KAPREALIAN ENGINEERING
INCORPORATED

KEI-P93-0603.R1
August 30, 1993

STID 4803

DOCUMENT

Paradiso Construction
P.O. Box 1836
2600 Williams Street
San Leandro, California 94577

Attention: Mr. Paul Paradiso

RE: Subsurface Investigation
Berkeley Farms
51st Street & Telegraph Avenue
Oakland, California

Dear Mr. Paradiso:

This report presents the results of Kaprealian Engineering, Inc's. (KEI) most recent subsurface investigation for the referenced site, in accordance with KEI's proposal (KEI-P93-0603.P1) dated June 23, 1993. The purpose of the investigation was to determine if the subsurface soil and ground water at the site (if encountered) has been impacted by contamination. The scope of the work performed by KEI consisted of the following:

Coordination with regulatory agencies

Geologic logging of 21 exploratory borings

Soil sampling

Monitoring and sampling of five existing monitoring wells.

Laboratory analyses

Data analyses, interpretation, and report preparation

SITE DESCRIPTION AND BACKGROUND

Reportedly, the subject site previously contained a street car maintenance facility. Currently, all buildings and above ground improvements have been removed from the site. It is located in Oakland, and is bounded by 51st Street to the north and Telegraph Avenue to the east. A total of five ground water monitoring wells were previously installed at the site by others. A Location Map is attached to this report.

2401 Stanwell Drive, Suite 400
Concord, California 94520
Tel: 510.602.5100 Fax: 510.687.0602

FIELD ACTIVITIES - EXPLORATORY BORING INSTALLATION

On July 26 through July 30, 1993, 21 exploratory borings (designated as EB1 through EB6A and EB6B through EB20 on the attached Figure 1) were drilled at the site. The subsurface materials penetrated and the depths at which soil samples were collected are shown on the attached Boring Logs.

The 21 borings were drilled to total depths ranging from 11.5 to 17.5 feet below grade. Exploratory boring EB6A was first drilled to a depth of 5 feet 7 inches below grade, but due to an obstruction (possibly a piece of concrete) was moved to a new location about 10 feet to the southwest (EB6B), where it was drilled to a total depth of 15 feet below grade. During drilling, ground water was encountered in six of the 21 exploratory borings (EB2, EB9, EB12, EB13, EB15, and EB20) at depths ranging from 11 to 17 feet below grade. Soil samples were collected for laboratory analysis and for lithologic logging purposes at a maximum spacing of 5 foot intervals, at significant changes in lithology, at obvious areas of contamination, and at or near the soil/ground water interface, beginning at a depth of approximately 4 to 5 feet below grade and continuing to the total depth drilled. Exploratory boring EB10 was sampled by the use of an Enviro-Core Percussion Soil Coring device. The remaining 20 other exploratory borings were drilled using four-inch solid-stem augers. In these borings, relatively undisturbed soil samples were collected by driving a California-modified split-spoon sampler (lined with brass liners) ahead of the drilling augers. The two-inch diameter brass liners holding the samples were sealed with aluminum foil, plastic caps and tape, labeled, and stored in a cooler, on ice, until delivery to a state-certified laboratory.

After completion of drilling and soil sampling, the exploratory borings were fully sealed with neat cement grout, which was placed from the bottom of the borings up to the surface in one continuous pour.

FIELD ACTIVITIES - MONITORING AND SAMPLING

The existing monitoring wells (MW1 through MW5) were developed on June 22, 1993. Prior to development, the wells were checked for depth to water table (by the use of an electronic sounder) and the presence of free product (by the use of an interface probe or paste tape). No free product was noted in any of the wells. After recording the monitoring data, the wells were each purged (by the use of a surface pump) of 30 to 50 gallons of water. Monitoring and well development data are summarized in Table 1.

The existing monitoring wells were sampled on June 29, 1993. Prior to sampling, the wells were checked for depth to water and the presence of free product or sheen. No free product or sheen was noted in any of the wells. After recording the monitoring data, the wells were each purged of between 6 and 12 gallons of water by the use of a surface pump. Water samples were then collected by the use of a clean Teflon bailer. The samples were decanted into clean glass VOA vials and/or one-liter amber bottles, as appropriate, which were then sealed with Teflon-lined screw caps, labeled, and stored in a cooler, on ice, until delivery to a state-certified laboratory.

In June of 1993, the surface of each well cover was surveyed by Kier & Wright of Pleasanton, California, to Mean Sea Level (MSL) and to a vertical accuracy of 0.01 feet.

ANALYTICAL RESULTS

All samples were analyzed at Sequoia Analytical Laboratory in Concord, California, and were accompanied by properly executed Chain of Custody documentation. Selected soil samples from the 21 borings EB1 through EB6A and EB6B through EB20 were analyzed for total petroleum hydrocarbons (TPH) as gasoline by EPA method 5030/modified 8015, benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA method 8020, and total oil and grease (TOG) by Standard Methods 5520E&F. In addition, the soil samples collected from the borings of EB1, EB3, EB5, EB6A, EB6B, EB9, EB11, EB12, EB14, EB18, and EB20 were analyzed for TPH as diesel by EPA method 3550/modified 8015. The soils samples from these 11 borings, plus the sample collected from EB17 were also analyzed for EPA method 8010 constituents. Lastly, the samples collected from the borings of EB1, EB3, EB4, EB6A, EB6B, and EB20 were analyzed for EPA method 8270 constituents.

Ground water samples collected from the five existing monitoring wells were analyzed for TPH as gasoline by EPA method 5030/modified 8015, BTEX by EPA method 8020, TPH as diesel by EPA method 3550/modified 8015, TOG by Standard Methods 5520B&F, and EPA method 8010 and 8270 constituents.

The results of soil analyses are summarized in Tables 4 and 5, and the results of the water analyses are summarized in Table 2 and 3. Copies of the laboratory analyses and the Chain of Custody documentation are attached to this report.

HYDROLOGY AND GEOLOGY

On June 29, 1993, the measured depth to ground water in the existing monitoring wells ranged from 12.15 to 17.72 feet below grade. The ground water flow direction appeared complex, as shown on the attached Figure 2. The hydraulic gradient at the site on June 29, 1993, varied between approximately 0.03 and 0.008, based on the water level data collected from the monitoring wells prior to purging. As previously noted, during drilling, ground water was encountered in six of the 21 exploratory borings (EB2, EB9, EB12, EB13, EB15, and EB20) at depths ranging from 11 to 17 feet below grade.

Based on review of regional geologic maps (U.S. Geological Survey Miscellaneous Geologic Investigations Map I-239 "Areal and Engineering Geology of the Oakland West Quadrangle, California" by D.H. Radbruch, 1957), the site is underlain by Quaternary-age alluvium fan deposits (Temescal Formation), which typically consist of lenses of clayey gravel, sandy silty clay, and sand-clay-silt mixtures.

Based on the results of our subsurface study, the site is underlain by fill materials to depths of between 1 and approximately 13 feet below grade, except in the vicinity of exploratory borings EB6B and EB20, where the fill extends to the total depth explored of 15 and 17.5 feet below grade, respectively. Predominantly sandy fill was also encountered along with gravel fill in borings EB8 and EB13. The fill is in turn generally underlain by alluvium to at least the maximum depth explored (17.5 feet below grade). The alluvium underlying the site consist predominantly of clayey silt and clayey gravel with lesser amounts of sandy or silty clay, and sand with silt or gravel.

DISCUSSION

The analytical results of the ground water samples collected from the five existing monitoring wells (MW1 through MW5) indicated non-detectable concentrations of TPH as gasoline, BTEX, TPH as diesel, TOG, and all EPA method 8270 constituents, except for 76 ppb of TPH as gasoline detected in MW1 and 0.64 ppb of benzene detected in MW5. It is important to note that Sequoia Analytical Laboratory reported that the chromatograph patterns indicated that the hydrocarbons detected in MW1 did not appear to be gasoline and appeared to be due to a discrete peak in the EPA 8010 range.

As seen in Table 3, low concentrations of EPA method 8010 constituents were detected in the ground water samples collected from the wells. Tetrachloroethene (PCE) was detected at concentrations

ranging from 17 ppb to 250 ppb. Trichloroethene (TCE), cis-1,2-dichloroethene (DCE), and vinyl chloride (VC) were detected at concentrations ranging from non-detectable to 24 ppb in the wells.

The analytical results of the soil samples collected during the drilling of the 21 exploratory borings at the subject site indicated low to non-detectable concentrations of TPH as gasoline, TPH as diesel, and BTEX. TOG was non-detectable in all of the soil samples collected from EB1, EB2, EB4, EB5, EB7, EB9 through EB14, and EB17 through EB20. TOG was detected at concentrations ranging from non-detectable to 9,900 ppm in the soil samples collected from EB3, EB6A, EB6B, EB8, EB15, and EB16. As seen in Table 4, however, TOG concentrations in each boring appear to decrease with depth.

All of the EPA method 8270 constituents were non-detectable in each of the soil samples analyzed except, for 2-methylnaphthalene, which was detected in soil samples EB3(10.5) and EB3(15.5) at concentrations of 150 ppb and 1,900 ppb, respectively. In addition, all of the EPA method 8010 constituents were non-detectable in all of the soil samples analyzed, except for minor amounts of PCE that were detected in samples EB6B(10.5), EB12(10.5), EB18(42), EB20(66), EB20(10.5), and EB20(16) at concentrations ranging of 12 ppb, 5.2 ppb, 42 ppb, 66 ppb, 770 ppb, and 2,400 ppb, respectively.

The analytical results of the soil samples collected from EB18 indicate non-detectable concentrations of PCE at 5 feet below grade and 10 feet below grade. PCE was detected at 42 ppb in the soil sample collected at 14.5 feet below grade in this boring. This depth below grade represents the approximate location of the soil/ground water interface. Due to the fact that PCE was non-detectable in the soil above this depth, and based on the southwest ground water flow direction reported for this portion of the site as well as the location of EB18 immediately downgradient of the property line, it appears that the PCE contamination detected at the subject site may at least be partially due to migration from an off-site source.

Due to the fact that DCE, TCE, and VC were non-detectable in all of the soil samples collected at the subject site, it appears that the concentrations of these constituents detected in the ground water samples may at least be partially due to a source other that the subject site.

It is important to note that while detectable concentrations of TOG and 2-methylnaphthalene were detected in soil samples, both TOG and 2-methylnaphthalene were non-detectable in all of the ground water samples collected at the site. Therefore, the ground water at the subject site does not appear to be impacted by these constituents.

DISTRIBUTION

A copy of this report should be sent to the Alameda County Health Care Services Agency, and to the Regional Water Quality Control Board, San Francisco Bay Region.

LIMITATIONS

Soil deposits and rock formations may vary in thickness, lithology, saturation, strength and other properties across any site. In addition, environmental changes, either naturally-occurring or artificially-induced, may cause changes in ground water levels and flow paths, thereby changing the extent and concentration of any contaminants. Our studies assume that the field and laboratory data are reasonably representative of the site as a whole, and assume that subsurface conditions are reasonably conducive to interpolation and extrapolation.

The results of this study are based on the data obtained from the field and laboratory analyses obtained from a state-certified laboratory. We have analyzed this data using what we believe to be currently applicable engineering techniques and principles in the Northern California region. We make no warranty, either expressed or implied, regarding the above, including laboratory analyses, except that our services have been performed in accordance with generally accepted professional principles and practices existing for such work.

Should you have any questions on this report, please call us at (510) 602-5100.

Sincerely,

Kaprealian Engineering, Inc.

Haig (Gary) Tejirian
Project Geologist

Joel G. Greger, C.E.G.
Senior Engineering Geologist

License No. EG 1633
Exp. Date 6/30/94

Robert H. Kezerian
Project Engineer

/bp

Attachments: Tables 1 through 5
Location Map
Figures 1 & 2
Boring Logs
Laboratory Analyses
Chain of Custody documentation

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TABLE 1

SUMMARY OF MONITORING DATA

Well #	Ground Water Elevation (feet)	Depth to Water (feet)	Product Thickness (feet)	Sheen	Water Purged (gallons)
(Monitored and Sampled on June 29, 1993)					
MW1	99.04	16.55	0	No	6
MW2	95.29	15.98	0	No	6
MW3	94.72	17.27	0	No	8
MW4	96.30	12.15	0	No	12
MW5	93.99	13.45	0	No	11
(Monitored and Developed on June 22, 1993)					
MW1	99.10	16.49	0	--	50
MW2	95.35	15.92	0	--	45
MW3	94.72	17.72	0	--	40
MW4	96.33	12.12	0	--	50
MW5	89.63	17.81	0	--	30

Well #	Surface Elevation* (feet)
MW1	115.59
MW2	111.27
MW3	112.44
MW4	108.45
MW5	107.44

-- Sheen determination was not performed.

* The elevation of the tops of the well covers have been surveyed relation to MSL, per City of Oakland Benchmark #2874 (elevation = 116.41 MSL.

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TABLE 2

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Number	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes
6/29/93	MW1*	ND	76♦	ND	ND	ND	ND
	MW2*	ND	ND	ND	ND	ND	ND
	MW3*	ND	ND	ND	ND	ND	ND
	MW4*	ND	ND	ND	ND	ND	ND
	MW5*	ND	ND	0.64	ND	ND	ND

♦ Sequoia Analytical Laboratory reported that the hydrocarbons detected did not appear to be gasoline.

* TOG and EPA method 8270 constituents were non-detectable.

ND = Non-detectable.

Results in parts per billion (ppb), unless otherwise indicated.

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TABLE 3

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Number	cis-1,2-Dichloro-ethene	Tetrachloro-ethene	Trichloro-ethene	Vinyl Chloride
6/29/93	MW1*	ND	250	ND	ND
	MW2*	ND	78	ND	ND
	MW3*	5.5	130	11	ND
	MW4*	ND	16	0.68	ND
	MW5*	24	17	5.9	3.0

* All EPA method 8010 constituents were non-detectable, except for the above compounds.

ND = Non-detectable.

Results in parts per billion (ppb), unless otherwise indicated.

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TABLE 4

SUMMARY OF LABORATORY ANALYSES
SOIL

Date	Sample Number	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes	TOG
7/28/93	EB1(5)	ND	ND	ND	ND	ND	ND	ND
	EB1(10)	ND	ND	ND	ND	ND	ND	ND
	EB1(15)	1.0♦	1.2	ND	0.0073	0.0060	0.016	ND
7/29/93	EB2(5.5)	--	ND	ND	ND	ND	ND	ND
	EB2(10.5)	--	ND	ND	ND	ND	ND	ND
	EB3(5)	5.9♦♦	2.7	0.013	0.012	0.016	0.051	270
	EB3(10.5)	8.2♦♦	10*	ND	ND	0.026	0.059	ND
	EB3(15.5)	290♦♦	440*	ND	1.4	2.6	5.9	70
7/28/93	EB4(5)	--	ND	ND	ND	ND	ND	ND
	EB4(10)	--	ND	ND	ND	ND	ND	ND
	EB4(15)	--	ND	ND	ND	ND	ND	ND
	EB5(5)	ND	ND	ND	ND	ND	ND	ND
	EB5(10)	ND	ND	ND	ND	ND	ND	ND
	EB5(15)	ND	ND	ND	ND	ND	ND	ND
7/29/93	EB6A(5)	4.4♦♦	ND	ND	ND	ND	ND	ND
	EB6B(10.5)	8.4♦♦	ND	ND	ND	ND	ND	1,700
	EB6B(14.5)	11.0♦♦	ND	ND	ND	ND	ND	210
	EB7(5)	--	ND	ND	ND	ND	ND	ND
	EB7(10)	--	ND	ND	ND	ND	ND	ND
	EB7(15)	--	ND	ND	ND	ND	ND	ND
	EB8(5.5)	--	ND	ND	ND	ND	ND	9,900
	EB8(11)	--	1.5	0.027	0.025	0.0063	0.030	1,200
	EB8(13)	--	1.1	0.019	0.016	0.0052	0.023	90
7/27/93	EB9(5)	ND	ND	ND	ND	ND	ND	ND
	EB9(10)	ND	ND	ND	ND	ND	ND	ND
7/26/93	EB10(10)	--	ND	ND	ND	ND	ND	ND
	EB10(14.5)	--	ND	ND	ND	ND	ND	ND
7/28/93	EB11(5.5)	ND	ND	ND	ND	ND	ND	ND
	EB11(10)	ND	ND	ND	ND	ND	ND	ND
	EB11(15)	ND	ND	ND	ND	ND	ND	ND

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TABLE 4 (Continued)

SUMMARY OF LABORATORY ANALYSES
SOIL

Date	Sample Number	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes	TOG
7/30/93	EB12(6)	ND	ND	ND	ND	ND	ND	ND
	EB12(10.5)	ND	ND	ND	ND	ND	ND	ND
	EB13(5.5)	--	ND	ND	ND	ND	ND	ND
	EB13(11)	--	ND	ND	ND	ND	ND	ND
7/28/93	EB14(5)	ND	ND	ND	ND	ND	ND	ND
	EB14(10)	ND	ND	ND	ND	ND	ND	ND
	EB14(13)	ND	ND	ND	ND	ND	ND	ND
	EB15(5)	--	ND	ND	ND	ND	ND	230
	EB15(12)	--	ND	ND	0.0071	0.0052	0.011	ND
	EB16(6.5)	--	ND	ND	ND	ND	0.0071	160
	EB16(10.5)	--	ND	ND	ND	ND	ND	190
	EB16(12)	--	ND	ND	ND	ND	ND	ND
7/29/93	EB17(5)	--	ND	ND	ND	ND	ND	ND
	EB17(10)	--	ND	ND	ND	ND	ND	ND
	EB17(15)	--	ND	ND	ND	ND	ND	ND
7/28/93	EB18(5)	ND	ND	ND	ND	ND	ND	ND
	EB18(10)	ND	ND	ND	ND	ND	ND	ND
	EB18(14.5)	ND	ND	ND	0.0053	ND	0.0065	ND
	EB19(7)	--	ND	ND	ND	ND	ND	ND
	EB19(12)	--	ND	ND	ND	ND	ND	ND
	EB19(15)	--	ND	ND	0.0071	0.0052	0.011	ND
7/30/93	EB20(5.5)	ND	ND	ND	ND	ND	ND	ND
	EB20(10.5)	1.9	ND	ND	ND	ND	ND	ND
	EB20(16)	ND	ND	ND	ND	ND	ND	ND

TABLE 4 (Continued)

SUMMARY OF LABORATORY ANALYSES
SOIL

NOTE: The soil samples were collected at the depths below grade indicated in the ( ) of the respective sample number.

ND = Non-detectable.

-- Indicates analysis was not performed.

* Sequoia Analytical Laboratory reported that the hydrocarbons detected did not appear to be gasoline.

♦ Sequoia Analytical Laboratory reported that the hydrocarbons detected did not appear to be diesel.

♦♦ Sequoia Analytical Laboratory reported that the hydrocarbons detected appeared to be diesel and non-diesel mixture.

Results in parts per million (ppm), unless otherwise indicated.

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TABLE 5

SUMMARY OF LABORATORY ANALYSES
SOIL

Date	Sample Number	Tetrachloroethene	2-Methylnapthalene
7/28/93	EB1(5)	ND	ND
	EB1(10)	ND	ND
	EB1(15)	ND	ND
7/29/93	EB3(5)	ND	ND
	EB3(10.5)	ND	150
	EB3(15.5)	ND	1,900
7/28/93	EB4(5)	--	ND
	EB4(10)	--	ND
	EB4(15)	--	ND
	EB5(5)	ND	--
	EB5(10)	ND	--
	EB5(15)	ND	--
7/29/93	EB6A(5)	ND	ND
	EB6B(10.5)	12	ND
	EB6B(14.5)	ND	ND
	EB9(5)	ND	--
	EB9(10)	ND	--
7/28/93	EB11(5.5)	ND	ND
	EB11(10)	ND	ND
	EB11(15)	ND	ND
7/30/93	EB12(6)	ND	--
	EB12(10.5)	5.2	--
7/28/93	EB14(5)	ND	--
	EB14(10)	ND	--
	EB14(13)	ND	--
7/29/93	EB17(5)	ND	--
	EB17(10)	ND	--
	EB17(15)	ND	--
7/28/93	EB18(5)	ND	--
	EB18(10)	ND	--
	EB18(14.5)		--

TABLE 5 (Continued)

SUMMARY OF LABORATORY ANALYSES
SOIL

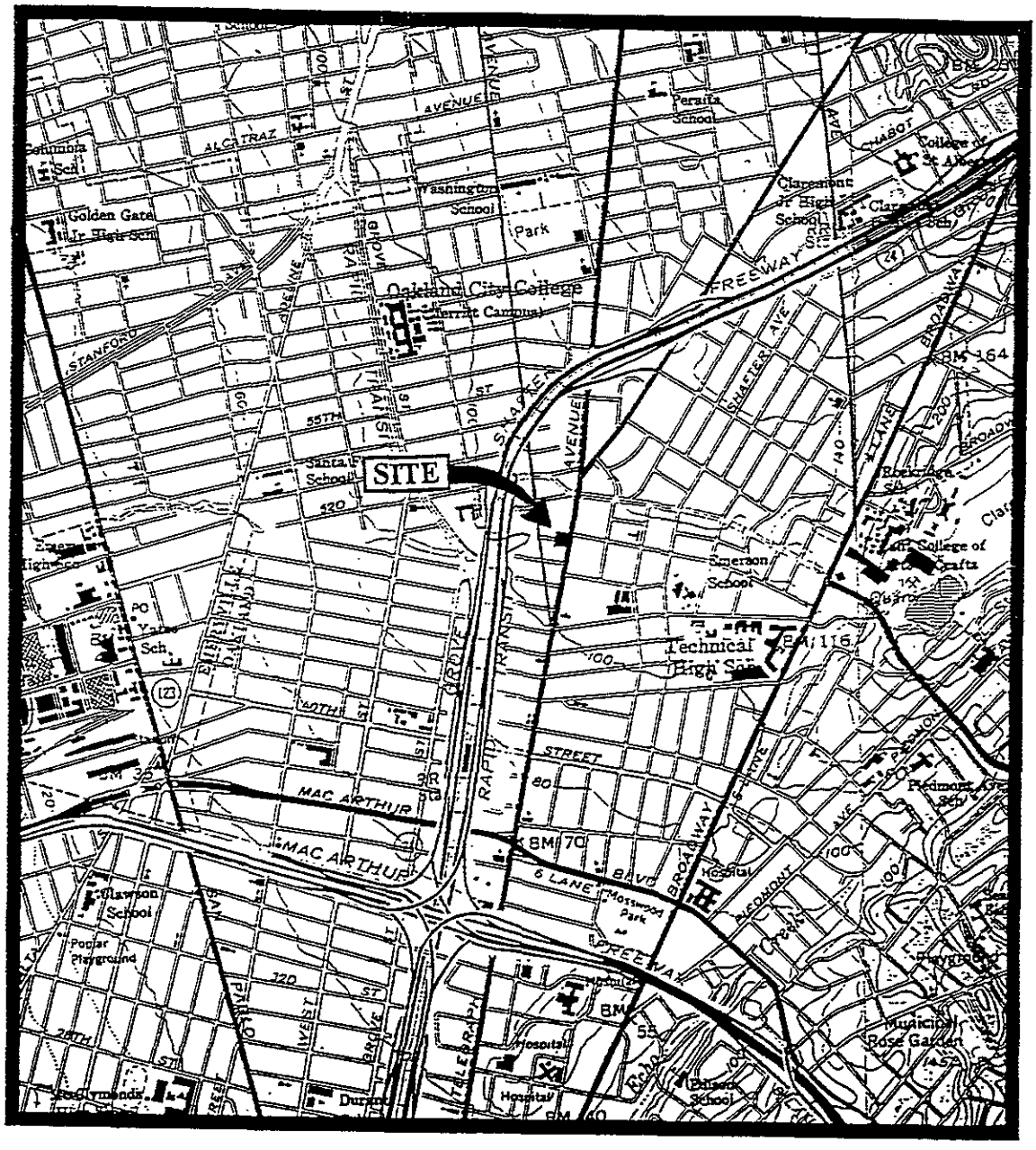
Date	Sample Number	Tetrachloroethene	2-Methylnapthalene
7/30/93	EB20(5.5)	66	ND
	EB20(10.5)	770	ND
	EB20(16)	2,400	ND

NOTE: All EPA method 8010 and 8270 constituents were non-detectable in the soil samples analyzed, except as shown above.

-- Indicates analysis was not performed.

ND = Non-detectable.

Results in parts per billion (ppb), unless otherwise indicated.



Base modified from 7.5 minute U.S.G.S. Oakland East and West Quadrangles (both photorevised 1980)

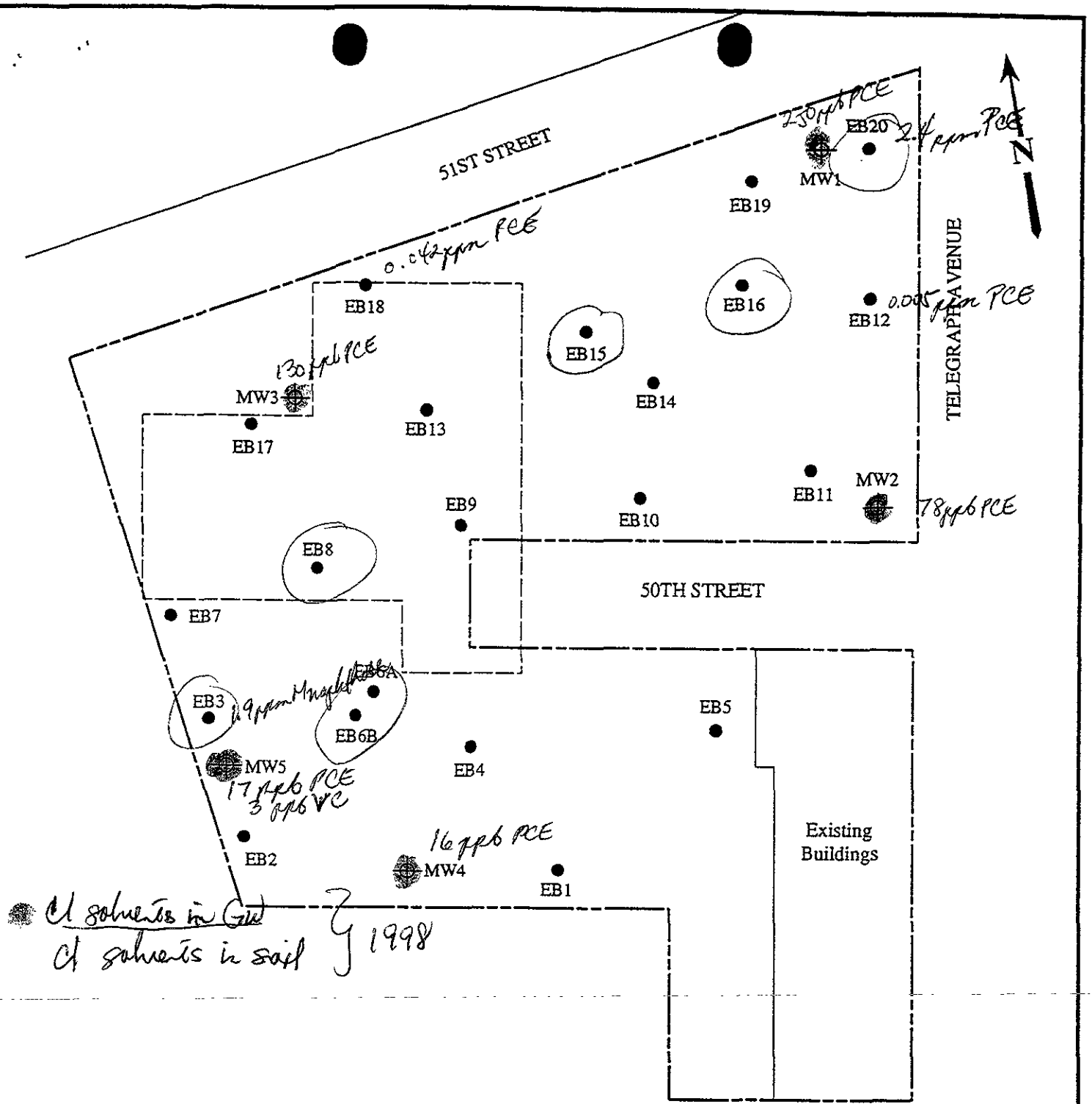
0 2000 4000

Approx. scale feet

KAPREALIAN ENGINEERING INCORPORATED

BERKELEY FARMS
51ST STREET & TELEGRAPH AVE.
OAKLAND, CALIFORNIA

LOCATION MAP



LEGEND

- Exploratory boring (by KEI)
- Monitoring well (by others)

0 60 120

Approx. scale feet

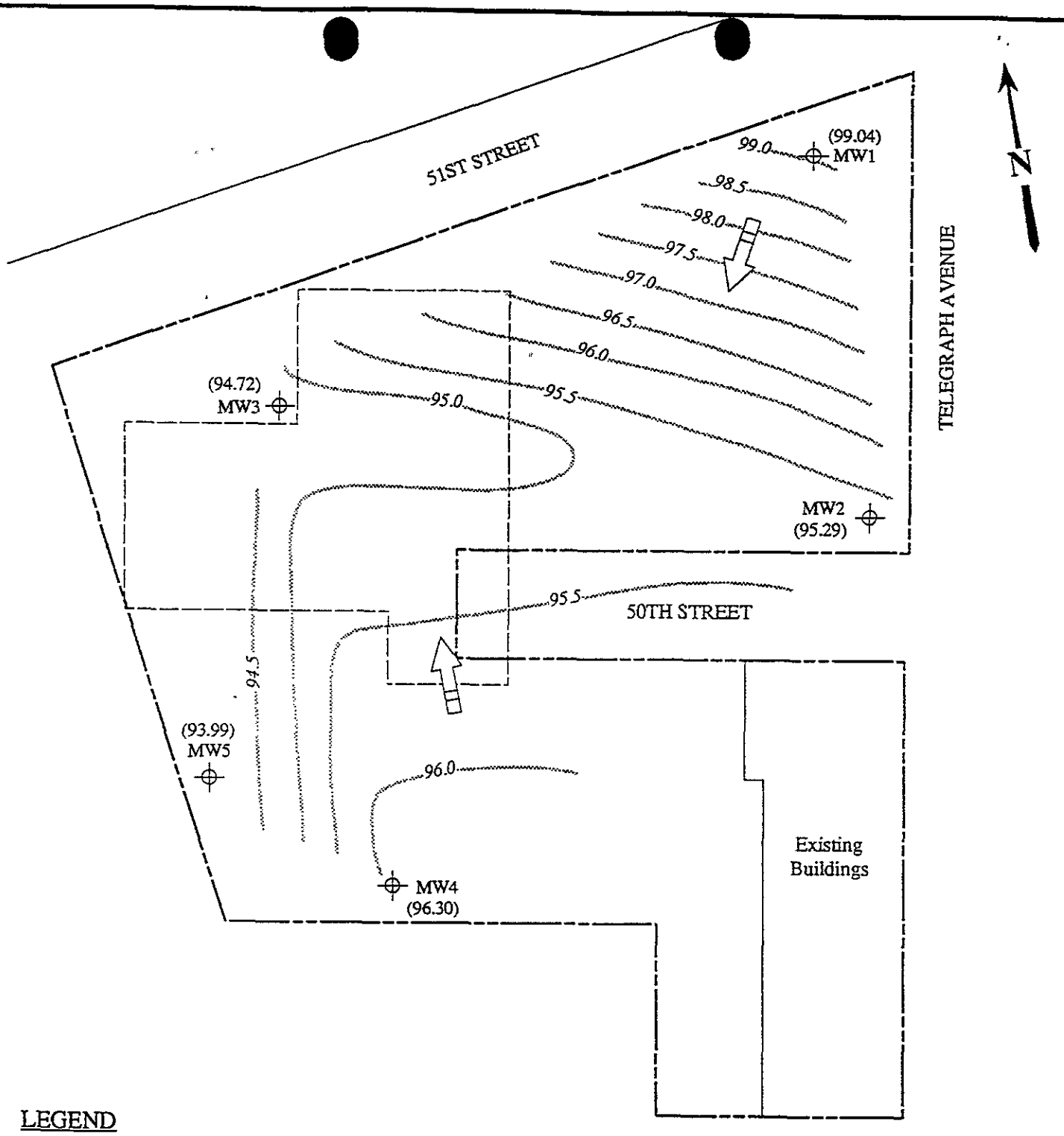
Base map modified from an Advanced Soil Technology Inc. site plan

EXPLORATORY BORING AND MONITORING WELL LOCATION MAP

KAPREALIAN ENGINEERING INCORPORATED

BERKELEY FARMS
51ST STREET & TELEGRAPH AVE.
OAKLAND, CALIFORNIA

FIGURE
1



LEGEND

- Monitoring well
- ( ) Ground water elevation in feet above Mean Sea Level
- Direction of ground water flow
- Contours of ground water elevation

0 60 120

Approx. scale feet

Base map modified from an Advanced Soil Technology Inc. site plan

POTENTIOMETRIC SURFACE MAP FOR THE JUNE 29, 1993 MONITORING EVENT

KAPREALIAN ENGINEERING
INCORPORATED

BERKELEY FARMS
51ST STREET & TELEGRAPH AVE.
OAKLAND, CALIFORNIA

FIGURE
2

KAPREALIAN ENGINEERING
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MAJOR DIVISIONS	SYMBOLS	TYPICAL SOIL DESCRIPTIONS
GRAVELS (More than 1/2 of coarse fraction > No. 4 sieve size)	GW	Well graded gravels or gravel - sand mixtures, little or no fines
	GP	Poorly graded gravels or gravel - sand mixtures, little or no fines
	GM	Silty gravels, gravel - sand - silt mixtures
	GC	Clayey gravels, gravel - sand - clay mixtures
SANDS (More than 1/2 of coarse fraction < No. 4 sieve size)	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
SILTS & 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 silty clays of low plasticity
SILTS & 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, organic silty clays, organic silts
HIGHLY ORGANIC SOILS	Pt	Peat and other highly organic soils

CLASSIFICATION CHART (Unified Soil Classification System)

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4"	**Logged By** JGG
	Casing Diameter N/A	D.L. CEG 1633
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 28, 1993
Boring No. EB1	**Drilling Method** Solid-Stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0		Silt, sand and gravel (fill).
			ML	Clayey silt, stiff, moist, very dark grayish brown.
7/13/17		5	CL	Sandy clay, trace gravel to 3/8 inch in diameter, very stiff, moist, dark yellowish brown.
12/15/22		10	GC	Clayey gravel with sand, medium dense to dense, moist, dark brown.
			CL	Silty clay, estimated at 10-15% sand, locally with trace gravel, very stiff, moist, olive brown and dark yellowish brown, mottled.
6/12/15		15	GC	Clayey gravel with sand, medium dense, very moist, olive brown.
				TOTAL DEPTH: 15.5'
		20		

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4"	**Logged By** J.G. JGG 16 33
	Casing Diameter N/A	
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 29, 1993
Boring No. EB2	**Drilling Method** Solid-Stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0		Sand, silt, and gravel with bricks, concrete and debris (fill).
4/4/5		5	GP-GC	Poorly graded gravel with clay, estimated at 20% clay and 10% sand, angular gravel to 2.5 inches in diameter, moist, loose, brown (fill).
5/7/7		10	ML	Clayey silt, estimated at 20% clay and trace to 10% fine-grained sand, very stiff, wet to locally saturated, dark gray.
	▽			Clayey silt, as above except saturated.
		15		TOTAL DEPTH: 15'
		20		

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4"	**Logged By** JGG J.G. CEG 1633
	Casing Diameter N/A	
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 29, 1993
Boring No. EB3	**Drilling Method** Soild-Stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0		Clayey gravel with sand, medium dense to dense, dry to slightly moist, light brown to brown (fill).
5/7/10		5	GP-GC	Poorly graded gravel with clay, estimated at 10-20% clay, medium dense, moist, brown, gravel to 1 inch in diameter (fill).
3/4/5		10	SP	Poorly graded sand, fine-grained, trace gravel, loose, moist, dark grayish brown.
			CL-SC	Sandy clay and clayey sand, very stiff/medium dense, moist, dark gray, very dark gray, and brown.
6/9/15		15	GP-GC	Poorly graded gravel with clay, estimated at 10% clay, medium dense, moist, greenish gray matrix, gravel very weathered and decomposed.
				TOTAL DEPTH: 16.5'
		20		

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4" **Casing Diameter** N/A	**Logged By** D.L. JGG CEG 1633
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 28, 1993
Boring No. EB4	**Drilling Method** Solid-Stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0		Silt, sand, and gravel, dense, dry to slightly, moist (fill).
			ML	Clayey silt, estimated at 35-45% clay, stiff, moist, very dark grayish brown to black.
7/13/19		5	GP-GC	Poorly graded gravel with clay, estimated at 15-30% clay, gravel to 1-1/2 inches in diameter, medium dense to dense, moist, very dark grayish brown.
			CL	Clay with silt, estimated at 5-10% gravel, very stiff, moist, olive brown and strong brown, mottled, with root holes.
9/12/19		10		
			ML	Clayey silt, estimated at 30-40% clay, trace sand, very stiff to hard, moist, olive brown and strong brown, mottled.
			CL	Sandy clay, very stiff to hard, moist, olive brown and strong brown, mottled, with iron oxide staining.
10/15/21		15		
				TOTAL DEPTH: 15.5'
		20		

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4"	**Logged By** D.L. JGG CEG 1633
	Casing Diameter N/A	
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 28, 1993
Boring No. EB5	**Drilling Method** Solid-Stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0		Silt, sand, and gravel, dense, dry to slightly moist (fill).
			ML	Clayey silt, estimated at 35-45% clay, stiff, moist, very dark grayish brown to black.
9/13/18		5	CL	Silty clay, trace fine-grained sand, very stiff to hard, moist, olive brown.
10/15/21		10	GC	Gravel with clay, estimated at 20-25% clay, angular to rounded gravel to 1-1/2 inches in diameter, medium dense to dense, moist, olive brown.
6/7/9		15	ML	Clayey silt, estimated at 10-15% sand, stiff to very stiff, moist, olive brown and strong brown, mottled.
				TOTAL DEPTH: 15.5'
		20		

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4" **Casing Diameter** N/A	**Logged By** J.G. JCG CEG 1633
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 29, 1993
Boring No. EB6A	**Drilling Method** Solid-Stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS		Description
		0			Sand, silt, and gravel with concrete, bricks and debris (fill).
5/6/12-1"		5	GC		Gravel with clay and silt, estimated at up to 20% clay and silt and 10% sand, angular gravel to over 3 inches in diameter, moist, medium dense to very dense (fill). Very slow drilling – concrete?
		10			TOTAL DEPTH: 5'7"
		15			
		20			

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4" **Casing Diameter** N/A	**Logged By** J.G. JGG CEG 1633
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 29, 1993
Boring No. EB6B	**Drilling Method** Solid-Stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0		Sand, silt, and gravel with concrete, bricks and debris (fill).
		5	GC	Gravel with clay and silt, estimated at up to 20% clay and silt and 10% sand, angular gravel to over 3 inches in diameter, moist, medium dense to very dense (fill).
7/4/3		10		Poor recovery. Gravel as above except loose.
				Boulder.
		15	GC	Gravel as above except saturated (fill?).
				TOTAL DEPTH: 15'
		20		

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4"	**Logged By** J.G. JGG CEG 16 33
	Casing Diameter N/A	
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 29, 1993
Boring No. EB7	**Drilling Method** Solid-Stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0		Sand, silt, and gravel with bricks, concrete, and debris (fill).
7/10/13		5	ML	Clayey silt, estimated at 10-15% clay and trace to 10% gravel, very stiff, slightly moist, iron-oxide staining, dark green and reddish brown, mottled.
9/12/25		10		Clayey silt as above except no gravel, moist, hard.
15/16/23		15	GP	Sandy gravel, estimated at 30% fine-grained sand and trace clay, dense, moist, grayish brown with iron-oxide staining, gravels highly weathered and decomposed.
		20		TOTAL DEPTH: 16'

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4" **Casing Diameter** N/A	**Logged By** J.G. JGG CEG 1633
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 29, 1993
Boring No. EB8	**Drilling Method** Solid-Stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0		Silt, sand, and gravel with bricks, concrete, glass, and other debris (fill).
4/5/5		5	SP	Gravelly sand, fine-grained, estimated at up to 40% gravel, glass, charcoal, and paper debris, loose, slightly moist, brown (fill).
6/8/11				(No recovery)
6/9/13		10	GC	(Poor recovery.) Clayey gravel with sand and debris, moist, dense, brown (fill).
12/14/20			SP	Gravelly sand, fine-grained, estimated at trace to 10% silt and clay, dense, very moist, orangish brown, with iron-oxide staining.
		15		TOTAL DEPTH: 14'
		20		

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4"	**Logged By** J.G. JGG CEG 1633
	Casing Diameter N/A	
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 27, 1993
Boring No. EB9	**Drilling Method** Solid-Stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0		Silt, sand, and gravel with brick, concrete, and debris (fill).
3/3/4		5	SP	Fine-grained sand, loose, brown (alluvium?)
4/4/6	▽	10		Fine-grained sand as above except moist, mottled, iron-oxide staining.
7/12/11		15		Coarse-grained gravelly sand, medium dense, saturated.
		20		TOTAL DEPTH: 16'

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4"	**Logged By** J66 J.G. CEG/633
	Casing Diameter N/A	
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 26, 1993
Boring No. EB10	**Drilling Method** Enviro Core Percussion Soil Coring	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0		Silt, sand, and gravel with brick, concrete, and debris (fill).
			ML	Clayey silt, estimated at 35-40% clay, stiff, moist, black (fill).
		5	GM	[No sample recovery between 4 - 7 feet] Silty gravel with sand (fill). [No sample recovery between 7-10 feet]
		10	ML	Sandy silt, estimated at 5-10% clay, stiff, moist, olive brown.
		15		Clayey silt, estimated at 5-10% gravel, stiff, moist, grayish brown and strong brown mottled.
		20		TOTAL DEPTH: 16'

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4" **Casing Diameter** N/A	**Logged By** J.G. JG6 CEG/1633
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 28, 1993
Boring No. EB11	**Drilling Method** Solid-stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0		Silt, sand, and gravel, very dense, dry to moist, pocketed with black silty clay, with bricks and concrete debris (fill).
7/12/19		5	CL	Silty clay, estimated at 5-10% sand and gravel to 3/4 inch in diameter, hard, moist, very dark grayish brown, with strong iron-oxide staining.
7/13/17		10	ML	Silt with clay, trace sand and gravel, very stiff, friable, moist, olive brown and grayish brown, mottled, with iron-oxide staining.
6/11/18			CL	Clay with silt, very stiff, moist, olive brown and strong brown mottled, with an estimated 10-15% sand below 13.5 feet.
7/13/20		15		Silty clay, estimated 10-15% sand, very stiff to hard, moist, olive brown and strong brown, mottled.
		20		TOTAL DEPTH: 16'

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4" **Casing Diameter** N/A	**Logged By** J.G. JGG CEG 1633
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 30, 1993
Boring No. EB12	**Drilling Method** Solid-Stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0		Sand, silt, clay, and gravel with bricks, concrete, and debris (fill).
9/13/16		5	ML	Silt with clay, estimated at 15% clay, very stiff, slightly moist, greenish brown mottled with iron-oxide staining, disturbed?
9/17/19		10		Silt as above, except trace to 10% clay, very moist, undisturbed.
	▽		GP	Sandy gravel, very dense, very moist, brown, with iron-oxide staining.
8/8/11		15	SM	Poorly graded gravelly sand, estimated at 40% subrounded gravel to 1/2 inch in diameter, medium dense, saturated, brown, with iron-oxide staining, sand is medium-grained.
		20		TOTAL DEPTH: 16'

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4" **Casing Diameter** N/A	**Logged By** J.G. JG LEG 1633
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 30, 1993
Boring No. EB13	**Drilling Method** Solid-Stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0	GM	Silty gravel with sand, very dense, dry to moist, very dark grayish brown, pocketed with black silty clay (fill).
4/4/6		5	SM	Sand with silt and gravel, estimated at 20-30% silt, 10-15% gravel, and trace charcoal, medium dense, moist, brown (fill).
5/7/11	▽	10	GM	Silty gravel with sand, estimated at 30% silt and 20% sand, pocketed with gray silty clay, medium dense, very moist, saturated at 11 feet, brown.
				TOTAL DEPTH: 11.5'
		15		
		20		

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4" **Casing Diameter** N/A	**Logged By** JGG D.L. CEG 1633
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 28, 1993
Boring No. EB14	**Drilling Method** Solid-Stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0	ML	Silt, sand, and gravel, very dense, dry to moist, with bricks and concrete debris (fill).
4/4/5		5		Gravelly silt with sand, firm to stiff, moist, very dark grayish brown to black, disturbed (fill).
3/6/11		10	CL	Sandy clay, estimated at 10-15% gravel, stiff to very stiff, moist, grayish brown and strong brown, mottled.
5/9/16				Silty clay, trace gravel, stiff to very stiff, moist, olive brown and strong brown, mottled.
		15		TOTAL DEPTH: 13.5'
		20		

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4" **Casing Diameter** N/A	**Logged By** JGC D.L. CEG/633
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 28, 1993
Boring No. EB15	**Drilling Method** Solid-Stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0		Silt, sand, and gravel, trace clay, dense to very dense, dry to moist, pocketed with black silty clay (fill).
5/7/9		5	GW	Well graded gravel with sand, estimated at 5-10% silt, loose to medium dense, slightly moist, very dark grayish brown (fill).
3/4/4		10	GM	(Very poor recovery.) Silty gravel with sand, pocketed with silty and clayey soils, loose, moist, variable color (fill).
3/5/6	▽			Silty gravel, as above except grading to wet, black below 11.5 feet, (fill).
				TOTAL DEPTH: 12.5'
		15		
		20		

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4" **Casing Diameter** N/A	**Logged By** J.G. JGG CEG 1633
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 29, 1993
Boring No. EB16	**Drilling Method** Solid-Stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0		Silt, sand, and gravel, bricks, concrete, and other debris (fill).
5/7/8 (Slough in Sampler)		5	GM	Silty gravel with sand and clay, medium dense, moist, dark brown (fill).
5/6/5				
9/11/12				Sampler blocked by large gravel, poor recovery.
10/10/10		10		Sandy gravel, estimated at 30-40% sand and up to 10% silt, dense, moist, brown, gravel is angular, to 1-1/2 inches in diameter, wood fragments (fill).
			CL	Gravelly clay, subrounded gravel to 1-1/2 inches in diameter, very stiff, moist, brown.
6/6/7			SP	Gravelly coarse-grained sand, medium dense, wet, brown, gravel is subrounded, to 1/2 inch in diameter.
		15		*TOTAL DEPTH: 12.5'*
		20		

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4" **Casing Diameter** N/A	**Logged By** J.G. JGG CEG 1633
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 29, 1993
Boring No. EB17	**Drilling Method** Solid-Stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0		Sand, gravel, and silt, with concrete, bricks, and debris (fill).
			ML	Clayey silt with gravel, estimated at up to 20% subrounded gravel to 5/8 inch in diameter, very stiff, slightly moist, light brown.
5/7/13		5	GP	Poorly graded gravel with sand, estimated at 20-30% fine-grained sand and 5-10% silt and clay, gravel highly weathered and decomposed, medium dense, slightly moist, light brown, iron-oxide stained.
8/10/13		10		Gravel with sand as above, except wet.
5/7/9		15	ML	Silt with sand and clay, estimated at 20% fine-grained sand and 15-20% clay, very stiff, very moist to wet, brown, mottled.
		20		TOTAL DEPTH: 16'

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4" **Casing Diameter** N/A	**Logged By** JGG D.L. CEG 1633
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 28, 1993
Boring No. EB18	**Drilling Method** Solid-stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0		Silt, sand, and gravel with bricks and concrete debris (fill).
			ML	Clayey silt, estimated at 35-45% clay, stiff, moist, black.
5/7/13		5	CL	Silty clay, estimated at 10-15% sand and gravel to 3/8 inch in diameter. stiff to very stiff, moist, dark yellowish brown.
9/11/12		10	GM	Silty gravel with sand, trace clay, angular to rounded gravel to 1-3/4 inches in diameter, medium dense, moist, dark yellowish brown.
8/12/15		15		Silty gravel with sand, estimated at 15% silt and trace clay, medium dense, very moist, brown.
				TOTAL DEPTH: 15.5'
		20		

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4" **Casing Diameter** N/A	**Logged By** JGG **D.L.** CEG/633
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 28, 1993
Boring No. EB19	**Drilling Method** Solid-stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0	GM	Silt, sand, and gravel with bricks, concrete and other debris, very dense (fill).
3/3/4		5		[Very poor recovery at 4-1/2 feet, about 3 inches.] Silty gravel with sand, loose, moist, dark brown (fill).
3/4/4			ML	Sandy silt, firm to medium stiff, moist, dark brown, sand is fine-grained.
3/3/4		10	GM	[Very poor recovery at 9-1/2 feet.] Silty gravel with sand.
5/5/6			SM	Silty sand, loose to medium dense, moist, dark brown.
			GW	Well graded gravel with sand, estimated at 5-10% silt, medium dense, moist, dark brown.
5/9/12		15	ML	Clayey silt, estimated at 5-10% sand, stiff to very stiff, moist, olive brown and strong brown, mottled.
		20		TOTAL DEPTH: 16'

BORING LOG

Project No. KEI-P93-0603	**Boring Diameter** 4" **Casing Diameter** N/A	**Logged By** J.G.
Project Name Berkeley Farms 51st. & Telegraph, Oakland	**Well Cover Elevation** N/A	**Date Drilled** July 30, 1993 JGC CEG 1633
Boring No. EB20	**Drilling Method** Solid-stem Flight Auger	**Drilling Company** Clear Heart Construction

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
		0		Sand, silt, clay, and gravel with bricks, concrete, and debris (fill).
5/4/3		5	GP	Gravel with sand, estimated at 20-30% fine-grained sand, gravel to 3 inches in diameter, local pockets of silty clay, loose, slightly moist, brown (fill).
4/4/6		10	ML	Gravelly silt with sand, estimated at 30% gravel, 25% sand, and trace clay, stiff, moist, brown, gravel to 2 inches in diameter (fill).
13/19/14	▽	15	GW	Gravel with silt and sand, estimated at up to 40% silt and sand and trace to 10% clay, wet to saturated, brown (fill).
		20		TOTAL DEPTH: 17.5'