Work Plan for Soil and Ground-Water Investigation, Harrison Street Garage Site, 1432 - 1434 Harrison Street, Oakland, California

October 13, 1993
2680.00-23

Prepared for
Alvin H. Bacharach and Barbara J. Borsuk
383 Diablo Road, Suite 100
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LEVINE·FRICKE

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ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

October 13, 1993 LF 2680.00-23

Mr. Thomas F. Peacock
Supervising Hazardous Materials Specialist
Alameda County Health Care Services Agency
Division of Hazardous Materials
80 Swan Way, Room 350
Oakland, California 94621

Subject: Work Plan for Soil and Ground-Water Investigation, Harrison Street Garage Site, 1432 - 1434 Harrison Street, Oakland, California

Dear Mr. Peacock:

On behalf of Mr. Alvin H. Bacharach and Mrs. Barbara J. Borsuk, Levine•Fricke, Inc., has prepared the enclosed Work Plan for Soil and Ground-Water Investigation at the Harrison Street Garage Site in Oakland, California. This work plan complies with the request in the September 22, 1993 letter from Mr. Steven Ritchie, San Francisco Regional Water Quality Control Board, to provide a technical report on the tank and hydraulic lift removal and to define the lateral and vertical extent of affected ground water.

As you know, previous soil and ground-water investigations have been performed at this site by Subsurface Consultants, Inc., SCS Engineers, Inc., RGA Environmental, Inc., and Levine•Fricke, Inc. Results of these previous investigations will be supplemented with the investigation described herein.

Additionally, removal of [redacted] storage tanks (USTs), two [redacted] sump, and some associated soils is planned for the month of November.

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We will finalize and implement the enclosed work plan a[redacted] ha[redacted] received and incorporated your comments and ob[redacted], approval on behalf of the ACDEH. If you have any questions or comments, please call either of the undersigned.

Sincerely,

John Sturman, P.E., R.G.
Senior Geotechnical Engineer

Michael Stoll
Project Engineer

Enclosure

cc: Alvin H. Bacharach
Barbara J. Borsuk
Gilbert Jensen, Esq., Alameda County District Attorney's Office
Randall D. Morrison, Crosby, Heafey, Roach & May
Mark Borsuk, Esq.
Rich Hiett, California Regional Water Quality Control Board, San Francisco Bay Region

CONTENTS

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WORK PLAN FOR SOIL AND GROUND-WATER INVESTIGATION
HARRISON STREET GARAGE SITE
1432-1434 HARRISON STREET, OAKLAND, CALIFORNIA

INTRODUCTION

On behalf of Mr. Alvin H. Bacharach and Mrs. Barbara J. Borsuk, Levine·Fricke has prepared this work plan for soil and ground-water investigation at the Harrison Street Garage site in Oakland, California ("the Site"; Figure 1). This Work Plan has been prepared to comply with the requirements set forth in the letter from [redacted], San Francisco Bay Regional Water Quality Control Board, to Mr. Bacharach, Ms. Borsuk, and Mr. Leland Douglas, dated September 22, 1993.

The Site currently contains four underground storage tanks (USTs), some hydraulic lifts, and a sump. These tanks, lifts, and sump are scheduled to be removed in November 1993. In this Work Plan, Levine·Fricke proposes to drill and install four shallow ground-water monitoring wells at or around the Site.

OBJECTIVES

The objectives of the proposed activities are as follows:

- to further assess the lateral and vertical extent of petroleum-affected soil at the Site
- to assess shallow ground-water quality at the Site
- to measure the shallow ground-water elevations and flow directions in the site vicinity

Results of this investigation will be used to develop plans for possible supplemental investigation, future remediation, and monitoring activities. Based on the existing data, it appears likely that hydrocarbon-affected soil and ground water extend off site. This investigation will be limited to the Site and will use data obtained to evaluate the need for and the locations of supplemental wells or borings.

BACKGROUND

The Site is currently operated as a parking garage. Before its current use, the Site also served as a parking garage offering retail gasoline sales and automobile service. Presently, four USTs remain at the Site, including [redacted] approximately [redacted]-gallon-capacity USTs located under the sidewalk on Harrison Street and [redacted] approximately [redacted]-gallon-capacity USTs located in the basement near Alice Street. The USTs are not currently in use. Those adjacent to Harrison Street are reported to have previously contained motor fuel (gasoline and possibly diesel) and the USTs near Alice Street contained waste oil. Additionally, a fuel dispenser, two hydraulic lifts, and one former sump are located within the parking garage. The four USTs, fuel dispenser, two hydraulic lifts, and one former sump are to be removed from the Site in response to a request from the Alameda County Department of Environmental Health (ACDEH).

Previous investigations of the area surrounding the subject USTs have been performed by Subsurface Consultants, Inc., SCS Engineers, Inc., RGA Environmental, Inc. (RGA), and Levine·Fricke. These investigations included 28 soil borings; additionally, grab ground-water samples were collected from four borings by SCI. Ground water was encountered at approximately [redacted] feet below ground surface (bgs). The direction of ground-water flow in the site vicinity has not yet been determined. No ground-water monitoring wells have been installed at or in the immediate vicinity of the Site. A summary of soil analytical data from previous investigations is presented in Table 1. These data are summarized for presentation on Figure 2.

SCOPE OF WORK

To supplement the soil-quality data collected during these previous investigations to assess the vertical and lateral extent of petroleum-affected soil and ground water, Levine·Fricke proposes to drill four soil borings which will be completed as shallow monitoring wells. Proposed drilling locations are shown on Figure 3. Results of this work will be used to assess the lateral and vertical extent of affected soils and ground water and to evaluate possible remediation alternatives. Based on data obtained during tank lift and sump removal activities, locations of wells may be modified.

The proposed scope of work includes the following specific tasks:

Task 1: Permitting for Drilling Wells
Task 2: Utility Location
Task 3: Drilling Subcontractor
Task 4: Observation of Drilling Activities
Task 5: Well Development, Sampling, and Surveying
Task 6: Laboratory Testing
Task 7: Reporting

These tasks are described in more detail below.

Task 1: Permitting for Drilling Wells

Levine·Fricke will coordinate with the drilling subcontractor to obtain required permits for the subject work before initiating field activities. Based on our experience, a minor encroachment permit and an excavation permit will be required by the City of Oakland for drilling in Harrison Street, and an excavation permit will be needed for drilling in the sidewalk. In addition, an Alameda County Zone 7 Drilling Permit will be required for drilling wells.

Task 2: Utility Location

Levine·Fricke will outline the proposed drilling locations with white paint and notify Underground Service Alert (USA) two days before start of field work. Additionally, a private underground utility location service will be subcontracted by Levine·Fricke to provide more information regarding underground utility lines near the proposed soil borings before commencement of drilling.

Task 3: Drilling Subcontractor

Borings will be drilled and wells will be installed by a Levine·Fricke subcontractor in accordance with State of California Department of Water Resources (DWR) standards. The four soil borings will be drilled by a California C-57 licensed drilling contractor using a truck-mounted rig in the approximate locations shown on Figure 3. The borings will extend to an estimated maximum depth of approximately 20 to 25 feet below ground surface. The exact locations of the borings will be determined in the field based upon the results of the underground utility survey. The maximum depths of the soil borings will be determined in the field based on soil conditions encountered and measured depth to ground water. If

it appears that affected soils related to the USTs may extend deeper than 25 feet bgs, the borings will be extended to no deeper than 35 feet bgs.

The soil borings will be drilled using the hollow-stem auger drilling method. Samples will be collected at minimum 5-foot intervals using a Modified California split-barrel sampler. In this method, soil samples are collected in clean brass liners that are inserted in the sample barrel. After removing the barrel, the samples will be inspected in the tubes for lithologic description, and will be described in accordance with the Unified Soil Classification System. To retain the tubes for possible chemical analysis, the ends of the tubes will be capped and sealed, and the tubes will be labeled and placed in a chilled ice chest. All lithologic logs will be prepared under the direct supervision of, and signed by, a California Registered Geologist.

Soil cuttings generated during drilling will be stored on site in sealed 55-gallon drums. Warning stickers will be affixed to the drums stating "Caution, Waste Soils, Do Not Handle" and the generator's name, site location, date, and boring number. We anticipate that the drill cuttings can be disposed of with soils excavated during UST removal activities. Drill augers will be steam cleaned before being brought to the Site and on site after drilling has been completed. Steam-cleaning water will be collected in a trough and stored on site in 55-gallon drums labeled "Caution, Wastewater, Do Not Handle." Water disposal options will be evaluated, and the water will be disposed of, after soil-quality results are obtained.

Each boring will be converted into wells by inserting 2-inch-diameter, flush-threaded, solid and slotted schedule 40 PVC casing through the hollow-stem auger. The 0.02-inch slotted well screen is estimated to extend from about 15 to 25 feet bgs, based on the shallow ground-water level. A filter pack consisting of Number 3 graded Monterey sand will be placed into the annular space between the hollow-stem auger and the PVC casing. The sand will extend about 2 feet above the top of the PVC casing. A layer of bentonite pellets a minimum of 1 foot thick will be placed above the sand, around the solid portion of the casing. From the top of the bentonite seal to the surface, a cement grout containing about 3 percent bentonite will protect the well from surface water intrusion. A locking well cap will be placed on the well. A traffic-rated round skirted utility box will be placed at the ground surface.

Drilling activities will be conducted on a Saturday to reduce impacts to traffic and public access along Harrison Street.

Task 4: Observation of Drilling Activities

A Levine·Fricke geologist or engineer will observe drilling and well installation, record soil lithology encountered, note ground-water conditions, screen soil samples for volatile hydrocarbons, and collect soil samples for chemical and geotechnical analyses. Drill cuttings and soil samples collected will be screened for volatile organic compounds using a field photoionization detector (PID), which measures total volatile organics in air. Approximately four soil samples will be retained from each of the borings. After review of the field data, selected samples will be submitted to an environmental laboratory for hydrocarbon analysis described under Task 6. Additionally, selected samples will be submitted to Levine·Fricke's geotechnical laboratory for analysis of physical properties.

The soil borings will be left open for approximately one hour to measure the static ground-water level. The depth to ground water will be measured by a Levine·Fricke engineer using an electric water-level probe.

Task 5: Well Development, Sampling, and Surveying

After the wells have been installed, each well (if it does not contain floating product) will be developed to remove fine particles and improve hydraulic communication between the slotted casing and the formation. The wells will be developed by purging approximately 10 well casing volumes or until the discharge is relatively free from sediment. The parameters of specific conductance, pH, temperature will be recorded during the purging process. Ground-water samples will be collected after these parameters have stabilized. Purged water will be collected in DOT-approved 55-gallon drums, which will be labelled "Caution, Wastewater, Do Not Handle," and left on site until an appropriate treatment/disposal method has been decided.

The well casing top elevations will be measured by a state-licensed well surveyor subcontracted by Levine·Fricke. The elevations will be measured to the nearest 0.01 foot and referenced to mean sea level. These data will aid in the construction of a ground-water elevation contour map.

good

Task 6: Laboratory Testing

A sample of product, if encountered in wells, will be submitted for fuel characterization analyses to identify the type(s) of fuel hydrocarbons which may be present. If no product is encountered, three soil samples that appear to contain elevated hydrocarbon elevations will be submitted for fuel characterization to Friedman & Bruya, Inc., of Seattle, Washington, a state-certified analytical laboratory.

The exact soil sample analyses which will be performed will be determined based on the fuel fingerprint results. However, for the purpose of this Work Plan, we have assumed that 10 soil samples collected during drilling will be analyzed for total petroleum hydrocarbons as gasoline (TPHg) and 4 of those soil samples for total petroleum hydrocarbons as diesel (TPHd) using modified EPA Method 8015. Additionally, all 10 soil samples will be analyzed for the fuel constituents benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8020. Soil samples will be submitted for analysis based on PID readings, soil lithology, and existing soil-quality data to better assess the lateral and vertical extent of petroleum-affected soils.

Each of the ground-water samples will be analyzed for TPHg, and BTEX, using the above methods. The sample from the well at Alice Street will also be analyzed for waste oil using Method [redacted]. Additionally, samples will be analyzed for [redacted] using the State of California Department of Toxic Substance Control (DTSC) method. Analyses will be conducted by a state-certified laboratory.

Task 7: Reporting

The methods used and results obtained for soil and ground water investigation activities described herein will be presented in a report which will be submitted to the ACDEH. Well logs, soil chemical data obtained, and laboratory certificates will be included in this report.

LEVINE·FRICKE PROJECT MANAGEMENT

Mr. John Sturman, P.E., R.G., Senior Geotechnical Engineer, will be the overall project manager for this project. As such, Mr. Sturman will be the primary contact for the ACDEH. Mr. Michael Stoll, Project Geotechnical Engineer, will coordinate field operations and interface with contractors and subcontractors. He will also oversee the field activities and

assist with data analysis and report preparation. Mr. Ted Splitter, P.E., Principal Geotechnical Engineer, will provide review of the technical and regulatory compliance aspects of the project.

ESTIMATED SCHEDULE

Levine·Fricke estimates that permitting from the City of Oakland will require about two weeks and perhaps as much as six weeks. Utility location verification will occur during the permit process. Thus, we [redacted] about one month from the date of agency approval of this Work Plan. Soil quality results will be available within two to three weeks after drilling, assuming normal seven- to ten-working-day turnaround. Ground-water sampling will be performed within one week of well drilling. Ground-water quality results will be available within two to three weeks of drilling, assuming normal turnaround time. A report presenting methods and results and providing recommendations for future work will be provided within three weeks of receipt of ground-water sample results.

TABLE 1
SOIL QUALITY RESULTS
HARRISON STREET GARAGE
1432 - 1434 HARRISON STREET, OAKLAND, CALIFORNIA
(all results in parts per million [ppm])

Sample ID	Date Collected	Consultant/ Laboratory	Depth (ft, bgs)	TPHg/ TVHg	Benzene	Toluene	Ethyl-benzene	Xylenes	TPHd	Kerosene	O&G	PCBs	CL-HCs	VOCs	Soluble Pb	Metals Pb	Metals Hg	Metals Ni	Metals Se
Waste Oil Tank Area																			
B6@9'	17-Sep-90	SCI/C&T	9	NA	<0.005	<0.005	<0.005	<0.005	<10	98	<50	0.009*	ND	NA	0.06	NA	NA	NA	NA
B6@9.5'	17-Sep-90	SCI/C&T	9.5	NA	NA	NA	NA	NA	<10	140	<50	NA	NA	NA	NA	NA	NA	NA	NA
B1-2'	16-Jan-92	RGA/CAL	2	27.3	<0.005	3	0.23	<0.005	55.7	NA	54.2	ND	ND	ND	NA	<2.2	50.7	21.9	15.3
B2-2'	16-Jan-92	RGA/CAL	2	<1	<0.005	0.1	<0.005	<0.005	1.5	NA	<20	ND	ND	ND	NA	<2.2	49.7	16.9	<7.5
B3-2'	16-Jan-92	RGA/CAL	2	1.6	<0.005	1.1	<0.005	<0.005	1.6	NA	<20	ND	ND	ND	NA	<2.2	54.2	33.6	17
B4-2'	16-Jan-92	RGA/CAL	2	1.9	<0.005	0.8	<0.005	<0.005	24.1	NA	54.8	ND	ND	ND	NA	<2.2	66.5	45.6	19.2
B5-2'	16-Jan-92	RGA/CAL	2	<1	<0.005	0.4	<0.005	<0.005	2.5	NA	50.9	ND	ND	ND	NA	<2.2	73	47.2	19.2
B6-2'	16-Jan-92	RGA/CAL	2	<1	<0.005	0.4	<0.005	<0.005	24.3	NA	<20	ND	ND	ND	NA	<2.2	66.7	41.4	16.9
B7-2'	16-Jan-92	RGA/CAL	2	2.6	<0.005	1.6	<0.005	<0.005	6.3	NA	221	ND	ND	(1)	NA	<2.2	74.2	36.3	18.9
B8-2'	16-Jan-92	RGA/CAL	2	<1	<0.005	0.04	<0.005	<0.005	2.9	NA	55.1	ND	ND	ND	NA	<2.2	52.9	30.8	15.3
B9-5'**	22-Jan-92	RGA/CAL	5	2.44	NA	<0.005	NA	NA	11.1	NA	NA	ND	NA	ND	NA	7.53	21.5	59.8	11.6
B10-8'**	22-Jan-92	RGA/CAL	8	<1	NA	<0.005	NA	NA	109	NA	NA	ND	NA	ND	NA	5.63	15.5	34.9	<7.5
Hydraulic Lift Area																			
B4@10'	17-Sep-90	SCI/C&T	10	NA	NA	NA	NA	NA	[redacted] #	<100	[redacted] #	NA	NA	NA	NA	NA	NA	NA	NA
B5@22.5'	17-Sep-90	SCI/C&T	22.5	[redacted]*	0.024	0.21	0.069	1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B13-5'	21-Jan-92	RGA/CAL	5	83.2	<0.005	0.068	1.23	<0.005	1.63	NA	NA	0.245	NA	ND	NA	17.4	45.4	46.1	21.9
B13-15'	21-Jan-92	RGA/CAL	15	[redacted]	NA	0.71	NA	8.85	<1	NA	NA	ND	NA	ND	NA	13.8	35.5	128.4	15.5
B14-5'	21-Jan-92	RGA/CAL	5	[redacted]	<0.005	NA	NA	NA	<1	NA	NA	ND	NA	ND	NA	11.2	28.1	39.4	12.3
B14-15'	21-Jan-92	RGA/CAL	15	2.5	NA	NA	<0.005	NA	17.3	NA	NA	ND	NA	ND	NA	13.2	32.8	376.2	15.3
B15-5'	30-Jan-92	RGA/CAL	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	26.6	29.4	56.6	9.02
B15-15'	30-Jan-92	RGA/CAL	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	16.7	33.2	72.3	15.5
B16-5'	30-Jan-92	RGA/CAL	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	14.3	44.9	60.3	15.2
B16-15'	30-Jan-92	RGA/CAL	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	10.2	34.7	48.4	8.81
Gasoline Tank Area																			
1@20.0'	25-Jul-90	SCI/C&T	20	[redacted]	[redacted]	490	110	610	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2@18.5'	25-Jul-90	SCI/C&T	18.5	[redacted]	[redacted]	900	190	1100	NA	NA	NA	NA	NA	NA	0.21	NA	NA	NA	NA
B7@13'	21-Sep-90	SCI/C&T	13	<1	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B7@20'	21-Sep-90	SCI/C&T	20	[redacted]	[redacted]	34	33	130	NA	NA	NA	NA	NA	NA	0.07	NA	NA	NA	NA
B8@22 1/2'	21-Sep-90	SCI/C&T	22.5	[redacted]	[redacted]	38	18	89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B17-5'	03-Feb-92	REG/CAL	5	NA	NA	NA	NA	NA	NA	NA	39.1	ND	NA	ND	NA	10.4	3.56	329.2	6.24*
B19-5'	03-Feb-92	REG/CAL	5	2.5	<0.005	<0.005	<0.005	0.01	28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B20-5'	03-Feb-92	REG/CAL	5	2.1	<0.005	0.03	<0.005	0.01	24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B20-15'	03-Feb-92	REG/CAL	15	2.5	<0.005	0.034	<0.005	<0.005	<1	NA	35.2	ND	NA	NA	NA	10.4	2.48	224.8	<7.5
B21-5'	05-Feb-92	REG/CAL	5	2.1	<0.005	0.02	<0.005	0.01	16.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B21-10'	05-Feb-92	REG/CAL	10	1.9	<0.005	0.021	<0.005	0.026	15.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B21-15'	05-Feb-92	REG/CAL	15	2	<0.005	0.03	<0.005	<0.005	22.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B22-5'	05-Feb-92	REG/CAL	5	42.3	<0.005	0.113	<0.005	2.13	[redacted]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B22-10'	05-Feb-92	REG/CAL	10	[redacted]	[redacted]	11.7	1.67	2.88	[redacted]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B23-5'	05-Feb-92	REG/CAL	5	2.5	<0.005	0.027	<0.005	<0.005	26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B23-10'	05-Feb-92	REG/CAL	10	3.3	<0.005	0.034	<0.005	<0.005	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LFSB1-4.0	22-May-93	LF/AEN	4	0.5	<0.005	0.01	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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HARRISON STREET GARAGE
1432 - 1434 HARRISON STREET, OAKLAND, CALIFORNIA
(all results in parts per million [ppm])

Sample ID	Date Collected	Consultant/ Laboratory	Depth (ft, bgs)	TPHg/ TVHg	Benzene	Toluene	Ethyl-benzene	Xylenes	TPHd	Kerosene	O&G	PCBs	CL-HCs	VOCs	Soluble Pb	Pb	Metals Hg	Ni	Se
LFSB1-14.0	22-May-93	LF/AEN	14	<0.2	0.020	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LFSB1-24.5	22-May-93	LF/AEN	24.5	[redacted]	[redacted]	980	160	750	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LFSB2-9.5	22-May-93	LF/AEN	9.5	<0.2	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LFSB2-19.5	22-May-93	LF/AEN	19.5	[redacted]	<0.2	9.4	16	68	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LFSB2-24.5	22-May-93	LF/AEN	24.5	[redacted]	[redacted]	320	120	410	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Data entered by MEK/2,8 Jun 93 Data proofed by MJL

Consultants:

SCI = Subsurface Consultants Incorporated, Oakland, California
RGA = RGA Environmental Consulting, Emeryville, California
L-F = Levine-Fricke Incorporated, Emeryville, California

Analytical Laboratories:

C&T = Curtis & Tompkins Limited, Berkeley, California
CAL = Carter Analytical Laboratory, Campbell, California
AEN = American Environmental Network, Pleasant Hill, California

Analyses/Methods:

TPHg/TVHg = Total Petroleum/Volatile Hydrocarbons as Gasoline. C&T used a DOHS method, CAL did not specify the method used, and AEN used EPA Modified Method 8015.
Benzene, Toluene, Ethylbenzene, and Xylenes = C&T and AEN used EPA Method 8020. CAL did not specify the method used.
TPHd = Total Petroleum Hydrocarbons as Diesel. C&T used a DOHS method and CAL did not specify the method used.
Kerosene = C&T used a DOHS method.
O&G = Oil and Grease. C&T used Standard Method 5520 E,F and CAL used EPA Method 413.1 or 413.2.
PCBs = Polychlorinated Biphenyls. The total result is listed in the table. C&T and CAL used EPA Method 8080 for PCBs.
CL-HCs = Chlorinated Hydrocarbons (Halogenated Volatile Organics). C&T and CAL used EPA Method 8010.
VOCs = Volatile Organic Compounds. C&T and CAL used EPA Method 8240.
Soluble Pb = Soluble Lead. C&T used EPA Method 7420.
Pb = Lead. CAL used EPA Method 6010.
Hg = Mercury. CAL used EPA Method 6010.
Ni = Nickel. CAL used EPA Method 6010.
Se = Selenium. CAL used EPA Method 6010.

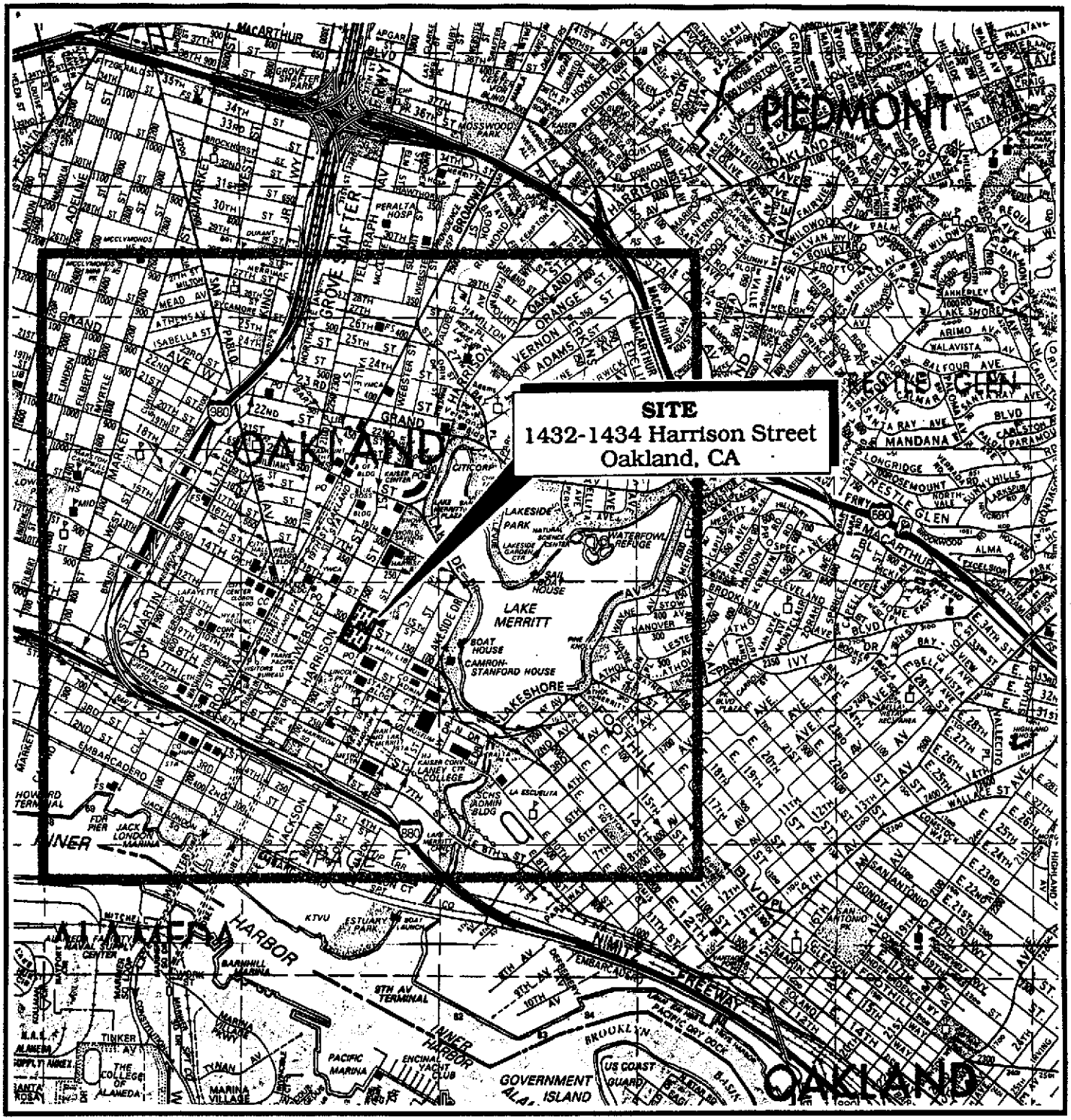
NA = Not analyzed
ND = Not detected

* Reported concentration is lower than the detection limit
** Samples may have exceeded holding time prior to analysis (except for metals)

(1) Toluene detected at 0.17 ppm.

The EPA Method 8020 benzene, toluene, ethylbenzene, and xylene results listed in this table were analyzed seperately from the VOC EPA 8240 analysis.
If benzene, toluene, ethylbenzene, or xylenes were detected by the EPA 8240 analysis, they are listed under the VOC heading.

This table presents soil-quality data obtained from environmental assessments at the Harrison Garage site in Oakland, California.
Included is data obtained by SCI, RGA, and Levine-Fricke.



MAP SOURCE:
Thomas Bros. Map
Alameda and Contra Costa Counties
EDITION 1992

Figure 1: SITE VICINITY MAP

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2680.02SAS11OCT93RVL

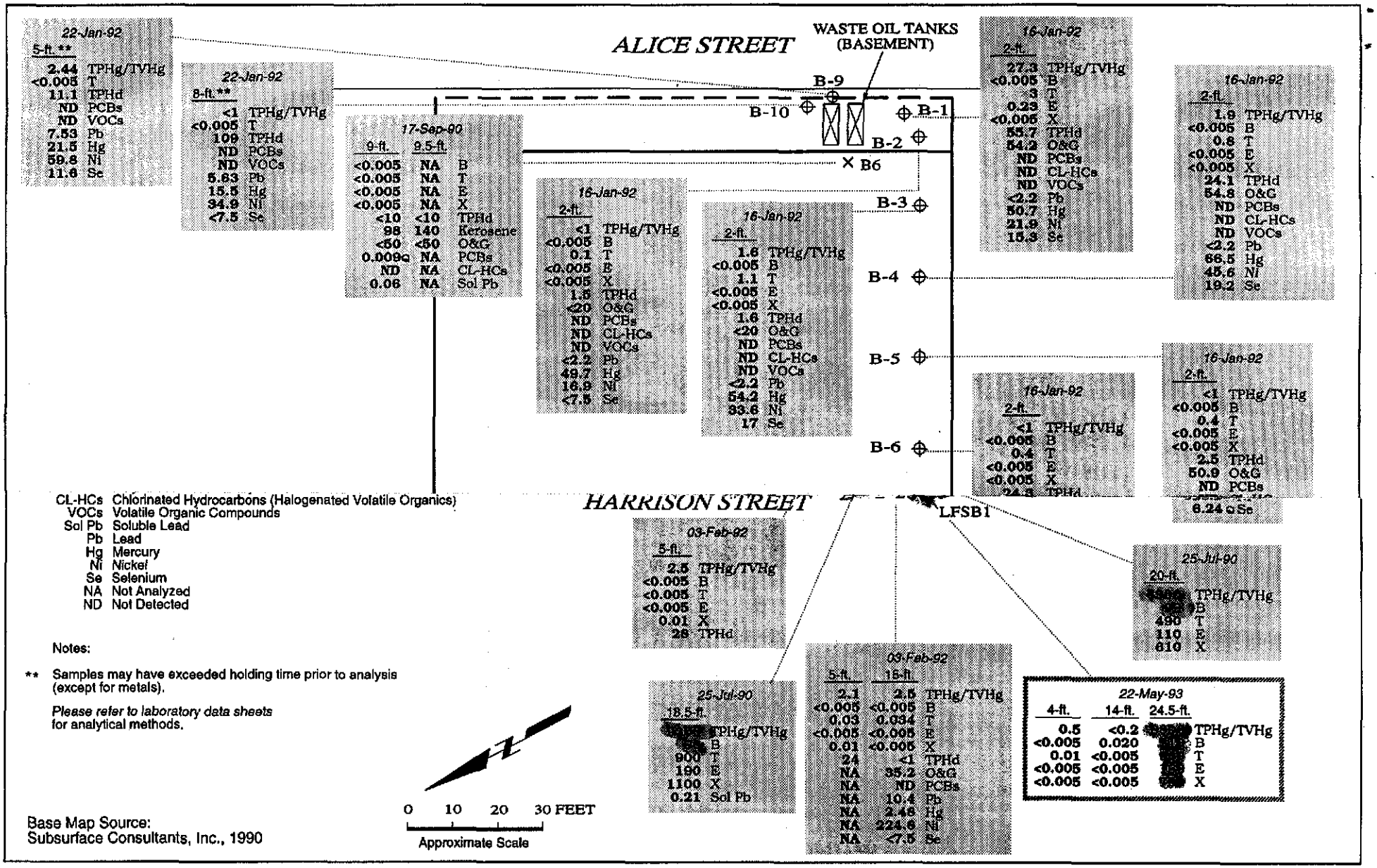


Figure 2 : SITE PLAN SHOWING SOIL BORING LOCATIONS AND TPHg/TVHg, BTEX, TPHd, O&G, PCBs, CL-HCs, VOCs, Pb, Hg, Ni, Se ANALYTICAL RESULTS AT THE HARRISON STREET GARAGE IN OAKLAND, CALIFORNIA, MAY, 1993

Project No. 2680.23

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS, & APPLIED SCIENTISTS

2680B001.JOS:EM 101393 2680C001.JOS:EM 101393

TABLE 1
SOIL QUALITY RESULTS
HARRISON STREET GARAGE
1432 - 1434 HARRISON STREET, OAKLAND, CALIFORNIA
(all results in parts per million [ppm])

Sample ID	Date Collected	Consultant/ Laboratory	Depth (ft, bgs)	TPHg/ TVHg	Benzene	Toluene	Ethyl-benzene	Xylenes	TPHd	Kerosene	O&G	PCBs	CL-HCs	VOCs	Soluble Pb	Pb	Metals Hg	Ni	Se
LFSB1-14.0	22-May-93	LF/AEN	14	<0.2	0.020	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LFSB1-24.5	22-May-93	LF/AEN	24.5	[redacted]	[redacted]	980	160	750	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LFSB2-9.5	22-May-93	LF/AEN	9.5	<0.2	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LFSB2-19.5	22-May-93	LF/AEN	19.5	[redacted]	<0.2	9.4	16	68	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LFSB2-24.5	22-May-93	LF/AEN	24.5	[redacted]	[redacted]	320	120	410	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Data entered by MEK/2,8 Jun 93 Data proofed by MJL

Consultants:

SCI = Subsurface Consultants Incorporated, Oakland, California
RGA = RGA Environmental Consulting, Emeryville, California
L-F = Levine-Fricke Incorporated, Emeryville, California

Analytical Laboratories:

C&T = Curtis & Tompkins Limited, Berkeley, California
CAL = Carter Analytical Laboratory, Campbell, California
AEN = American Environmental Network, Pleasant Hill, California

Analyses/Methods:

TPHg/TVHg = Total Petroleum/Volatile Hydrocarbons as Gasoline. C&T used a DOHS method, CAL did not specify the method used, and AEN used EPA Modified Method 8015.
Benzene, Toluene, Ethylbenzene, and Xylenes = C&T and AEN used EPA Method 8020. CAL did not specify the method used.
TPHd = Total Petroleum Hydrocarbons as Diesel. C&T used a DOHS method and CAL did not specify the method used.
Kerosene = C&T used a DOHS method.
O&G = Oil and Grease. C&T used Standard Method 5520 E,F and CAL used EPA Method 413.1 or 413.2.
PCBs = Polychlorinated Biphenyls. The total result is listed in the table. C&T and CAL used EPA Method 8080 for PCBs.
CL-HCs = Chlorinated Hydrocarbons (Halogenated Volatile Organics). C&T and CAL used EPA Method 8010.
VOCs = Volatile Organic Compounds. C&T and CAL used EPA Method 8240.
Soluble Pb = Soluble Lead. C&T used EPA Method 7420.
Pb = Lead. CAL used EPA Method 6010.
Hg = Mercury. CAL used EPA Method 6010.
Ni = Nickel. CAL used EPA Method 6010.
Se = Selenium. CAL used EPA Method 6010.

NA = Not analyzed
ND = Not detected

* Reported concentration is lower than the detection limit
** Samples may have exceeded holding time prior to analysis (except for metals)

(1) Toluene detected at 0.17 ppm.

The EPA Method 8020 benzene, toluene, ethylbenzene, and xylene results listed in this table were analyzed seperately from the VOC EPA 8240 analysis.
If benzene, toluene, ethylbenzene, or xylenes were detected by the EPA 8240 analysis, they are listed under the VOC heading.

This table presents soil-quality data obtained from environmental assessments at the Harrison Garage site in Oakland, California.
Included is data obtained by SCI, RGA, and Levine-Fricke.

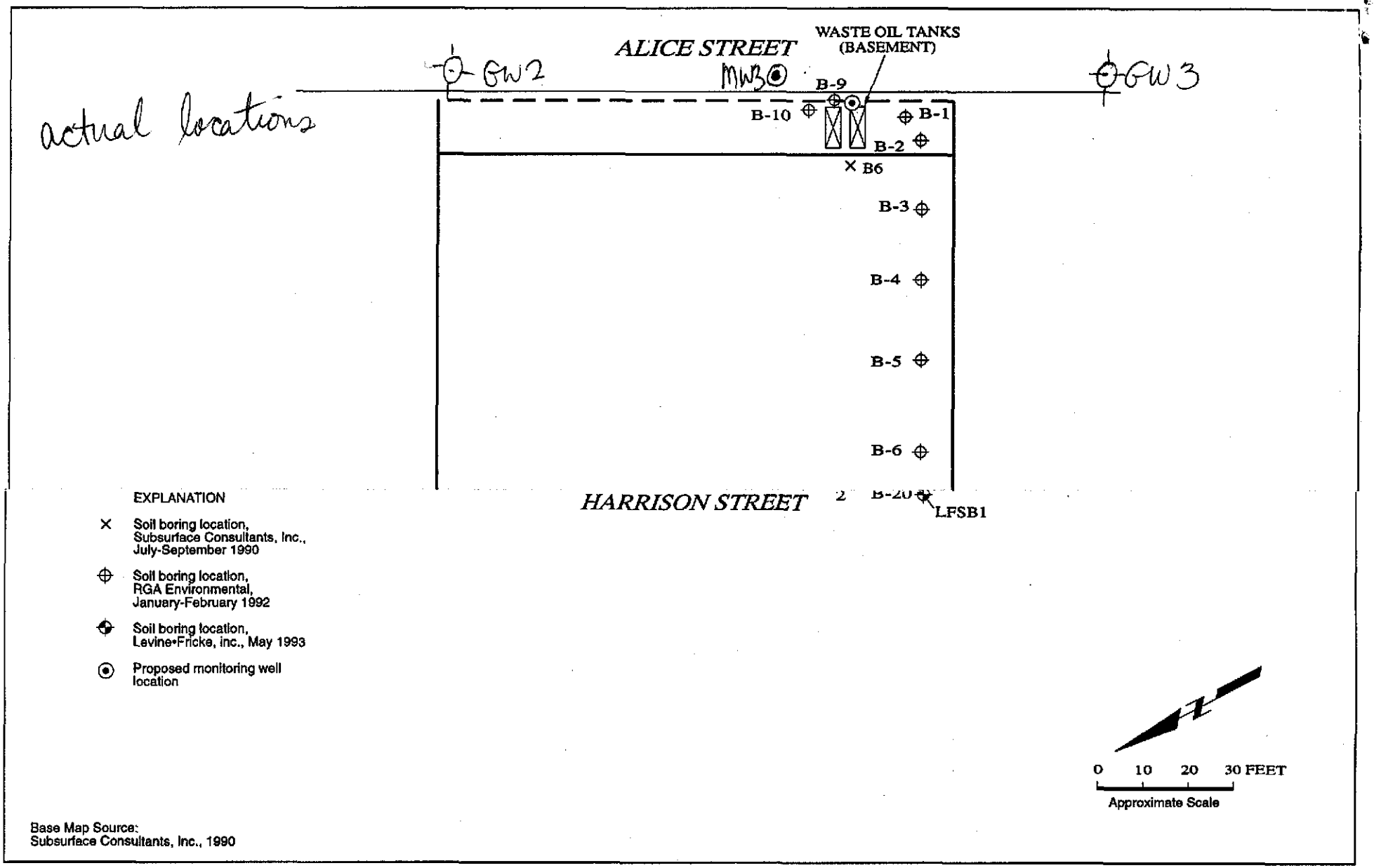
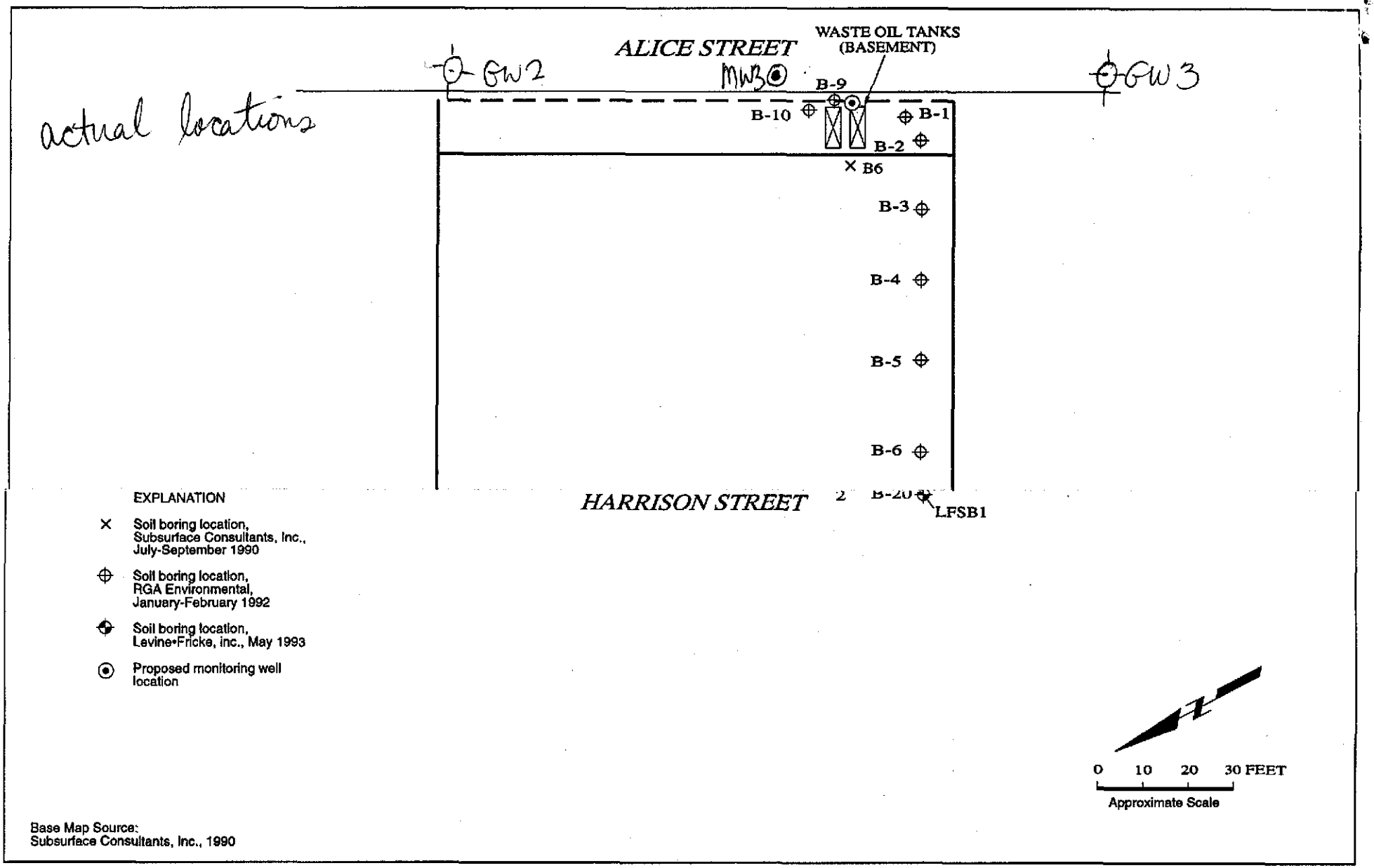


Figure 3 : SITE PLAN SHOWING PROPOSED MONITORING WELL LOCATIONS



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