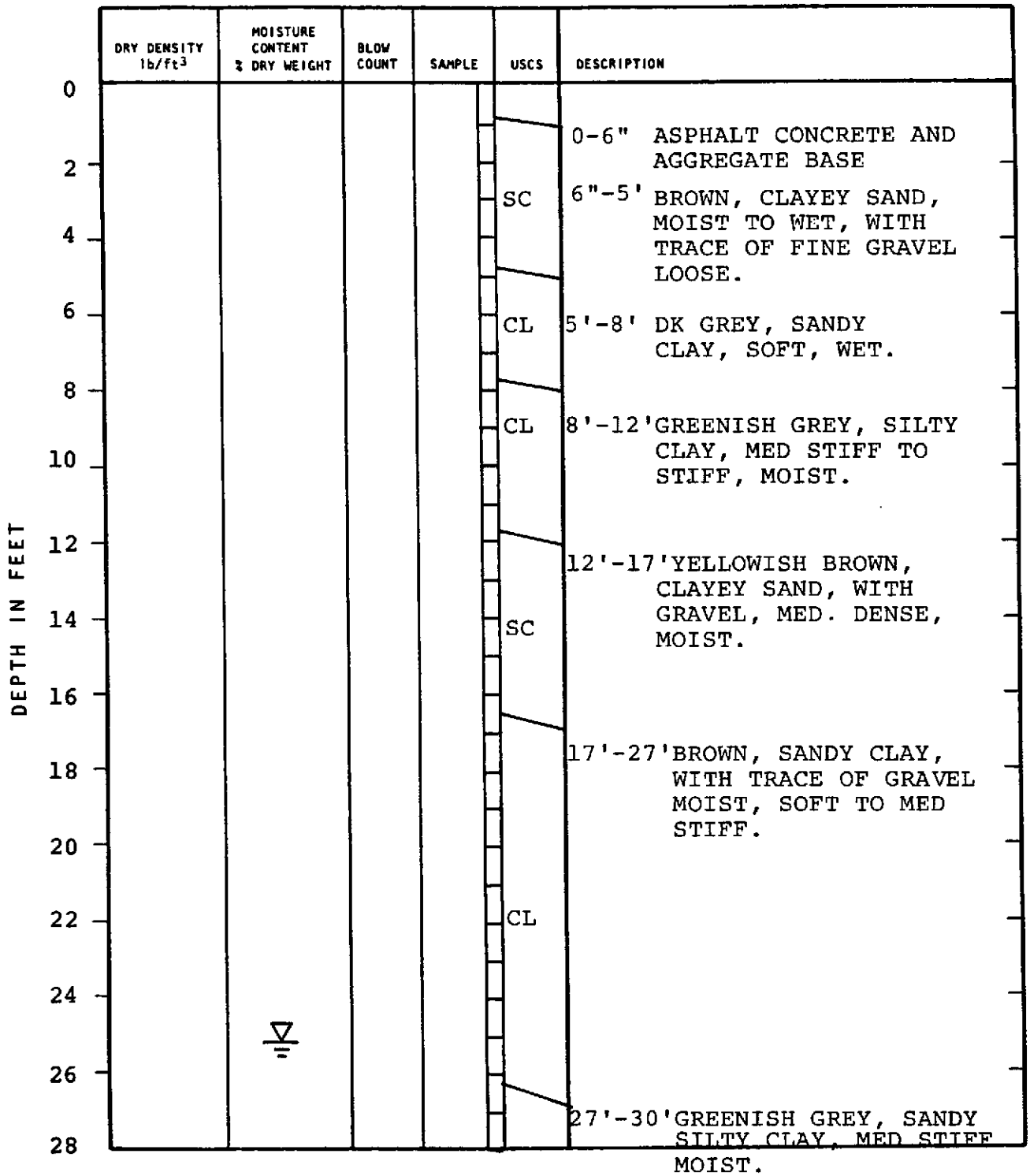
IT ENVIROSCIENCE/CHEVRON
OAKLAND, CALIFORNIA
BORING LOG LEGEND

PROJECT NO. B-1189-1

PLATE 3



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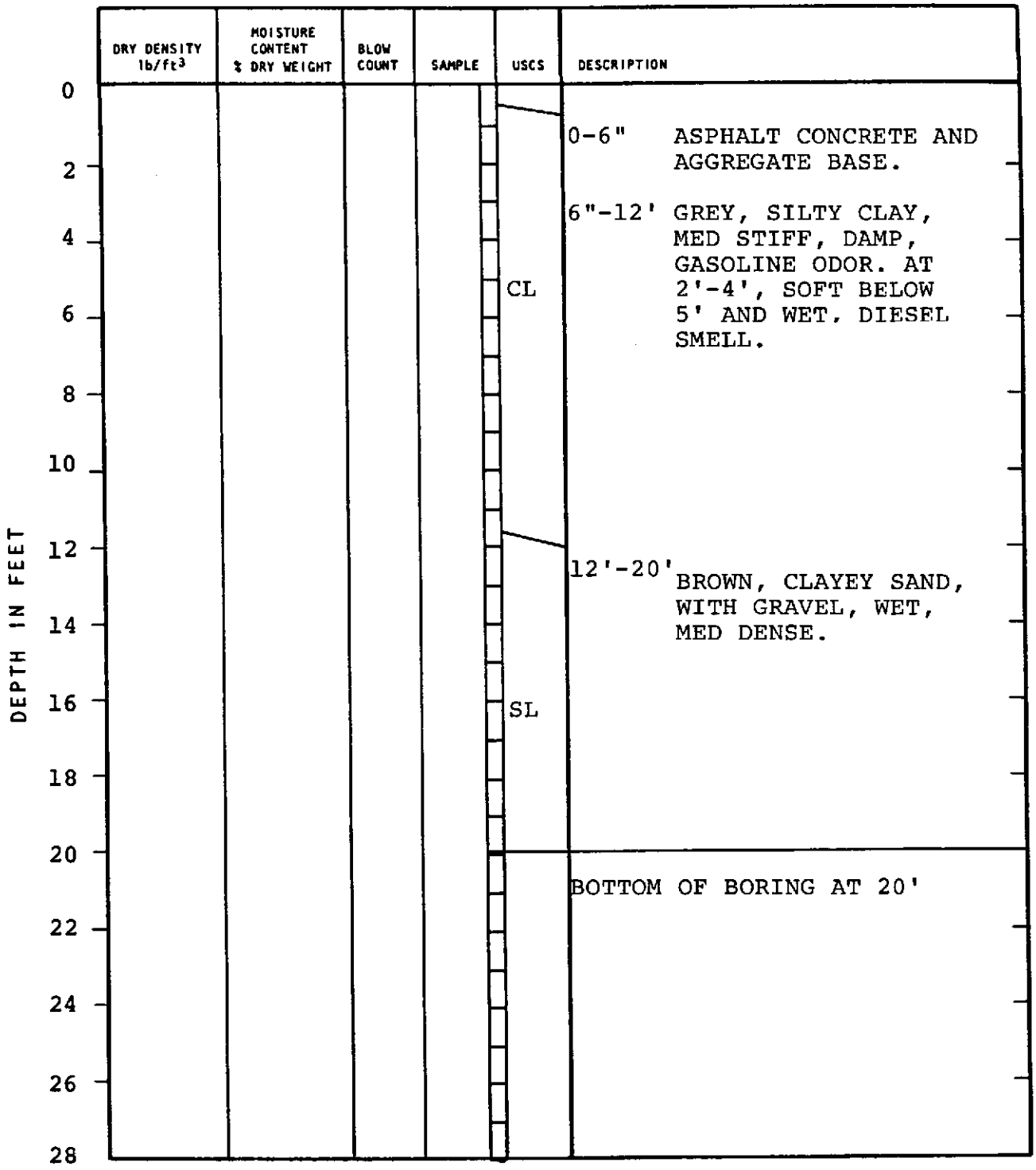
CHECKED BY: DCM DATE: 3/82

IT ENVIROSCIENCE/CHEVRON
OAKLAND, CALIFORNIA
LOG OF BORING NO. B-1

PROJECT NO. B-1189-1

PLATE
4



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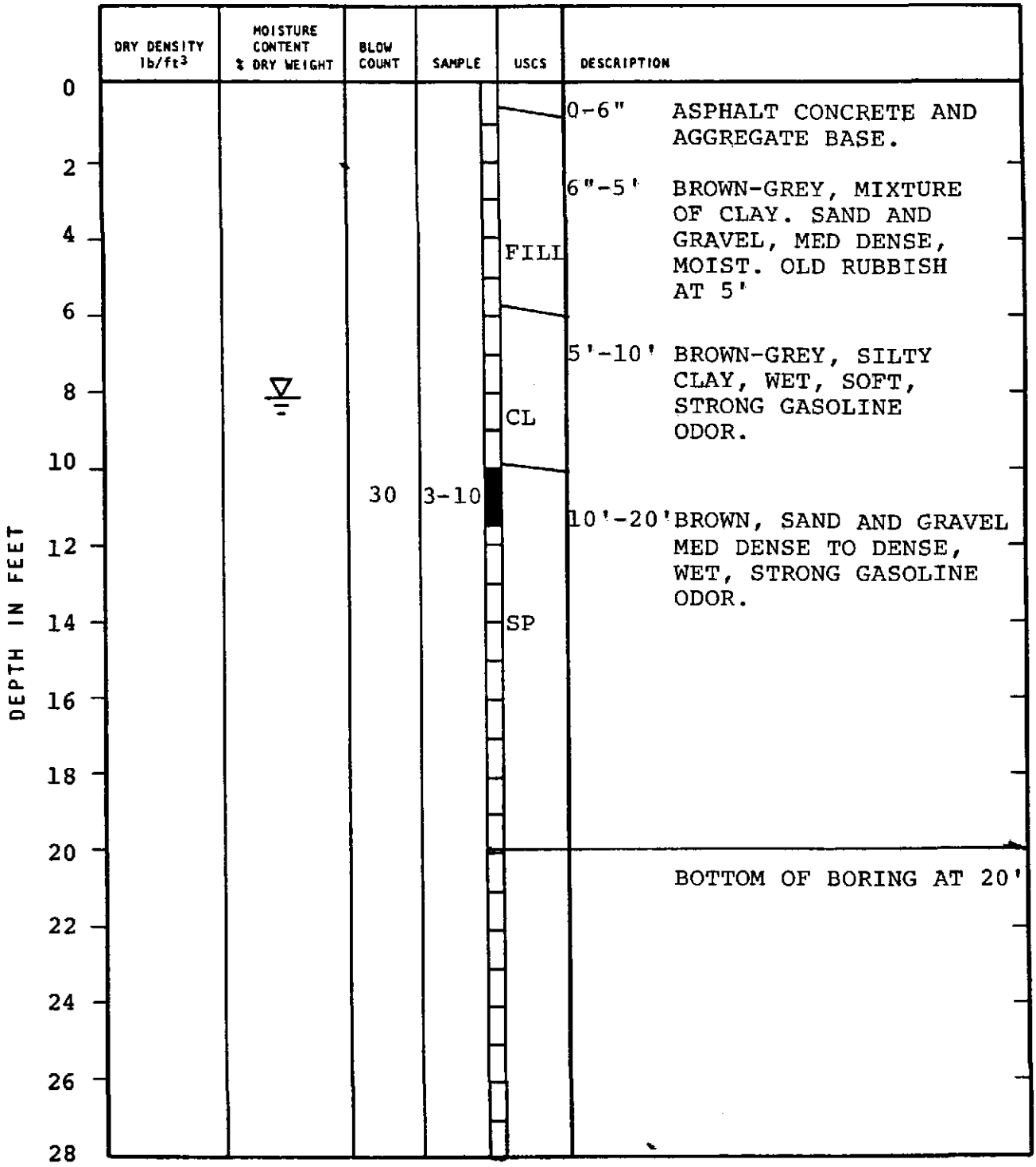
CHECKED BY: DCM DATE: 3/82

IT ENVIROSCIENCE/CHEVRON
OAKLAND, CALIFORNIA
LOG OF BORING NO. B-2

PROJECT NO. B-1189-1

PLATE
5



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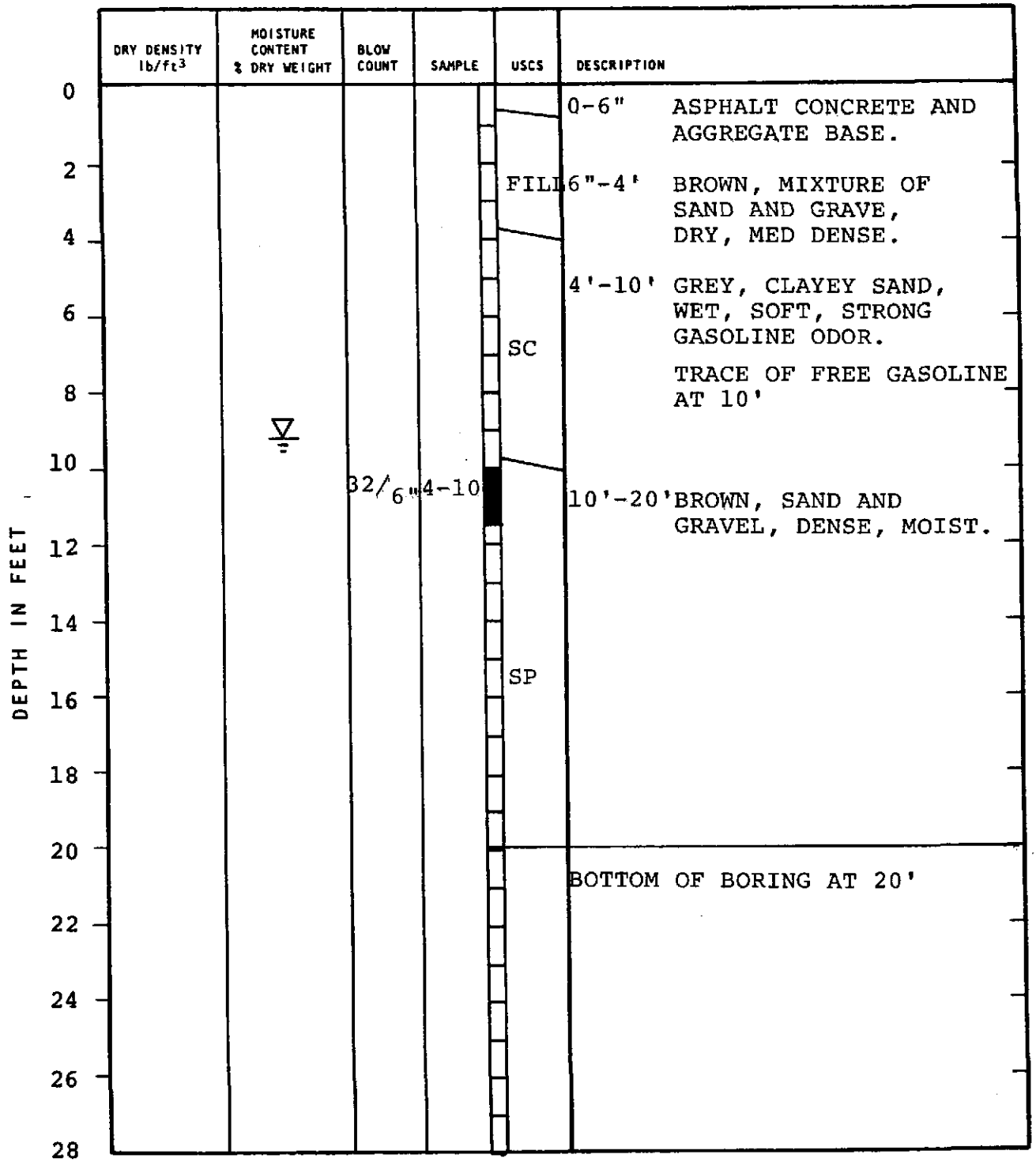
CHECKED BY: DCM DATE: 3/82

IT ENVIROSCIENCE/CHEVRON
OAKLAND, CALIFORNIA
LOG OF BORING NO. B-3

PROJECT NO. B-1189-1

PLATE
6



J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

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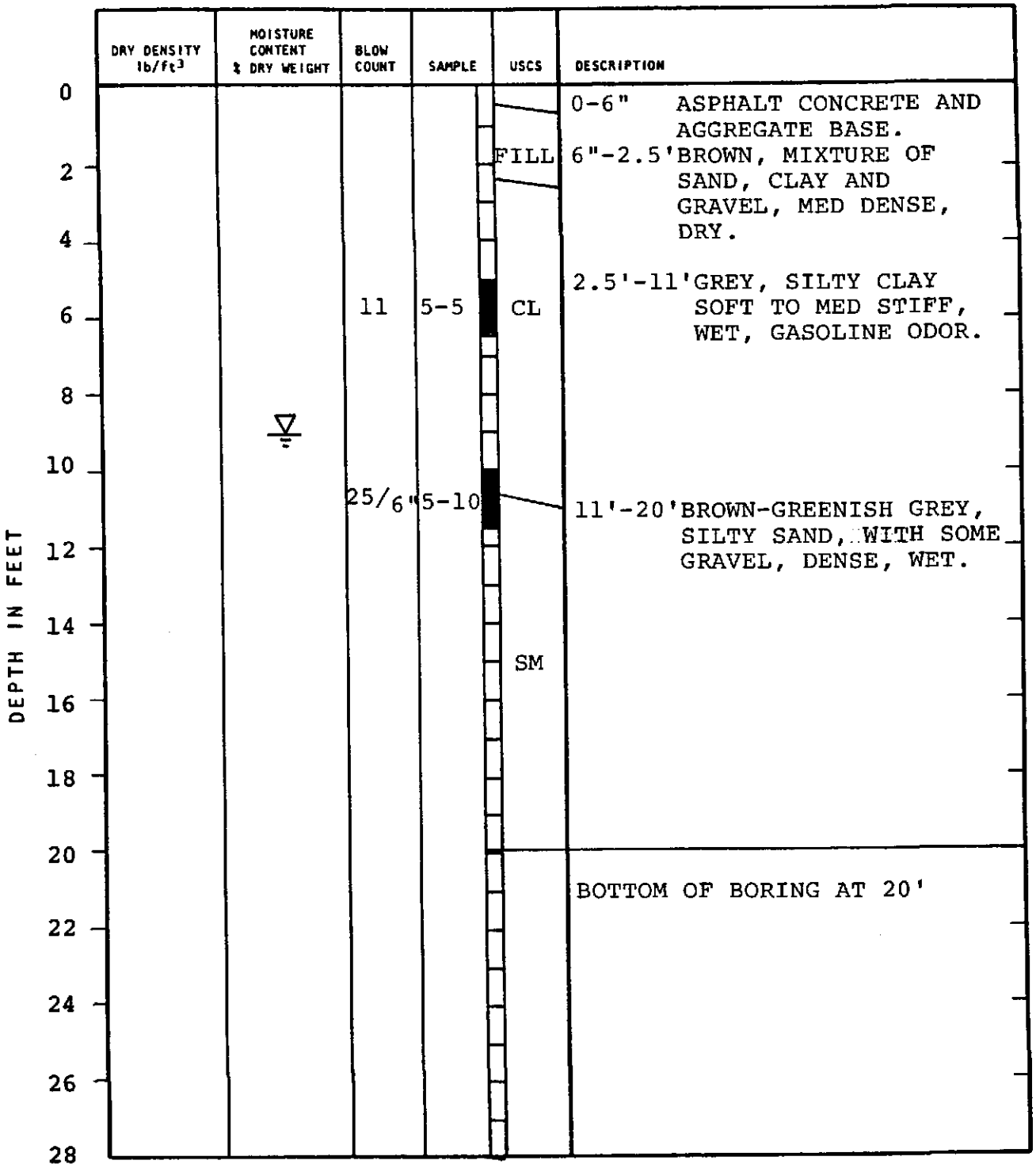
IT ENVIROSCIENCE/CHEVRON
OAKLAND, CALIFORNIA
LOG OF BORING NO. B-4

PROJECT NO. B-1189-1

PLATE
7



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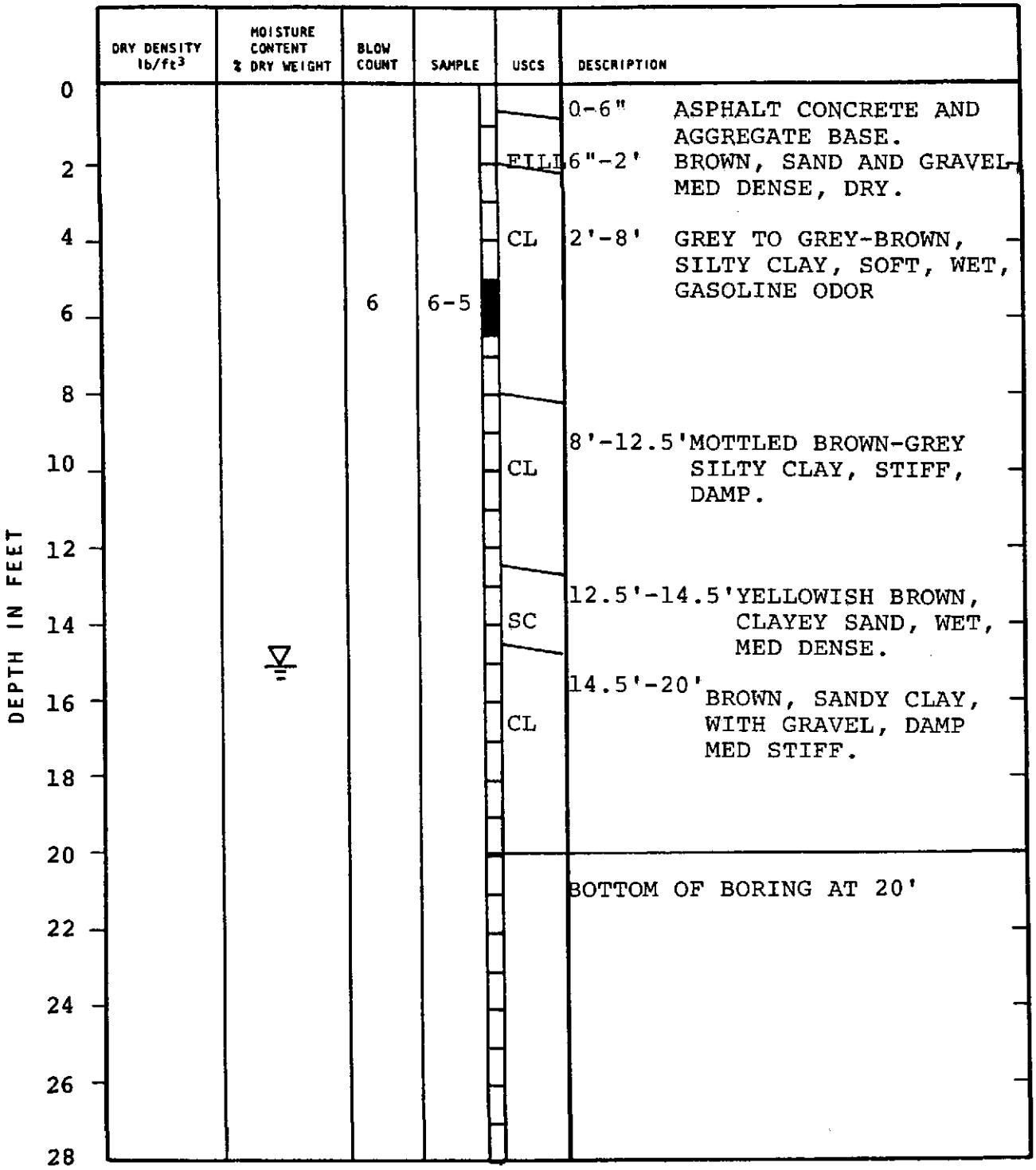
IT ENVIROSCIENCE/CHEVRON
OAKLAND, CALIFORNIA
LOG OF BORING NO. B-5

PROJECT NO. B-1189-1

PLATE
8



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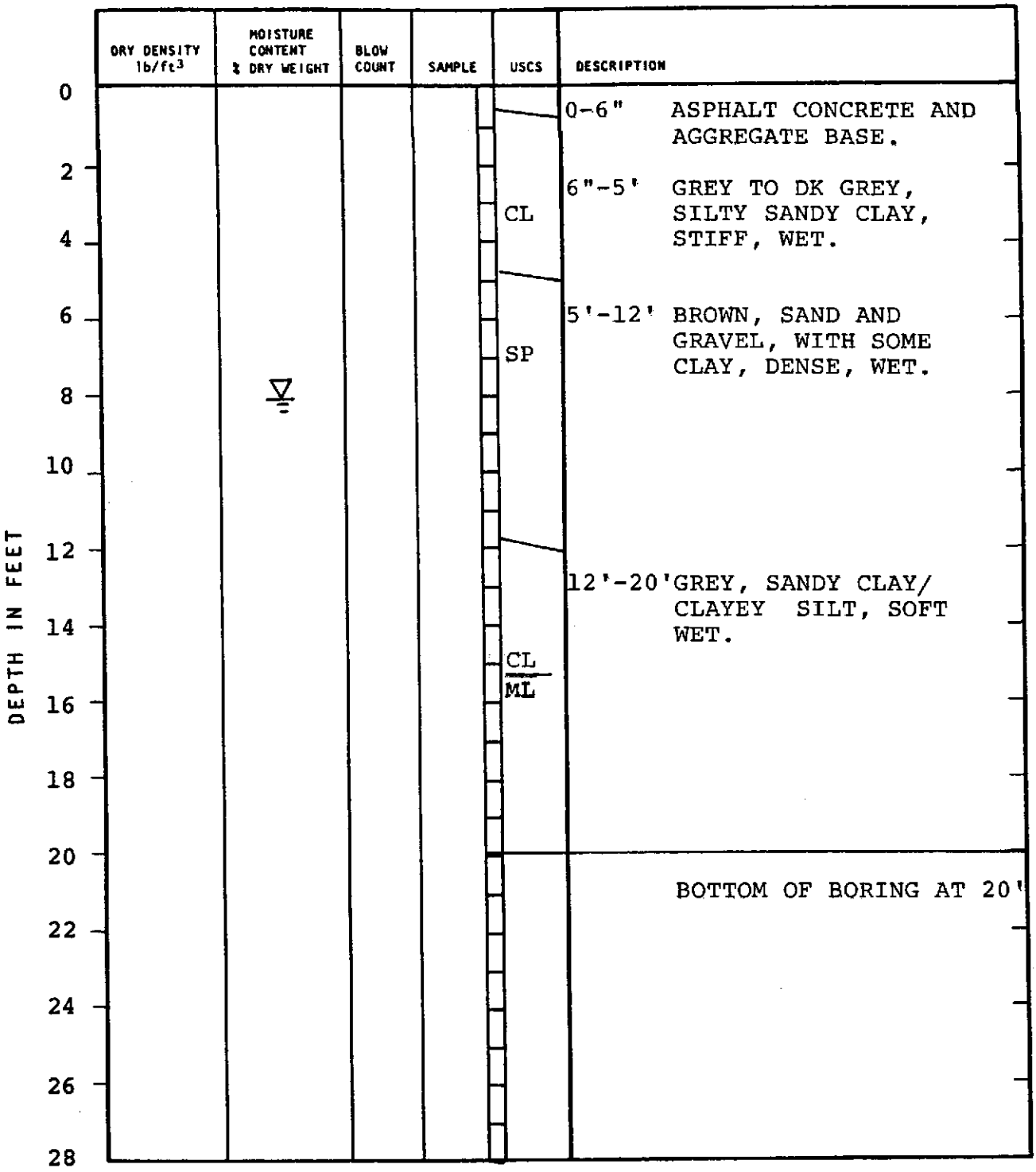
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PREPARED BY: PLC DATE: 3/82
CHECKED BY: DCM DATE: 3/82

IT ENVIROSCIENCE/CHEVRON
OAKLAND, CALIFORNIA
LOG OF BORING NO. B-6

PROJECT NO. B-1189-1

PLATE
9



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GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

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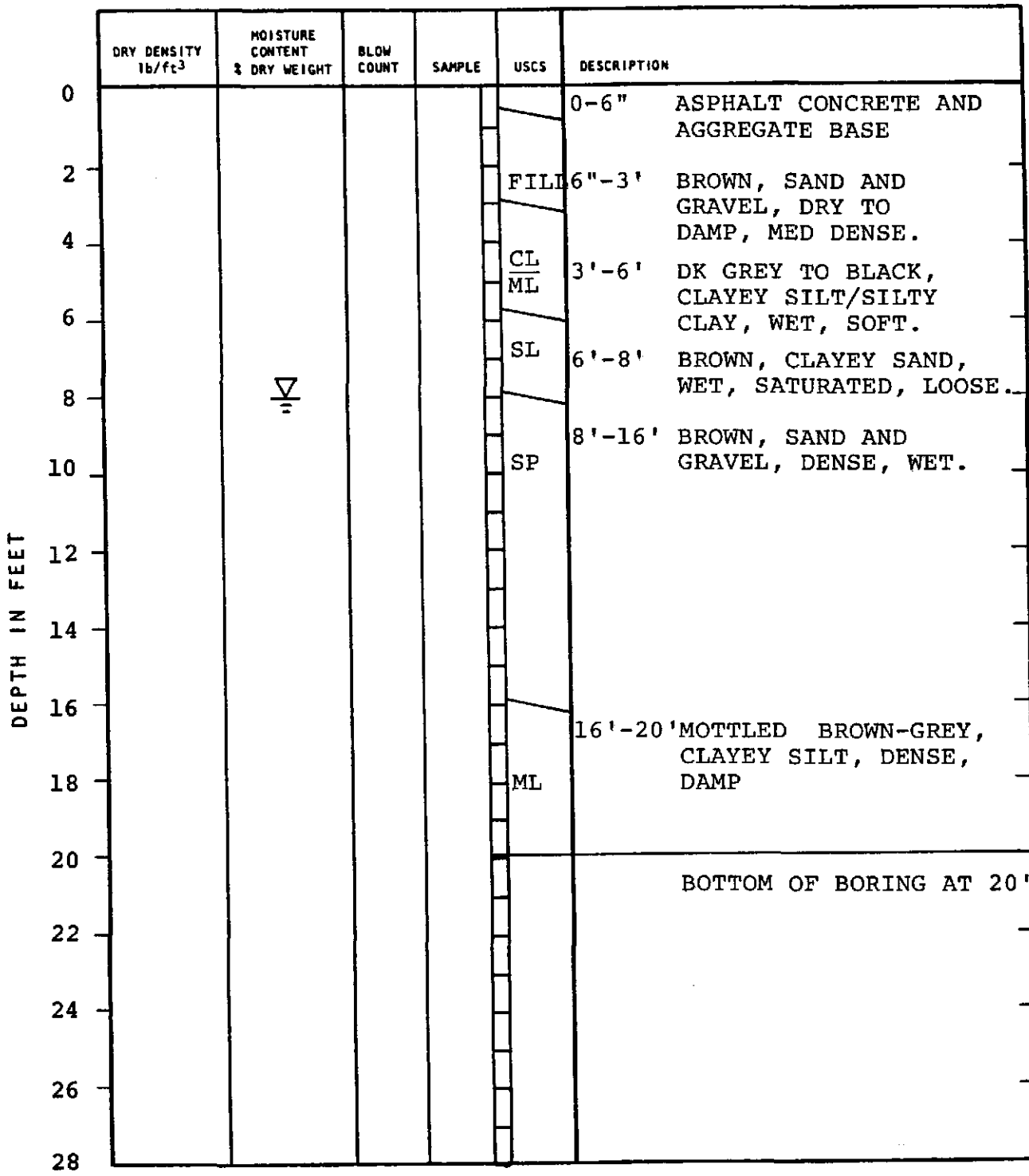
CHECKED BY: DCM DATE: 3/82

IT ENVIROSCIENCE/CHEVRON
OAKLAND, CALIFORNIA
LOG OF BORING NO. B-7

PROJECT NO. B-1189-1

PLATE
10



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GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

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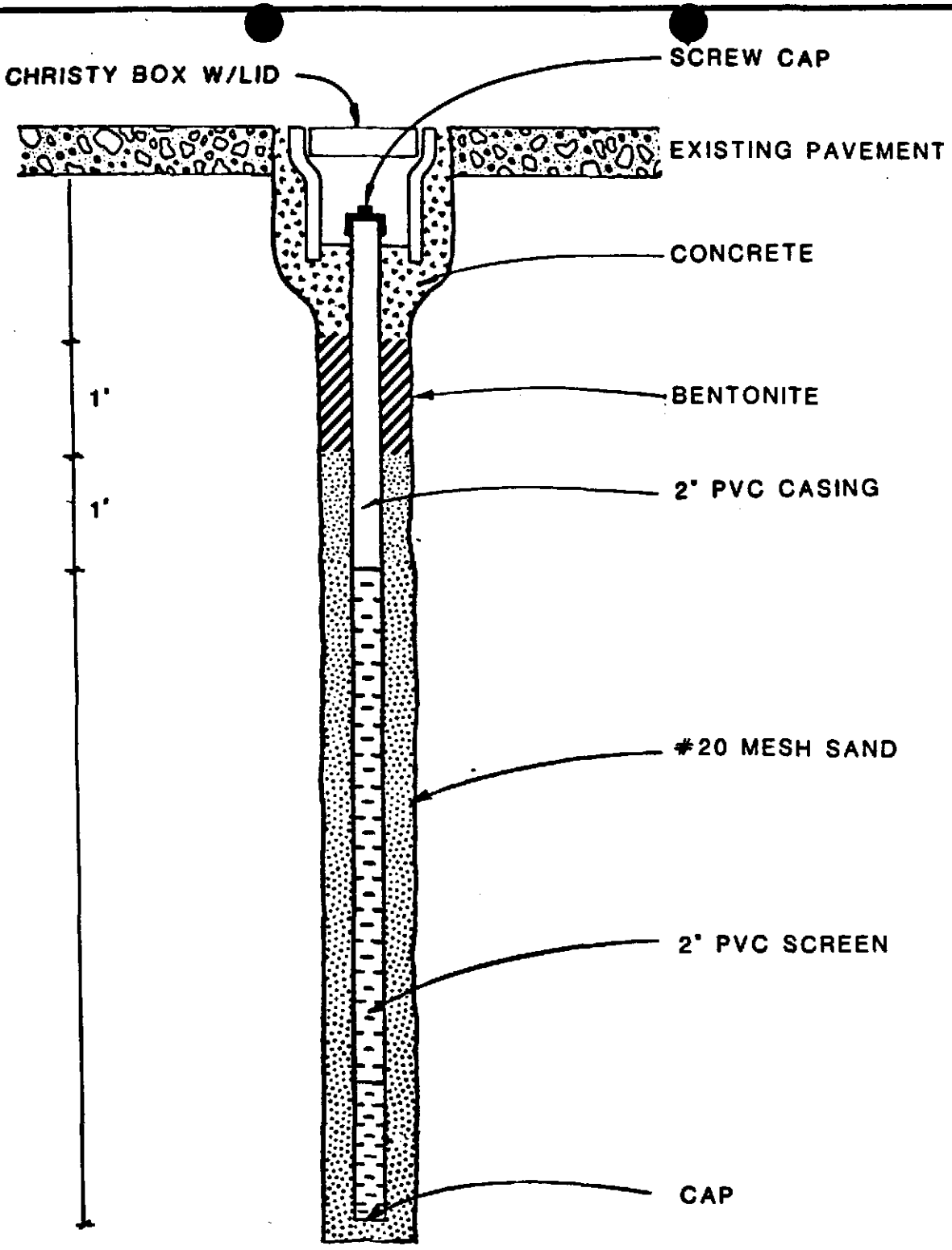
CHECKED BY: DCM DATE: 3/82

IT ENVIROSCIENCE/CHEVRON
OAKLAND, CALIFORNIA
LOG OF BORING NO. B-8

PROJECT NO. B-1189-1

PLATE
11



NOT TO SCALE

J.H. KLEINFELDER & ASSOCIATES GEOTECHNICAL CONSULTANTS • MATERIALS TESTING	IT ENVIROSCIENCE/CHEVRON OAKLAND, CALIFORNIA **TYPICAL WELL PROFILE**	PLATE 12
PREPARED BY: PLC DATE: 3/82 CHECKED BY: DCM DATE: 3/82	PROJECT NO. B-1189-1	