SOIL TECH ENGINEERING

Soil, Foundation and Geological Engineers

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DATE: 8/30/94 TIME: _____

TO: Alameda County Health Care Services

ATTN: Ms. Juliet Shin

RE: _____

FAX: 510-337-9335

11c PAGES
(INCLUDING COVER PAGE)

FROM: Soil Tech Engineering

C/O: Frank Hamedi or Noori Ameli

OUR FAX: 408-988-3343

NOTE: _____

PLEASE CALL OUR OFFICE IF YOU DO NOT RECEIVE ALL THE PAGES.

9/2/94

The well construction of the existing well is not acceptable to be used for monitoring because its screen interval is located too far beneath the current water table. The addendum to the W.P. should include a proposal for the an additional 2nd well. J.S.

JEANNE WAHLER

RESULTS OF PHASE II PRELIMINARY SITE CHARACTERIZATION AT 2951 HIGH STREET IN OAKLAND, CALIFORNIA

March 9, 1990

McLaren

McLaren

March 9, 1990

Mr. George Brewster
President
Blue Chip Business Brokers, Inc.
22693 Hesperian Blvd., Suite 130
Hayward, CA 94541

Dear Mr. Brewster:

RESULTS OF PHASE II PRELIMINARY SITE CHARACTERIZATION AT 2951 HIGH STREET IN OAKLAND, CALIFORNIA

McLaren performed a Phase II preliminary site characterization at 2951 High Street in Oakland, California. The Phase II work was conducted between February 8, 1989 and March 1, 1990 per your authorization and in accordance with the "Proposal for a Phase II Preliminary Site Characterization at 2951 High Street in Oakland, California" dated January 24, 1990.

The property is currently occupied by Lee's ARCO Service Station and is pending sale. The site location is shown in Figure 1. Phase II work was performed to determine if petroleum contamination problems exist at the site due to on-site activities. Four underground fuel tanks exist at the site: two 4,000 gallon unleaded gasoline tanks; one 6,000 gallon super unleaded gasoline tank; and one 6,000 gallon regular gasoline tank. Tank testing results from August 2, 1988 indicate that the two 6,000 gallon tanks tested tight. The two 4,000 gallon tanks were not certified tight, however, the leak rates measured were within the legal limits. The four tanks are located immediately adjacent to one another as a tank farm as shown on Figure 2.

Prior to preparing the Phase II scope of work, McLaren was informed that the piping and dispensers on-site were replaced within the last year or two. McLaren therefore assumed that if any contamination had been found during the upgrade, it would have been addressed at that time. Therefore, the Phase II investigation was designed to address only the underground fuel tanks.

FIGURE 1
SITE LOCATION MAP

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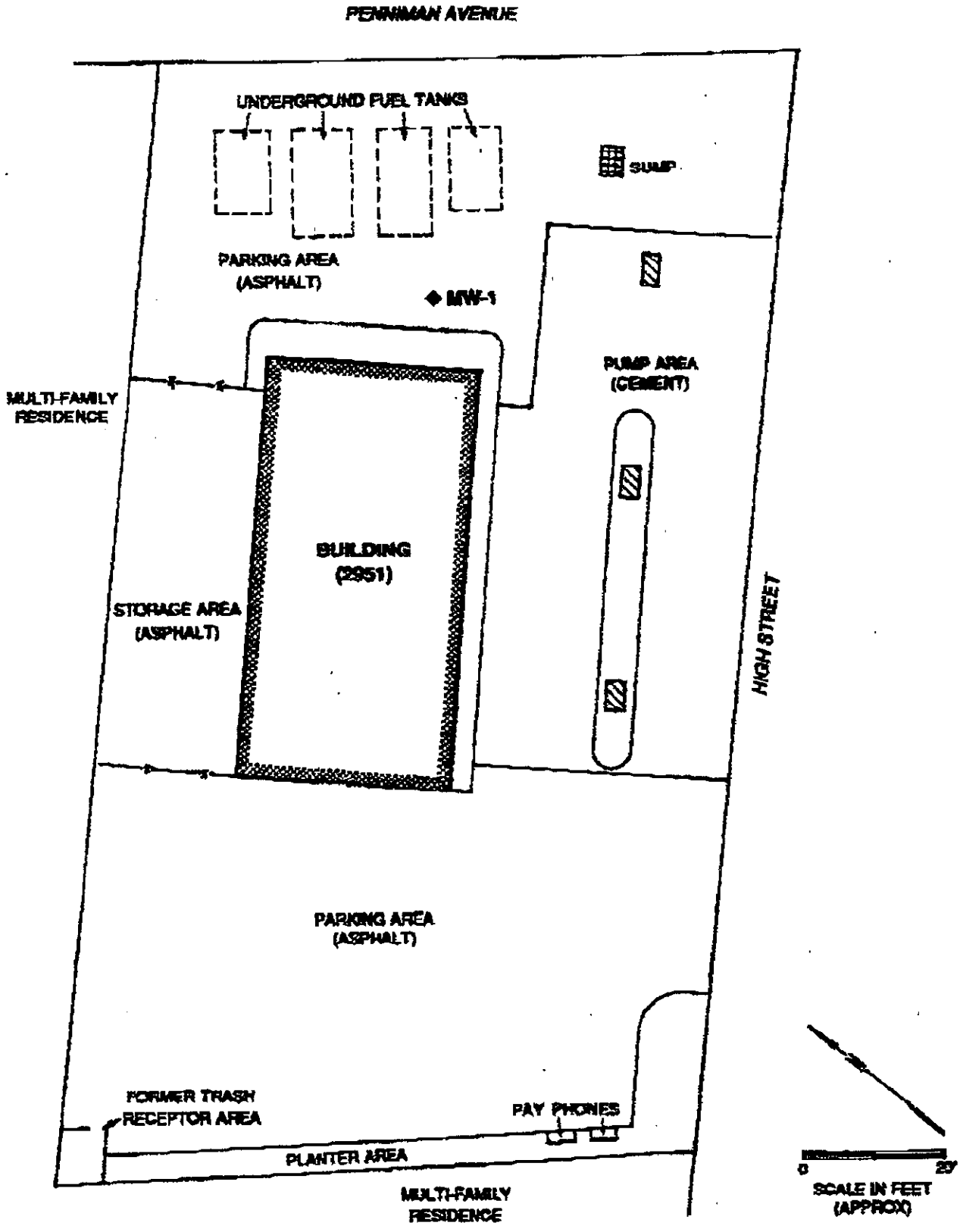
FIGURE 2
SITE PLAN AND
MONITOR WELL LOCATION



McLaren

Phase II work included: 1) collecting soil samples for possible analysis during the drilling of one borehole; 2) converting the borehole into a 4-inch diameter monitoring well; 3) developing the well: and 4) collecting one groundwater sample for analysis. The scope-of-work performed reflects your requested level of effort for the installation of only one groundwater monitoring well.

It should be noted that this investigation did not include a Phase I site assessment. During a telephone conversation, after submittal of the proposal, with Mr. Brewster, and Mr. Mohammed Mashoon of Zimma Center, Inc., co-owner of the property, McLaren learned that a surface spill had occurred at the site within the last year. Apparently, Haber Oil Company of Pleasant Hill, California, an ARCO product distributor, had overfilled a tank during a delivery. The amount of product released is unknown. It is also unknown if the release was reported and/or cleaned up.

At Mr. Brewster's request, McLaren conducted a preliminary site inspection to determine if any residual surface contamination was evident and to evaluate the probability of a release to the subsurface. The site inspection was conducted on February 13, 1990. Numerous minor surface stains were observed, however, it is unlikely that the subsurface has been impacted from these stains. Major cracks in the asphalt were observed along previously trenched areas extending from the tank farm area to the side of the building and to the pump dispenser area. An on-site grated sump, located east of the fuel tanks and in a significantly depressed area, was full to capacity with a liquid material whose surface appeared to be covered with an undetermined thickness of gasoline product. The integrity of sump's floor and walls are unknown.

McLaren reported the above findings to Mr. Brewster on February 14, 1990. As a result of the findings, Haber Oil agreed to remove and dispose of the sump's contents. Haber Oil was on-site on February 15, 1990 and apparently removed the contents of the sump. However, the sump appeared to be full again on February 20, 1990 and a sheen was observed on the surface of the fluid. It should be noted that the local area had been subjected to heavy rains during the previous two days.

The following describes McLaren's procedures and findings during the Phase II investigation at the subject property.

PHASE II PRELIMINARY SITE CHARACTERIZATION

The Phase II work included monitoring well installation, and soil and groundwater sampling and analysis to determine soil and groundwater quality adjacent to and downgradient from the tank farm area.

Pre-sampling Activities

Prior to conducting field work, a site specific Health and Safety Plan (HSP) was prepared, as required by OSHA regulations. The HSP included a task risk analysis and an emergency response plan for all field work conducted. In addition to the HSP, Underground Services Alert was contacted and an underground utility clearance was performed by McLaren at the soil boring location.

Soil Sampling and Well Installation

Soil samples were collected for possible analysis from one soil boring located approximately ten feet downgradient from the tank farm area. A four-inch diameter monitoring well (MW-1) was constructed in the boring. The monitoring well location is shown on Figure 2.

Prior to drilling, three 3-inch diameter borings were hand augered to 5 feet below ground surface at locations approximately six inches from each other to ensure the absence of utilities at the proposed drilling location. The boring was then drilled using a Mobile B-56 drill rig equipped with precleaned, 12-inch outside diameter (O.D.), hollow-stem augers. Exploration Geoservices of San Jose, California was the drilling subcontractor.

Soil samples were collected every five feet, beginning at a depth of five feet, using an 18-inch Modified Split-Spoon Drive Sampler. The split-spoon sampler was lined with three 6 x 2-inch brass tubes. The sampler was lowered into the borehole and driven 18 inches using a 140 pound hammer. After sampling, the sampler was extracted from the borehole, and the bottom brass tube was removed and immediately sealed for possible analysis as described below. A field screen sample was also collected, immediately above the sample to determine the presence or absence of volatile organic compounds in the soil using an organic vapor analyzer (OVA).

The brass tubes chosen for possible analysis were trimmed and the ends sealed with a double thickness of aluminum foil, and hermetically sealed with duct tape. The samples were labeled, put into a plastic "zip-lock" type bag, and placed into a cooler containing ice. The soil samples were sent the next day with the groundwater samples for overnight delivery by courier under chain-of-custody to McLaren Analytical Laboratory in Rancho Cordova, California. The chain-of-custody forms are presented in Attachment I.

Soil material from the borehole was evaluated for texture (using the Unified Soil Classification system), color, and moisture. The boring was drilled to a total depth of 35.5 feet. A clayey and silty sand was encountered below the sub-base material at the surface to approximately 10.5 feet below grade. A semi-consolidated clayey and sandy silt was observed between 10.5 and 17.0 feet below grade. Groundwater was encountered at 9.0 feet, however, it appeared to be a perched water zone resulting from the relatively low permeable clayey and sandy silt unit. Sand and gravel units were observed between 17.0 and 32.0 feet below grade. Groundwater was encountered at depth of 19.0 feet. A semi-consolidated silty clay was encountered between 32.0 feet and total depth at 35.5 feet below grade. A single log that is representative of the soil conditions encountered during drilling is included as Attachment II.

All sampling equipment was washed with a trisodium phosphate and Ivory soap solution between samples. The augers were steam-cleaned on-site and all fluids were contained and placed in 55-gallon drums. Borehole cuttings (soil) were also placed in 55-gallon drums. All drums were labeled appropriately and securely stored on-site pending analysis.

Monitoring wells were constructed inside the hollow-stem augers using 4-inch inside diameter (I.D.), flush-threaded, Schedule 40 PVC blank casing and 0.020-inch machine slotted well screen. Before constructing the well, bentonite pellets were placed in the bottom of the borehole between 32.0 and 35.5 feet below grade. Monitoring well MW-1 was screened from 17.0 to 32.0 feet below grade. The filter pack material around the screened portion of each well consists of 8/20 mesh silica sand and extends two feet above the perforations. A one-half foot bentonite pellet seal was placed above the filter pack. The sanitary seal consists of neat cement which extends from the top of the bentonite seal to two feet below the ground surface. The well is secured with a lockable water-tight cap and enclosed in a vault box with a traffic-rated lid.

Monitoring Well Development and Groundwater Sampling

Following well construction, Blaine Tech Services (BTS) of San Jose, California developed and sampled the monitoring well on February 21, 1990. Their report, "Well Development Report 900221-H-1.DEV" and "Groundwater Sampling Report 900221-H-1" both dated January 16, 1990, describes the procedures and equipment that they used. The well development and sampling reports are presented in Attachment III and summarized below.

An initial measurement by BTS indicated that the total depth of monitoring well MW-1 was 23.8 feet below grade. This contradicts the construction details which indicates total depth of the well to be 32.0 feet below grade, indicating that approximately 8.2 feet of sediment entered the well casing following construction of the well. The PVC screen ruptured after installation of the well, allowing entry of the filter pack and native materials inside the well casing. BTS attempted to remove the material using a surge block, suction pump, and bailer. After eleven well casing volumes had been removed, total depth inside the casing was measured at a depth of 27.5 feet.

Approximately four feet of material had been removed from the well casing leaving approximately 18 feet of standing water inside the casing, and 9 feet of saturated native material exposed. Because petroleum hydrocarbons are found at the surface of the water tables, and 9 feet of the water-bearing zone was clear of sediment inside the well casing, BTS was able to collect a groundwater sample representative of the water-bearing formation.

Initial depth to groundwater was measured at 10.29 feet below grade. Groundwater samples were collected from monitoring well MW-1 by BTS personnel following well development. Samples were collected using pre-cleaned Teflon bailers and decanted into 40-ml volatile organic analysis vials. In addition, one travel blank was prepared for quality control purposes. Groundwater samples were sent by courier for overnight delivery to McLaren Analytical Laboratory using proper chain-of-custody procedures. Chain-of-custody forms are presented in Attachment I.

All water generated during development and sampling were labeled and securely stored on-site in 55-gallon drums pending analytical results.

Phase II Analytical Methods and Results

Soil samples collected during drilling were selected for analysis based on OVA readings, and physical and visual observations such as chemical odors or textural variations. A total of five samples were collected from the borehole. McLaren received verbal authorization from Mr. Brewster on February 21, 1990 to analyze three of the soil samples on a rush one week analytical turnaround time. Therefore, the 5.0-5.5, 10.0-10.5, and 15.0-15.5 foot samples were analyzed for total volatile hydrocarbons (TVHs) and volatile aromatic compounds: benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020. The sample from 20.0-20.5 feet was also sent to the laboratory, but was put on hold for future analysis if necessary. Analytical results for soil are summarized in Table 1.

The groundwater sample collected from monitoring well MW-1 and the prepared travel blank were analyzed for TVHs and BTEX by EPA Method 602. These samples were also analyzed on a rush one week analytical turnaround time, per Mr. Brewster's verbal authorization. Analytical results for groundwater are summarized in Table 2.

The results indicate that there has been a release of petroleum product to soil and groundwater at the site. In the shallow soil sample from 5.0-5.5 feet, TVHs, toluene, and xylenes were detected at 460 parts per million (ppm), 3 ppm, and 15 ppm, respectively. The 10.0-10.5 foot sample contained only 0.5 ppm of benzene. TVHs and BTEX were not detected in the 15.0-15.5 foot sample. The groundwater sample contained TVHs, benzene, toluene, and xylenes at 1,200 parts per billion (ppb), 72 ppb, 33 ppb, and 149 ppb, respectively. Although residual concentrations of benzene, toluene, and xylenes were detected in the travel blank, the concentrations detected were sufficiently below the concentrations detected in the groundwater sample. McLaren believes that these residual contaminants are likely due to laboratory or field contamination and not actual in-situ contamination.

The 5.0-5.5 foot soil sample contained TVHs (total petroleum hydrocarbon as gasoline) at a concentration above the Department of Health Services (DHS) Leaking Underground Fuel Tanks (LUFT) Manual guidelines of 10 mg/kg (ppm) for gasoline allowable in soil at a site with shallow groundwater at less than 25 feet below grade. In addition, benzene was detected in the groundwater sample at a concentration above DHS Maximum Contaminant Levels (MCLs) for Contaminants in Drinking Water of 1 ppb. MCLs are found in the California Code of Regulations (CCR) Title 22.

TABLE 1

PHASE II SOIL ANALYTICAL RESULTS
TOTAL VOLATILE HYDROCARBONS AND VOLATILE AROMATICS
µg/g (parts per million, ppm)

Sample Location	Depth (Feet)	Date Sampled	TVHs	B	T	E	X
MW-1	5.0-5.5	2/20/90	460	ND	3.	ND	15.
MW-1	10.0-10.5	2/20/90	ND	0.5	ND	ND	ND
MW-2	15.0-15.5	2/20/90	ND	ND	ND	ND	ND

ABBREVIATIONS:

TVHs - Total Volatile Hydrocarbons by EPA Method 8020
B - Benzene, Volatile Aromatic Compound by EPA Method 8020
T - Toluene, Volatile Aromatic Compound by EPA Method 8020
E - Ethylbenzene, Volatile Aromatic Compound by EPA Method 8020
X - Xylenes, Volatile Aromatic Compound by EPA Method 8020
ND - Analytes Not Detected (see Attachment I for detection limits)

0309danl

TABLE 2

PHASE II GROUNDWATER ANALYTICAL RESULTS
TOTAL VOLATILE HYDROCARBONS AND VOLATILE AROMATICS
µg/l (parts per billion, ppb)

Location	Date Sampled	TVHs	B	T	E	X
MW-1	2/21/90	1,200.	72.	33.	ND	149.
Travel Blank	2/21/90	ND	1.0	3.9	ND	1.1

ABBREVIATIONS:

TVHs - Total Volatile Hydrocarbons by EPA Method 602
B - Benzene, Volatile Aromatic Compound by EPA Method 602
T - Toluene, Volatile Aromatic Compound by EPA Method 602
E - Ethylbenzene, Volatile Aromatic Compound by EPA Method 602
X - Xylenes, Volatile Aromatic Compound by EPA Method 602
ND - Analytes Not Detected (see Attachment I for detection limits)

0309dam1

Conclusions and Recommendations

Petroleum hydrocarbon contamination exists in soil and groundwater at the subject property at concentrations above acceptable State regulatory levels. Based on soil and groundwater results from one well location, and the known history of the tanks and previous surface spill, it appears that the surface spill is responsible for petroleum hydrocarbon contamination in the 5.0-5.5 and 10.0-10.5 foot soil samples. However, the soil contamination at this location is not responsible for the groundwater contamination based on the fact that the 15.0-15.5 foot soil sample did not contain detectable concentrations of TVHs and/or BTEX, and ground water was encountered during drilling at 19.0 feet.

The source of the groundwater contamination in monitoring well MW-1 is unknown at this time. It is unlikely that the gasoline from the surface spill migrated from the surface through this layer, low permeable native material was encountered in the MW-1 boring between 10.5 and 17.0 feet below ground surface. However, it is possible that the product entered the tank backfill area, which is highly permeable and may be as deep as groundwater (19.0 feet), and the backfill material facilitated the migration of the contamination from the surface to the groundwater.

Groundwater contamination at the subject site could be a result of one or more of the following situations:

1. Product may have entered the tank farm backfill during overfilling of one of the tanks at the time of the surface spill.

2. One or more of the fuel tanks and/or associated piping may be leaking into the backfill material.

3. Groundwater contamination could be migrating onto the property from an upgradient off-site source.

Further investigation is required by State and local agencies to determine the source, and the vertical and lateral extent of soil and groundwater contamination. In addition, the Underground Storage Tank Unauthorized Release (Leak) / Contamination Site Report, provided to you on March 1, 1990 by McLaren, must be filled out by the property owner and sent to the Alameda County Department of Environmental Health. You are also required to submit this technical report to the same agency.

If you have any questions concerning this report, please call one of us at (415) 521-5200.

Sincerely,

Georgina Dammatt
Program Manager

Jeanne A. Wahler
Associate Geologist

Attachments

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SOIL DRILLING LOG

McLAREN

SB/MW # : MW-1
D-
Page 1 of 2
Sampler: J.WAHLER

PROJECT BLUE CHIP-1 (14101) LOCATION 2951 HIGH ST., OAKLAND (LEE'S ARCO)
ELEVATION MONITORING DEVICE HNu
SAMPLING DATE(S) 2/20/90 START 9:30 FINISH 2:00
SAMPLING METHOD CALIF. MODIFIED SPLIT SPOON SUBCONTRACTOR & EQUIPMENT EXPLORATION GEOSERVICES MIKE YAEGER
MEMO *SAMPLES ANALYZED BY McLAREN ANALYTICAL LABORATORY
**SAMPLE PUT ON HOLD

Depth Below Surface(ft)	Penetration Results: Blows 6"-6"-6"	BPF	Sampler Depth Interval (ft.)	Sample ID #	Hnu reading (ppm)	Soil Description: Color, Texture, Moisture, Etc.	Unified Classification	Graphic Log	Sampled Depth	Well Construction Details
						0-1.0' Asphalt and sub-base	A C			Vault box
						1.0'-2.5' Clayey silt: dark gray (5Y 4/1) <2% sand; 88-90% silt; 10% clay; slightly moist; very stiff; low plasticity; hydrocarbon odor.	M L			
	28-40-50/5"	90	4.0-5.5	5385	850	2.5-4.0' Clayey sand: olive gray (5Y 5/2) 75% very fine to medium sand; 10% silt; 15% clay; moist; stiff; medium plasticity; strong hydrocarbon odor.	S C			
5							S M			
2/20/90 (perched)						4.0'-7.0' Silty sand: light yellowish brown (2.5Y 6/4) 85% well graded sand; 10% silt; 5% clay; slightly moist; very dense; strong hydrocarbon odor.	S C			
10	16-30-35	65	9.0-10.5	5386	250					
						7.0'-10.5' Clayey sand: olive gray (5Y 5/2) 85% well graded sand; 15% clay; saturated; very dense; very strong hydrocarbon odor. Perched water between 9.0'-9.5'.	M L			
15	26-30-50/5"	80	14.0-15.5	5387	4	10.5'-17.0' Clayey silt/sandy silt: yellowish brown (10YR 5/6) 15% well graded sand; 70% silt; 15% clay; slightly moist; hard caliche; semi-consolidated; no hydrocarbon odor.				
2/20/90										
	18-23-38	61	18.0-20.5	5388	3	17.0'-24.5' Clayey sand: yellowish brown (10YR 5/4) 85% medium to very coarse sand; 15% clay; moist to saturated; very dense; semi-consolidated; no hydrocarbon odor. Saturated below 19.0'.	S C			
20										
	30-50/6"	80	24.0-25.5		4	24.5'-26.0' Sandy gravel: brownish yellow (10YR 6/6) 75% fragmented gravel; 15% well graded sand; 10% clay; very dense; saturated.	G C			
25										
	16-30-40	70	29.0-30.5		3	26.0'-30.0' Silty sand: yellow (10YR 7/6) 70% very fine to medium sand; 20% silt; 10% clay; dense; saturated.	S M			
30										

2.0'
14.5'
15.0'
17.0'

Locking well cap
Neat cement
4" Sch. 40 PVC blank casing
Bentonite pellets
4" Sch. 40 PVC 0.020" slot screen casing
8/20 Mesh sand

SIGNATURE OF FIELD SUPERVISOR
ASSOCIATE GEOLOGIST
TITLE

SIGNATURE OF REVIEWER
SUPERVISING ENGINEER, P.E.
TITLE

SOIL DRILLING LOG

McLAREN

SB/MW # : MW-1
D-
Page 2 of 2
Sampler: J. WAHLER

PROJECT BLUE CHIP-1 (14101) LOCATION 2951 HIGH ST., OAKLAND (LEE'S ARCO)
ELEVATION MONITORING DEVICE HNU
SAMPLING DATE(S) 2/20/90 START 9:30 FINISH 2:00
SAMPLING METHOD CALIF. MODIFIED SPLIT SPOON SUBCONTRACTOR & EQUIPMENT EXPLORATION GEOSERVICES MIKE YAEGER
MEMO *SAMPLES ANALYZED BY McLAREN ANALYTICAL LABORATORY

Depth Below Surface (ft.)	Penetration Results: Blows 6"-6"-6"	Penetration Results: BPF	Sampler Depth Interval (ft.)	Sample ID #	Hnu reading (ppm)	Soil Description: Color, Texture, Moisture, Etc.	Unified Classification	Graphic Log	Sampled Depth	Well Construction Details
35'	19-29-31	60	24.0-26.5			30.0'-32.5' Sandy gravel: light yellowish brown (10YR 6/4) 55% fragmented gravel; 35% very fine to coarse sand; 10% clay; very dense; saturated.	G C			32.0' End cap; 34.8' Bentonite pellets; 35.5' T.D.
						32.5'-35.5' sigity clay; yellowish brown (10YR 5/6) 10% medium to very coarse sand; 40% silty; 50% clay; hard; saturated; semi-consolidated; caliche.	C L			
40'										
45'										
50'										
55'										
60'										

SIGNATURE OF FIELD SUPERVISOR
ASSOCIATE GEOLOGIST
TITLE

SIGNATURE OF REVIEWER
SUPERVISING ENGINEER, P.E.
TITLE