KAPREALIAN ENGINEERING
INCORPORATED

January 10, 1994

Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, CA 94621

Attention: Ms. Madhulla Logan

RE: Berkeley Land Company
51st Street & Telegraph Avenue
Oakland, California

Dear Ms. Logan:

This letter is written to follow up on our December 21, 1993 meeting, regarding the subject property. As you requested, I have enclosed a copy of the site environmental assessment report, dated April 28, 1987, which was generated by J.H. Kleinfelder & Associates for the property. The analytical results of the metals analyses for the soil and ground water samples are shown in Table 2 and Table 4, respectively.

The analytical results of all of the soil samples indicated that the concentrations of each of the metals analyzed for was below the total threshold limits set forth by the California Code of Regulations, Title 22. Additionally, the analytical results of the ground water sample indicated that the concentrations of each of the metals analyzed for was below the maximum contaminant levels for drinking water set forth by the Environmental Protection Agency.

If you have any questions, please do not hesitate to call me at (510) 602-5100.

Sincerely,

Kaprealian Engineering, Inc.

Robert H. Kezerian
Project Engineer

Enclosure

cc: Rick Montesano, Paradiso Construciton (w/o)

2401 Stanwell Drive, Suite 400
Concord, California 94520
Tel: 510 602.5100 Fax. 510.687.0602

SITE ENVIRONMENTAL ASSESSMENT:
PROPOSED SHOPPING CENTER
51ST AND TELEGRAPH AVENUE
OAKLAND, CALIFORNIA

April 28, 1987

J. H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING
LAND AND WATER RESOURCES

J. H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS • MATERIALS TESTING
LAND & WATER RESOURCES
1901 OLYMPIC BOULEVARD, SUITE 300
WALNUT CREEK, CA 94596-5063
(415) 938-5610

April 28, 1987
File: 10-1689-01

Mr. Daniel Baker
Pacific Quadrant Development Corp.
3130 Crow Canyon Place, Suite 200
San Ramon, CA 94583

SUBJECT: Site Environmental Assessment: Proposed Shopping Center, 51st and Telegraph Avenue, Oakland, California

Dear Mr. Baker:

We are pleased to submit this report describing our investigation of soil and ground water quality at the above referenced location. The enclosed report describes our field investigation, the analytical results of soil and ground water sampling, and our conclusions and recommendations.

We appreciate the opportunity of providing our services to you on this project and trust this report meets your needs at this time. If you have any questions, please don't hesitate to contact us.

Very truly yours,

J. H. KLEINFELDER & ASSOCIATES

Dennis Laduzinsky
Staff Geologist

Elaine Hanford, R.G.
Project Geologist

R. Jeffrey Eden, Ph.D., P.E.
Senior Engineer/Assistant Engineering Manager

DL:EH:RJD:wh

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1 INTRODUCTION

This report presents the results of a site environmental assessment of soil and ground water quality at the existing commercial property at the southwest corner of 51st Street and Telegraph Avenue, Oakland, California. The location of the site is shown on Plate 1. The study was conducted as a pre-purchase site assessment to identify, on a reconnaissance basis, general environmental factors which might negatively affect redevelopment of the existing property. We understand the Pacific Quadrant Development Corporation plans to purchase the site. The work was authorized by Mr. Daniel Baker based on our Agreement for Environmental Services dated April 9, 1987.

2 SCOPE OF SERVICES

The scope of work performed during our investigation included the following work elements:

- Field site reconnaissance
- Drilling of six exploratory borings for soil sample collection
- Completion of one boring as a ground water monitoring well
- Analysis of soil and ground water samples by a contract analytical laboratory
- Review of aerial photographs and title documents to characterize site utilization history
- Discussions with representatives of local regulatory agencies regarding the site history and existing environmental concerns
- Preliminary well survey in site vicinity
- Data analysis and preparation of this report

3 FIELD INVESTIGATION

3.1 SITE DESCRIPTION

The site lies within a relatively flat-lying area of northern Oakland. The site is presently developed as one large, and two smaller, one-story commercial buildings, with adjacent paved parking areas. The property is surrounded by arterial streets, and commercial and residential properties.

3.2 FIELD INVESTIGATION

Our field investigation was conducted on April 9 and 10, 1987, and consisted of drilling six exploratory borings at the approximate locations shown on Plate 2. The borings were drilled with a truck-mounted drilling rig equipped with 8-inch diameter hollow-stem augers.

Relatively undisturbed soil samples were obtained with a two-inch ID Modified California-type drive sampler containing thin brass liners. The sampler was driven with a 140 pound hammer falling 30 inches. The number of blows required to drive the final 12 of 18 inches is recorded as the penetration resistance (blows/ft.) on the boring log. The augers and sampler were steam-cleaned prior to use at boring B-1/MW-1. The brass tubes were thoroughly cleaned with TSP (tri-sodium phosphate) detergent and rinsed with distilled water prior to use. The sampler was also cleaned with TSP between sample points to limit cross-contamination.

When the sampler was withdrawn from the borehole, the brass liners containing the samples were removed, examined for logging, sealed with aluminum foil-lined caps, and stored in a cooled ice chest. The soil samples were later delivered to Acurex Corporation for chemical analysis using chain-of-custody control.

Our field investigation also included a reconnaissance inspection of the interior crawl-space beneath the existing large building.

3.3 SUBSURFACE CONDITIONS

The shallow surface soils at the site consist of fill and backfill material composed of soil and debris. Previous work by Merrill, Seeley, Mullen, Sandefur, Inc., indicates that the fill generally deepens to approximately 17 1/2 feet below existing grade across the northwestern portion of the site.

Site plans available from the City of Oakland indicate that an old stream channel of Temescal Creek crosses beneath the site (Plate 3). The stream was apparently confined to a buried concrete culvert (now abandoned) prior to construction of a street car barn on the site. Boring B-4 was drilled to refusal at a depth of 5.0 feet at four different locations in the general vicinity of the old culvert. An active concrete storm drain transects the northern margin of the property trending toward 51st street.

3.4 WELL INSTALLATION

Boring B-1 was completed as ground water monitoring well MW-1 to a depth of 30.0 feet below the surface using 2-inch ID, schedule 40, PVC casing. A 0.02-inch slotted well screen with threaded cap at the base was installed from approximately 30.0 to 15.0 feet below grade and blank casing placed nearly to the surface. A filter pack consisting of washed Monterey Sand was placed

between the casing and borehole wall to a depth of approximately 13.0 feet. A well seal consisting of three feet of bentonite topped by cement was placed above the sand pack, isolating the monitoring interval from the surface. The well was completed with a locking steel vault inside a concrete Christy-type box, slightly above the existing grade.

3.5 WELL DEVELOPMENT AND SAMPLING

Monitoring well MW-1 was developed and sampled on April 10, 1987, using an acrylic bailer. Well development consisted of the rapid removal of approximately four well-volumes of water from the well. Following development, water samples were obtained and placed in appropriate laboratory-supplied containers and placed in a cooled ice chest. The bailer was thoroughly cleaned with TSP detergent and rinsed with distilled water prior to developing and sampling. No floating product or hydrocarbon odors were detected during development and sampling.

4 ANALYTICAL RESULTS

4.1 LABORATORY PROCEDURES

Soil and water samples were analyzed by Acurex Corporation of Mountain View, California. Where practical, groups of two soil samples from each boring were composited on an equal-weight basis to single samples at the laboratory prior to analysis. Soil samples were analyzed for volatile and semi-volatile organics using EPA Methods 8240, 8270 and for EPA Priority Pollutant Metals. In addition, four samples from the western portion of the site were analyzed for total extractable hydrocarbons.

Water samples obtained from monitoring well MW-1 were analyzed for volatile and semi-volatile organics using EPA Methods 624, 625, and for EPA Priority Pollutant Metals and total extractable hydrocarbons.

4.2 ANALYTICAL RESULTS - SOIL

The analytical results of soil sample analysis are attached-to this report as Appenidx 1 and are presented in the tables below.

TABLE 1

Soil Sample Analysis - Organics

Sample Location & Depth	Volatiles EPA 8240 Results	Semi-Volatiles EPA 8270 Results	Total Extractable Hydrocarbons
B1-3'& 7'	ND	ND	<30 mg/kg
B1-10' & 15'	ND	ND	<30 mg/kg
B2-4.5' & 7'	ND	ND ND	NA
B3-3' & 7'	ND	ND	NA
B4-2'	31 ug/kg Ethylbenzene	ND	5200 mg/kg
B5-3'	ND	13,000 ug/kg Napthalene	<1 mg/kg
B5-7'	ND	ND	NA
B6-2.5' & 5.5'	ND	ND	NA

ND - Not Detected

NA - Not Analyzed

< - symbol meaning not detected at or above the indicated detection limit.

4.3 ANALYTICAL RESULTS - WATER

The analytical results of water sample analysis are attached to this report as Appendix 1 and are presented in the tables below.

TABLE 3

Water Sample Analysis - Organics

Parameter	Sample W-MW-1
Volatiles	18 ug/l Tetrachloroethene
EPA 624	
Semi-Volatiles	ND
EPA 625	
Total Extractable Hydrocarbon	<1

ND - Not Detected

< Symbol meaning not detected at or above the indicated detection limit.

TABLE 2

Soil Sample Analysis - Metals

Constituent	Sample Location							
	B1 3'& 7'	B1 10'& 15'	B2 4.5' & 7'	B3 3' & 7'	B4 2'	B5 3'	B5 7'	B6 2.5' & 5.5'
Antimony	<1	<1	<1	<1	<1	<1	<1	<1
Arsenic	3	6	6	13	2	4	2	5
Beryllium	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	27	36	36	29	33	34	24	30
Copper	19	24	51	70	66	23	15	21
Lead	8	10	41	104	44	<2	6	6
Mercury	<.1	<.1	0.2	0.6	0.3	<.1	<.1	<.1
Nickel	37	49	44	43	32	34	23	36
Selenium	<1	<1	<1	<1	<1	<1	<1	<1
Silver	<1	<1	<1	<1	<1	<1	<1	<1
Thallium	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	48	47	70	160	109	56	33	54

All results reported in mg/kg

< Symbol meaning not detected at or above the indicated detection limit.

TABLE 4

Water Sample Analysis - Metals

Constituent	Sample W-MW-1	Standard (1)
Antimony	<0.01	--
Arsenic	0.02	0.5
Beryllium	<0.01	--
Cadmium	<0.01	0.01
Chromium	0.14	0.05
Copper	0.06	1.0
Lead	<0.02	0.05
Mercury	<0.001	0.002
Nickel	0.11	--
Selenium	<0.01	0.01
Silver	<0.01	0.05
Thallium	<0.01	--
Zinc	0.14	5.0

(1) Primary and Secondary Maximum Contaminant Levels

All results reported in mg/l.

< Symbol meaning not detected at or above able the indicated detection limit

5 SITE INVESTIGATION

This portion of our investigation involved a review of available aerial photographs and title documents to assess site development history, and discussions with local regulatory agency representatives pertaining to known environmental problems on site or in the general vicinity of the site. Aerial photographs flown in 1947 and 1985 did not reveal any obvious indications of specific chemical storage (e.g. drum storage or stockpiled materials). The photographs indicate that the Temescal Creek channel had been channelized and covered by asphalt paving and the street car barn prior to 1947. It appears that the site was no longer used as a street-car barn by 1950, and has remained in use as a commercial property since that time.

It should be noted that a dry-cleaning service appears to have occupied part of the existing building in the recent past. Dry-cleaning facilities generally store some quantity of solvents; however, we did not observe any obvious indications of soil contamination beneath this portion of the building.

Our conversations with representatives of the California Regional Water Quality Control Board, California Department of Health Services, and the Alameda County Health Department did not reveal the existence of known contamination problems either at, or in the immediate vicinity of the site. Our conversations with representatives of the Oakland Fire Department indicate that no underground storage tanks are known to currently exist or have been removed under permit at the site. However, this does not preclude the existence of abandoned underground tanks at the site.

We have been unable to obtain information on classification of beneficial uses of ground water in immediate vicinity of the site from the California Regional Water Quality Control Board. However, a review of the Board's Fuel Leaks listing indicated six sites with leaking tanks within a one and one-half mile radius of the site. Ground water impact severity rankings for these sites indicate limited ground water use in these areas.

A preliminary limited well survey including a review of the records of the Alameda County Public Works Department and the East Bay Municipal Utility District indicated that approximately 20 wells are listed in the probable downgradient direction to the west of the site. Most of these were apparently installed for landscape irrigation purposes in the mid 1970's, and thirteen are presently classified as temporarily abandoned. As of this time, no records indicating that ground water in the project vicinity is utilized for potable supply have been found.

No underground service bays or indications of widespread contamination were observed during our inspection of the interior crawl-space beneath the existing building. Apparently oil-soaked surface soils are present in an approximately 20 x 40 foot area beneath the building mid-section. Where examined, the staining and discoloration appears to extend to a depth of approximately six inches. However, more extensive contamination may exist locally.

A one-gallon can labeled "Asbestos Fiber Roof Cement" is present beneath the western end of the building, suggesting that asbestos-containing products may have been used during construction or repair of the building. During demolition of

existing structures at the site, the contractor should use appropriate control for dust emissions and may possibly have to dispose of portions of the demolition debris at a Class I disposal site. Evaluation of asbestos levels within the existing buildings was not part of our investigation.

8 REFERENCES

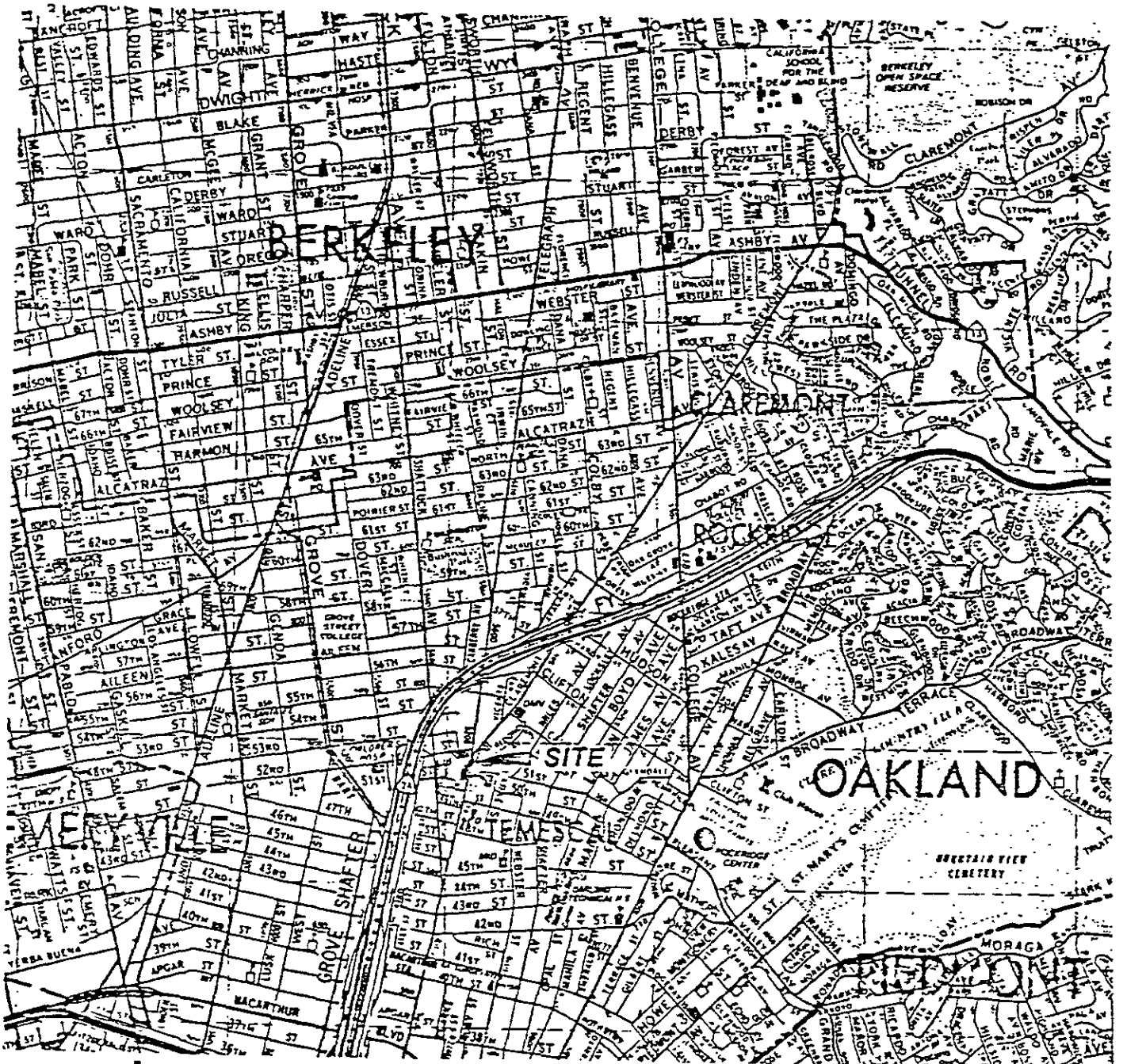
Interim Report - Geotechnical Exploration and Engineering Study, Potential Hydrocarbon Contamination, Proposal Shopping Center, 51st and Telegraph Avenues, Oakland, California: Merrill, Seeley, Mullen, Sandefur, Inc., April, 1987.

Geotechnical Exploration and Engineering Study, Proposed shopping center, 51st & Telegraph Avenues, Oakland, California: Merrill, Seeley, Mullen, Sandefur, Inc., November 1986.

Aerial Photographs

Pacific Aerial Survey, Oakland, California

Photo	Date	Approximate Scale
AV-2640-07-19/20	5-15-85	1"=1,000'
AV-2040-07-18/19	6-22-81	1"=1,000'
AV-1377-06-19/20	7-07-77	1"=1,000'
AV-1100-07-20/21	4-18-73	1"=1,000'
AV-902-07-17/18	5-02-69	1"=1,000'
AV-253-08-21/22	5-03-57	1"=1,000'
AV-28-14-33/34	4-14-50	1"=1,000'
AV-11-04-11/12	3-24-47	1"=1,000'



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

PACIFIC RIM DEVELOPMENT
CONVENIENCE CENTER 51st & TELEGRAPH
OAKLAND, CALIFORNIA

PLATE
1

6 CONCLUSIONS AND RECOMMENDATIONS

Based on the information gathered during this investigation, and on a review of the results of soil sample analyses performed by Merrill, Seeley, Mullen, Sandefur, Inc., it appears that several isolated areas of hydrocarbon contamination are present in the fill-soils at the site. However, drilling records and the the analytical results do not indicate the presence of widespread contamination.

Hydrocarbons as waste oil were detected at a concentration of 5200 ppm (parts per million) in the soil sampled from the two-foot depth at boring B-4 (Sample S-B4-2). This boring was drilled to refusal at a depth of five feet at several locations in the vicinity of the abandoned Temescal Creek culvert, and it is possible that soil contamination may be more extensive along the length of the culvert due to selective migration of hydrocarbons along a more permeable conduit. We recommend a more thorough examination of the fill materials along this structure during site preparation and grading.

Other organic constituents were not detected in soils sampled a the site except in sample S-B4-2 which contained 31 ug/kg (ppb) ethylbenzene and 13,000 ug/kg (ppb) napthalene. Both of these constituents are common components of petroleum fuels or oils. This detection of these compounds is consistent with the level of petroleum hydrocarbons detected in sample S-B4-2. No PCB's were detected in the samples analyzed. The concentrations of EPA Priority Pollutant Metals in the soil samp. d at the site were found to be within acceptable limits.

Semi-volatile organics detection limits for sample S-B4-2 and composite samples from borings B2 and B3 were elevated due to sample matrix interferences. Observations of our field geologist indicated that wood and asphalt debris were encountered in these borings which could account for the matrix interferences. Hydrocarbon odors were not detected in these borings, however.

The ground water sampled from monitoring well MW-1 was found to contain 18 ug/l (ppb) of tetrachloroethene. The measured concentrations of EPA Priority Pollutant Metals were below any designated levels of concern with the exception of chromium. The levels of tetrachloroethene and chromium detected both exceed the primary drinking water standards for these constituents. A preliminary well survey completed to date has not indicated the existance of wells utilized for drinking water supply in the probable downgradient direction. California Regional Water Quality Control Board records obtained to date list ground water use as limited in the area surrounding the project site. It is possible that the ground water sampled may not meet standards for drinking water quality set for other chemical constituents thus, limiting its beneficial uses. However, our investigation did not include analyses for drinking water constituents.

In summary, the results of our investigation and a review of soil sample analyses by Merrill, Seeley, Mullen, Sandefur, Inc., indicate that hydrocarbons appear to be present at isolated locations in the fill soils at the site and beneath the existing building. This contamination appears to be relatively localized in extent, although, more extensive zones of contamination may be present. In accordance with guidelines presented by the San Francisco Bay Regional Water Quality Control Board, we recommend removal of soils at the site which exceed 1000 ppm total hydrocarbon concentration. The quantity of soil which exceeds this level is difficult to estimate, at this time; however, it could be as high as 200 yards or possibly more. Excavation and

disposal of this material at a permitted disposal facility is estimated to cost approximately $4,500 per 16 cubic yard truck load. This cost includes excavation, transportation and disposal, and assumes that the contaminated soils do not contain PCB's. We recommend that a Kleinfelder representative be present during excavation operations to conduct onsite monitoring and collect samples of soils remaining in excavation areas. Specific costs associated with excavation monitoring will be dependent upon contractor schedule; however, estimated costs are approximately $700 to $800 per eight hour day. Analytical costs will vary with the requirements of the waste hauler and disposal site.

We recommend that a more extensive well survey be completed of the project area along with supplemental review of RWQCB records to develop information on beneficial uses of ground water in the area. Should information developed indicate that the constituents identified in well MW-1 may result in a possible reduction in beneficial uses of area ground water, we recommend installation of a second monitoring well on the probable upgradient side of the site along Telegraph Avenue to develop supplemental information on site ground water quality. Samples from the second well and existing well MW-1 should be analyzed for Title 22 drinking water constituents, as well as EPA Priority Pollutant Metals and Volatile Organics by EPA Method 624.

Copies of this report and any supplemental reports should be submitted to both the Regional Water Quality Control Board and California Department of Health Services for their review and comment.

7 LIMITATIONS

This report was prepared in general accordance with the accepted standard of practice which exists in Northern California at the time the investigation was performed. It should be recognized that definition and evaluation of environmental conditions is a difficult and inexact art. Judgements leading to conclusions and recommendations are generally made with an incomplete knowledge of the conditions present. More extensive studies, including additional environmental investigations, can tend to reduce the inherent uncertainties associated with such studies. If the client wishes to reduce the uncertainty beyond the level associated with this study, Kleinfelder & Associates should be notified for additional consultation.

Our firm has prepared this report for the client's exclusive use for this particular project and in accordance with generally accepted engineering practices within the area at the time of our investigation. No other warranties, expressed or implied, as to the professional advice provided are made. The recommendations provided in this report are based on the assumption that an adequate program of tests and field observations will be conducted by our firm during any subsequent phases in order to evaluate compliance with the recommendations.

ACUREX Corporation

Environmental Systems Division

J.H. Kleinfelder
1901 Olympic Blvd., Ste. 300
Walnut Creek, CA 94596

April 20, 1987
Acurex ID: 8704030
Client PO: 10-1689-1

Attention: Dennis Laduzinsky

Subject: Analysis of Two Soil Samples for Total Extractable Hydrocarbons, Volatile and Semivolatile Organic Compounds, Received 4/09/87.

Soil samples were analyzed for total extractable hydrocarbons. Results are presented in Table 1. The method can be summarized as follows:

> A 30 gram sample of soil is extracted with methylene chloride. The extract is dried and concentrated to a final volume of 10 mL. The concentrate is injected into a gas chromatograph with a column of 10% SP2100 on Supelcoport. The gas chromatograph is temperature programmed from 50° to 280°C to separate the hydrocarbons which are detected with a flame ionization detector.

Soil samples were analyzed for purgeable organic compounds according to U.S. EPA Method 8240 (Test Methods for Evaluating Solid Waste - SW846, 2nd Ed.,1982). Results are presented in Table 2. The method can be summarized as follows:

> Helium is bubbled through a 5 gram soil sample in organic free water contained in a specially designed purging chamber. The purgeable volatile organic compounds are efficiently transferred from the aqueous phase to the vapor phase. The vapor is swept through a sorbent column where the purgeables are trapped. After purging is completed, the trap is heated and back flushed with helium to desorb the purgeables onto a gas chromatographic column. The gas chromatograph is temperature programmed to separate the purgeables which are then detected with a mass spectrometer.

Solid samples were analyzed for semivolatile organic compounds according to U.S. EPA Method 8270 (Test Methods for Evaluating Solid Waste - SW846, 2nd Ed.,1982). Results are presented in Table 3. The method can be summarized as follows:

> Thirty grams of sample is extracted with methylene chloride/acetone (1:1) at neutral pH. The extract is dried and concentrated to 1 mL. Just prior to injection into a Gas Chromatograph/Mass Spectrometer (GC/MS), the extract is combined with internal standards. The GC/MS is equipped with a fused silica capillary column and is setup for the analysis of semivolatile priority pollutants.

itative identification of the priority pollutants is performed
ially using the relative retention times, and the relative
dance of a set of unique ions. The entire mass spectrum is checked
re any final identifications are recorded. Quantitative analysis is
ormed by the internal standard method using a single characteristic
and response factors obtained from a daily calibration standard. In
tables, an entry such as "<5" means that the compound is not
cted and the detection limit is 5.

r to analysis, every sample is spiked with surrogate compounds as
of Acurex's Quality Control Program. These compounds simulate the
vior of compounds of interest and confirm that acceptable
veries are being achieved on every sample. The results of surrogate
veries are reported with the sample results.

d samples were analyzed for requested metals using atomic
rption spectrometry following Test Methods for Evaluating Solid
e (EPA 1982). The EPA method which was employed is listed along the
of the parameter. Samples were prepared using EPA method 3050 by
sting the sample in acid. The sample aliquot was aspirated into a
e or placed on a stabilized temperature graphite platform and
trothermally heated for atomization. Nickel nitrate was added in
determination of arsenic and selenium to prevent loss of the
yte. Mercury was determined by the cold vapor technique using EPA
od 7470, where the mercury in the sample was reduced to the
ental state and the mercury vapor purged. The atoms were placed in
light path of an atomic absorption spectrometer where the
rbance of light specific to the element of interest was measured.
atomic absorption spectrometer was run in the dual beam mode with
erium background correction, where it was possible, so as to
mize interferences. The results are presented in Table 4.

ou should have any questions, please do not hesitate to call.

itted by: Richard Scott
Richard Scott
Manager, GC/MS Operations

Approved by: David R. Taylor
David R. Taylor, Ph.D.
Manager, Quality Assurance

RT/jn

e results were obtained by following standard laboratory procedures;
liability of Acurex Corporation shall not exceed the amount paid for
report. In no event shall Acurex be liable for special or
equential damages.

Table 1. Total Extractable Hydrocarbons

J.H. Kleinfelder Sample ID

	S-B1-3 S-B1-7	S-B1-10 S-B1-15	Method Blank
	mg/Kg	mg/Kg	mg/Kg
TEH	<30	<30	<30

Table 2. Volatile Organic Results

	Kleinfelder Sample ID		
	S-B1-3 and S-B1-7	S-B1-10 and S-B1-15	storage blank
8240 Compounds	ug/kg	ug/kg	ug/kg
Chloromethane	<5	<5	<5
Bromomethane	<4	<4	<4
Vinyl Chloride	<5	<5	<5
Chloroethane	<4	<4	<4
Methylene Chloride	<10	<10	<10
Trichlorofluoromethane	<4	<4	<4
1,1-Dichloroethene	<5	<5	<5
1,1-Dichloroethane	<3	<3	<3
trans-1,2-Dichloroethene *	<4	<4	<4
Chloroform	<4	<4	<4
1,2-Dichloroethane	<5	<5	<5
1,1,1-Trichloroethane	<4	<4	<4
Carbon Tetrachloride	<4	<4	<4
Bromodichloromethane	<4	<4	<4
1,2-Dichloropropane	<3	<3	<3
trans-1,3-Dichloropropene	<4	<4	<4
Trichloroethene	<4	<4	<4
Benzene	<3	<3	<3
Dibromochloromethane	<4	<4	<4
1,1,2-Trichloroethane	<3	<3	<3
cis-1,3-Dichloropropene	<3	<3	<3
2-Chloroethylvinylether	<3	<3	<3
Bromoform	<3	<3	<3
1,1,2,2-Tetrachloroethane	<3	<3	<3
Tetrachloroethene	<3	<3	<3
Toluene	<3	<3	<3
Chlorobenzene	<3	<3	<3
Ethylbenzene	<4	<4	<4
Dichlorobenzenes	<4	<4	<4
Date analyzed	4/15/87	4/15/87	4/15/87
Surrogates	Percent Recoveries (%)		
1,2-Dichloroethane-d4	94	88	90
Toluene-d8	107	122	114
p-Bromofluorobenzene	90	80	88

* - cannot be distinguished from the cis isomer by this column

Table 3. Semivolatile Organic Results

	Kleinfelder Sample ID	
	S-B1-3 and S-B1-7	S-B1-10 and S-B1-15
8270 Compounds	ug/kg	ug/kg
Phenol	<33	<33
bis(2-Chloroethyl)Ether	<33	<33
2-Chlorophenol	<33	<33
1,3-Dichlorobenzene	<33	<33
1,4-Dichlorobenzene	<33	<33
1,2-Dichlorobenzene	<66	<66
bis(2-Chloroisopropyl)Ether	<33	<33
N-Nitroso-Di-n-Propylamine	<130	<130
Hexachloroethane	<66	<66
Nitrobenzene	<99	<99
Isophorone	<66	<66
2-Nitrophenol	<130	<130
2,4-Dimethylphenol	<99	<99
bis(2-Chloroethoxy)Methane	<66	<66
2,4-Dichlorophenol	<99	<99
1,2,4-Trichlorobenzene	<33	<33
Naphthalene	<33	<33
Hexachlorobutadiene	<66	<66
4-Chloro-3-Methylphenol	<33	<33
Hexachlorocyclopentadiene	<660	<660
2,4,6-Trichlorophenol	<66	<66
2-Chloronaphthalene	<33	<33
Dimethyl Phthalate	<33	<33
Acenaphthylene	<33	<33
Acenaphthene	<33	<33
2,4-Dinitrophenol	<660	<660
4-Nitrophenol	<260	<260
2,4-Dinitrotoluene	<66	<66
2,6-Dinitrotoluene	<99	<99
Diethylphthalate	<33	<33
4-Chlorophenyl-Phenylether	<33	<33
Fluorene	<33	<33
4,6-Dinitro-2-Methylphenol	<200	<200
N-Nitrosodiphenylamine	<130	<130
4-Bromophenyl-Phenylether	<33	<33
Hexachlorobenzene	<99	<99
Pentachlorophenol	<33	<33
Phenanthrene	<33	<33
Anthracene	<33	<33
Di-n-Butylphthalate	<66	<66

Table 3. Semivolatile Organic Results (continued)

	Kleinfelder Sample ID	
	S-B1-3 and S-B1-7	S-B1-10 and S-B1-15
8270 Compounds	ug/kg	ug/kg
Fluoranthene	<99	<99
Pyrene	<66	<66
Butylbenzylphthalate	<99	<99
3,3-Dichlorobenzidine	<660	<660
Benzo(a)Anthracene	<33	<33
bis(2-Ethylhexyl)Phthalate	<66	<66
Chrysene	<33	<33
Di-n-Octyl Phthalate	<66	<66
Benzo(b)Fluoranthene	<130	<130
Benzo(k)Fluoranthene	<130	<130
Benzo(a)Pyrene	<33	<33
Indeno(1,2,3-cd)Pyrene	<33	<33
Dibenzo(a,h)Anthracene	<99	<99
Benzo(g,h,i)Perylene	<66	<66
Alpha-BHC	<330	<330
Beta-BHC	<330	<330
Gamma-BHC	<330	<330
Delta-BHC	<330	<330
Heptachlor	<330	<330
Aldrin	<330	<330
Heptachlor Epoxide	<330	<330
Endosulfan I	<330	<330
Dieldrin	<330	<330
4,4'-DDE	<330	<330
Endrin	<330	<330
Endosulfan II	<330	<330
4,4'-DDD	<330	<330
Endrin Aldehyde	<330	<330
Endosulfan Sulfate	<330	<330
4,4'-DDT	<330	<330
PCB's	<330	<330

Surrogates	Percent Recovery (%)	
2-Fluorophenol	56	68
Phenol-d5	57	62
Nitrobenzene-d5	64	67
2-Fluorobiphenyl	67	75
2,4,6-Tribromophenol	58	52
p-Terphenyl-d14	54	80

Table 4. Metals Results

Parameter	EPA Method	Client Sample ID: S-B1-3 S-B1-7 Comp. mg/Kg	S-B1-10 S-B1-15 Comp. mg/Kg	Method Blank mg/Kg
Antimony	7041	<1	<1	<1
Arsenic	7060	3	6	<1
Beryllium	7090	<1	<1	<1
Cadmium	7130	<1	<1	<1
Chromium	7190	27	36	<1
Copper	7210	19	24	<1
Lead	7420	8	10	<1
Mercury	7470	<0.1	<0.1	<0.1
Nickel	7520	37	49	<3
Selenium	7740	<1	<1	<1
Silver	7760	<1	<1	<1
Thallium	7841	<1	<1	<1
Zinc	7950	48	47	<1

ACUREX Corporation

Environmental Systems Division

J.H. Kleinfelder
1901 Olympic Blvd., Ste. 300
Walnut Creek, CA 94596

April 20, 1987
Acurex ID: 8704035
Client PO: 10-1689-1

Attention: Dennis Laduzinsky

Subject: Analysis of Two Soil Samples for Total Extractable Hydrocarbons, and Volatile and Semivolatile Organic Compounds; Received 4/09/87.

Soil samples were analyzed for total extractable hydrocarbons. Results are presented in Table 1. The method can be summarized as follows:

> A 30 gram sample of soil is extracted with methylene chloride. The extract is dried and concentrated to a final volume of 10 mL. The concentrate is injected into a gas chromatograph with a column of 10% SP2100 on Supelcoport. The gas chromatograph is temperature programmed from 50° to 280°C to separate the hydrocarbons which are detected with a flame ionization detector.

Soil samples were analyzed for purgeable organic compounds according to U.S. EPA Method 8240 (Test Methods for Evaluating Solid Waste - SW846, 2nd Ed.,1982). Results are presented in Table 2. The method can be summarized as follows:

> Helium is bubbled through a 5 gram soil sample in organic free water contained in a specially designed purging chamber. The purgeable volatile organic compounds are efficiently transferred from the aqueous phase to the vapor phase. The vapor is swept through a sorbent column where the purgeables are trapped. After purging is completed, the trap is heated and back flushed with helium to desorb the purgeables onto a gas chromatographic column. The gas chromatograph is temperature programmed to separate the purgeables which are then detected with a mass spectrometer.

Solid samples were analyzed for semivolatile organic compounds according to U.S. EPA Method 8270 (Test Methods for Evaluating Solid Waste - SW846, 2nd Ed.,1982). Results are presented in Table 3. The method can be summarized as follows:

> Thirty grams of sample is extracted with methylene chloride/acetone (1:1) at neutral pH. The extract is dried and concentrated to 1 mL. Just prior to injection into a Gas Chromatograph/Mass Spectrometer (GC/MS), the extract is combined with internal standards. The GC/MS is equipped with a fused silica capillary column and is setup for the analysis of semivolatile priority pollutants.

Qualitative identification of the priority pollutants is performed initially using the relative retention times, and the relative abundance of a set of unique ions. The entire mass spectrum is checked before any final identifications are recorded. Quantitative analysis is performed by the internal standard method using a single characteristic ion and response factors obtained from a daily calibration standard. In the tables, an entry such as "<5" means that the compound is not detected and the detection limit is 5.

Prior to analysis, every sample is spiked with surrogate compounds as part of Acurex's Quality Control Program. These compounds simulate the behavior of compounds of interest and confirm that acceptable recoveries are being achieved on every sample. The results of surrogate recoveries are reported with the sample results.

Solid samples were analyzed for requested metals using atomic absorption spectrometry following Test Methods for Evaluating Solid Waste (EPA 1982). The EPA method which was employed is listed along the side of the parameter. Samples were prepared using EPA method 3050 by digesting the sample in acid. The sample aliquot was aspirated into a flame or placed on a stabilized temperature graphite platform and electrothermally heated for atomization. Nickel nitrate was added in the determination of arsenic and selenium to prevent loss of the analyte. Mercury was determined by the cold vapor technique using EPA method 7470, where the mercury in the sample was reduced to the elemental state and the mercury vapor purged. The atoms were placed in the light path of an atomic absorption spectrometer where the absorbance of light specific to the element of interest was measured. The atomic absorption spectrometer was run in the dual beam mode with deuterium background correction, where it was possible, so as to minimize interferences. The results are presented in Table 4.

If you should have any questions, please do not hesitate to call.

Submitted by: Richard Scott
Richard Scott
Manager, GC/MS Operations

Approved by: David R. Taylor
David R. Taylor, Ph.D.
Manager, Quality Assurance

RS/DRT/jn

Table 1. Total Extractable Hydrocarbon Results

	Kleinfelder Sample ID			
	S-B4-2	S-B5-3	W-MW-1	method blank
Parameter	mg/kg	mg/kg	mg/kg	mg/kg
TEH	5200	<1	<1	<1

Table 2. Volatile Organic Results

Kleinfelder Sample ID

624 Compounds	W-MW-1 ug/L
Chloromethane	<5
Bromomethane	<4
Vinyl Chloride	<5
Chloroethane	<4
Methylene Chloride	<10
Trichlorofluoromethane	<4
1,1-Dichloroethene	<5
1,1-Dichloroethane	<3
trans-1,2-Dichloroethene *	<4
Chloroform	<4
1,2-Dichloroethane	<5
1,1,1-Trichloroethane	<4
Carbon Tetrachloride	<4
Bromodichloromethane	<4
1,2-Dichloropropane	<3
trans-1,3-Dichloropropene	<4
Trichloroethene	<4
Benzene	<3
Dibromochloromethane	<4
1,1,2-Trichloroethane	<3
cis-1,3-Dichloropropene	<3
2-Chloroethylvinylether	<3
Bromoform	<3
1,1,2,2-Tetrachloroethane	<3
Tetrachloroethene	18
Toluene	<3
Chlorobenzene	<3
Ethylbenzene	<4
Dichlorobenzenes	<4
Date analyzed	4/20/87
Surrogates	Percent Recoveries (%)
1,2-Dichloroethane-d4	64
Toluene-d8	99
p-Bromofluorobenzene	95

* - cannot be distinguished from the cis isomer by this column

Table 3. Volatile Organic Results

	Kleinfelder Sample ID				
8240 Compounds	S-B2-4.5 and S-B2-7 ug/kg	S-B3-3 and S-B3-7 ug/kg	S-B4-2 ug/kg	S-B5-3 ug/kg	S-B5-7 ug/kg
Chloromethane	<5	<5	<25	<5	<5
Bromomethane	<4	<4	<20	<4	<4
Vinyl Chloride	<5	<5	<25	<5	<5
Chloroethane	<4	<4	<20	<4	<4
Methylene Chloride	<10	<10	<50	<10	<10
Trichlorofluoromethane	<4	<4	<20	<4	<4
1,1-Dichloroethene	<5	<5	<25	<5	<5
1,1-Dichloroethane	<3	<3	<15	<3	<3
trans-1,2-Dichloroethene *	<4	<4	<20	<4	<4
Chloroform	<4	<4	<20	<4	<4
1,2-Dichloroethane	<5	<5	<25	<5	<5
1,1,1-Trichloroethane	<4	<4	<20	<4	<4
Carbon Tetrachloride	<4	<4	<20	<4	<4
Bromodichloromethane	<4	<4	<20	<4	<4
1,2-Dichloropropane	<3	<3	<15	<3	<3
trans-1,3-Dichloropropene	<4	<4	<20	<4	<4
Trichloroethene	<4	<4	<20	<4	<4
Benzene	<3	<3	<15	<3	<3
Dibromochloromethane	<4	<4	<20	<4	<4
1,1,2-Trichloroethane	<3	<3	<15	<3	<3
cis-1,3-Dichloropropene	<3	<3	<15	<3	<3
2-Chloroethylvinylether	<3	<3	<15	<3	<3
Bromoform	<3	<3	<15	<3	<3
1,1,2,2-Tetrachloroethane	<3	<3	<15	<3	<3
Tetrachloroethene	<3	<3	<15	<3	<3
Toluene	<3	<3	<15	<3	<3
Chlorobenzene	<3	<3	<15	<3	<3
Ethylbenzene	<4	<4	31	<4	<4
Dichlorobenzenes	<4	<4	<20	<4	<4
Date analyzed	4/17/87	4/17/87	4/17/87	4/17/87	4/17/87
Surrogates	Percent Recoveries (%)				
1,2-Dichloroethane-d4	96	103	75	103	102
Toluene-d8	137	137	129	131	119
p-Bromofluorobenzene	140	133	147	116	138

* - cannot be distinguished from the cis isomer by this column

Table 3. Volatile Organic Results

8240 Compounds	Kleinfelder Sample ID: S-B6-2.5 and S-B6-5.5 ug/kg	storage blank ug/kg
Chloromethane	<5	<5
Bromomethane	<4	<4
Vinyl Chloride	<5	<5
Chloroethane	<4	<4
Methylene Chloride	<10	<10
Trichlorofluoromethane	<4	<4
1,1-Dichloroethene	<5	<5
1,1-Dichloroethane	<3	<3
trans-1,2-Dichloroethene *	<4	<4
Chloroform	<4	<4
1,2-Dichloroethane	<5	<5
1,1,1-Trichloroethane	<4	<4
Carbon Tetrachloride	<4	<4
Bromodichloromethane	<4	<4
1,2-Dichloropropane	<3	<3
trans-1,3-Dichloropropene	<4	<4
Trichloroethene	<4	<4
Benzene	<3	<3
Dibromochloromethane	<4	<4
1,1,2-Trichloroethane	<3	<3
cis-1,3-Dichloropropene	<3	<3
2-Chloroethylvinylether	<3	<3
Bromoform	<3	<3
1,1,2,2-Tetrachloroethane	<3	<3
Tetrachloroethene	<3	<3
Toluene	<3	<3
Chlorobenzene	<3	<3
Ethylbenzene	<4	<4
Dichlorobenzenes	<4	<4
Date analyzed	4/17/87	4/17/87
Surrogates	Percent Recoveries (%)	
1,2-Dichloroethane-d4	100	74
Toluene-d8	123	133
p-Bromofluorobenzene	98	94

* - cannot be distinguished from the cis isomer by this column

Table 4. Semivolatile Organic Results

Kleinfelder Sample ID

625 Compounds	W-MW-1 ug/L	method blank ug/L
Phenol	<2	<2
bis(2-Chloroethyl)Ether	<2	<2
2-Chlorophenol	<2	<2
1,3-Dichlorobenzene	<2	<2
1,4-Dichlorobenzene	<2	<2
1,2-Dichlorobenzene	<4	<4
bis(2-Chloroisopropyl)Ether	<2	<2
N-Nitroso-Di-n-Propylamine	<8	<8
Hexachloroethane	<4	<4
Nitrobenzene	<6	<6
Isophorone	<4	<4
2-Nitrophenol	<8	<8
2,4-Dimethylphenol	<6	<6
bis(2-Chloroethoxy)Methane	<4	<4
2,4-Dichlorophenol	<6	<6
1,2,4-Trichlorobenzene	<2	<2
Naphthalene	<2	<2
Hexachlorobutadiene	<4	<4
4-Chloro-3-Methylphenol	<2	<2
Hexachlorocyclopentadiene	<40	<40
2,4,6-Trichlorophenol	<4	<4
2-Chloronaphthalene	<2	<2
Dimethyl Phthalate	<2	<2
Acenaphthylene	<2	<2
Acenaphthene	<2	<2
2,4-Dinitrophenol	<40	<40
4-Nitrophenol	<16	<16
2,4-Dinitrotoluene	<4	<4
2,6-Dinitrotoluene	<6	<6
Diethylphthalate	<2	<2
4-Chlorophenyl-Phenylether	<2	<2
Fluorene	<2	<2
4,6-Dinitro-2-Methylphenol	<12	<12
N-Nitrosodiphenylamine	<8	<8
4-Bromophenyl-Phenylether	<2	<2
Hexachlorobenzene	<6	<6
Pentachlorophenol	<2	<2
Phenanthrene	<2	<2
Anthracene	<2	<2
Di-n-Butylphthalate	<4	<4

Table 4. Semivolatile Organic Results (continued)

Kleinfelder Sample ID

625 Compounds	W-MW-1 ug/L	method blank ug/L
Fluoranthene	<6	<6
Pyrene	<4	<4
Butylbenzylphthalate	<6	<6
3,3-Dichlorobenzidine	<40	<40
Benzo(a)Anthracene	<2	<2
bis(2-Ethylhexyl)Phthalate	<4	<4
Chrysene	<2	<2
Di-n-Octyl Phthalate	<4	<4
Benzo(b)Fluoranthene	<8	<8
Benzo(k)Fluoranthene	<8	<8
Benzo(a)Pyrene	<2	<2
Indeno(1,2,3-cd)Pyrene	<2	<2
Dibenzo(a,h)Anthracene	<6	<6
Benzo(g,h,i)Perylene	<4	<4
Alpha-BHC	<20	<20
Beta-BHC	<20	<20
Gamma-BHC	<20	<20
Delta-BHC	<20	<20
Heptachlor	<20	<20
Aldrin	<20	<20
Heptachlor Epoxide	<20	<20
Endosulfan I	<20	<20
Dieldrin	<20	<20
4,4'-DDE	<20	<20
Endrin	<20	<20
Endosulfan II	<20	<20
4,4'-DDD	<20	<20
Endrin Aldehyde	<20	<20
Endosulfan Sulfate	<20	<20
4,4'-DDT	<20	<20
PCB's	<20	<20

Surrogates	Percent Recovery (%)	
2-Fluorophenol	55	61
Phenol-d5	53	58
Nitrobenzene-d5	70	62
2-Fluorobiphenyl	72	62
2,4,6-Tribromophenol	@	@
p-Terphenyl-d14	86	73

@ - surrogate not recovered

Table 5. Semivolatile Organic Results

	Kleinfelder Sample ID				
8270 Compounds	S-B2-4.5 and S-B2-7 ug/kg	S-B3-3 and S-B3-7 ug/kg	S-B4-2 ug/kg	S-B5-3 ug/kg	S-B5-7 ug/kg
Phenol	<1700	<1700	<1700	<33	<33
bis(2-Chloroethyl)Ether	<1700	<1700	<1700	<33	<33
2-Chlorophenol	<1700	<1700	<1700	<33	<33
1,3-Dichlorobenzene	<1700	<1700	<1700	<33	<33
1,4-Dichlorobenzene	<1700	<1700	<1700	<33	<33
1,2-Dichlorobenzene	<3300	<3300	<3300	<66	<66
bis(2-Chloroisopropyl)Ether	<1700	<1700	<1700	<33	<33
N-Nitroso-Di-n-Propylamine	<6600	<6600	<6600	<130	<130
Hexachloroethane	<3300	<3300	<3300	<66	<66
Nitrobenzene	<5000	<5000	<5000	<99	<99
Isophorone	<3300	<3300	<3300	<66	<66
2-Nitrophenol	<6600	<6600	<6600	<130	<130
2,4-Dimethylphenol	<5000	<5000	<5000	<99	<99
bis(2-Chloroethoxy)Methane	<3300	<3300	<3300	<66	<66
2,4-Dichlorophenol	<5000	<5000	<5000	<99	<99
1,2,4-Trichlorobenzene	<1700	<1700	<1700	<33	<33
Naphthalene	<1700	<1700	13000	<33	<33
Hexachlorobutadiene	<3300	<3300	<3300	<66	<66
4-Chloro-3-Methylphenol	<1700	<1700	<1700	<33	<33
Hexachlorocyclopentadiene	<33000	<33000	<33000	<660	<660
2,4,6-Trichlorophenol	<3300	<3300	<3300	<66	<66
2-Chloronaphthalene	<1700	<1700	<1700	<33	<33
Dimethyl Phthalate	<1700	<1700	<1700	<33	<33
Acenaphthylene	<1700	<1700	<1700	<33	<33
Acenaphthene	<1700	<1700	<1700	<33	<33
2,4-Dinitrophenol	<33000	<33000	<33000	<660	<660
4-Nitrophenol	<13000	<13000	<13000	<260	<260
2,4-Dinitrotoluene	<3300	<3300	<3300	<66	<66
2,6-Dinitrotoluene	<5000	<5000	<5000	<99	<99
Diethylphthalate	<1700	<1700	<1700	<33	<33
4-Chlorophenyl-Phenylether	<1700	<1700	<1700	<33	<33
Fluorene	<1700	<1700	<1700	<33	<33
4,6-Dinitro-2-Methylphenol	<10000	<10000	<10000	<200	<200
N-Nitrosodiphenylamine	<6600	<6600	<6600	<130	<130
4-Bromophenyl-Phenylether	<1700	<1700	<1700	<33	<33
Hexachlorobenzene	<5000	<5000	<5000	<99	<99
Pentachlorophenol	<1700	<1700	<1700	<33	<33
Phenanthrene	<1700	<1700	<1700	<33	<33
Anthracene	<1700	<1700	<1700	<33	<33
Di-n-Butylphthalate	<3300	<3300	<3300	<66	<66

Table 5. Semivolatile Organic Results (continued)

	Kleinfelder Sample ID				
8270 Compounds	S-B2-4.5 and S-B2-7 ug/kg	S-B3-3 and S-B3-7 ug/kg	S-B4-2 ug/kg	S-B5-3 ug/kg	S-B5-7 ug/kg
Fluoranthene	<5000	<5000	<5000	<99	<99
Pyrene	<3300	<3300	<3300	<66	<66
Butylbenzylphthalate	<5000	<5000	<5000	<99	<99
3,3-Dichlorobenzidine	<33000	<33000	<33000	<660	<660
Benzo(a)Anthracene	<1700	<1700	<1700	<33	<33
bis(2-Ethylhexyl)Phthalate	<3300	<3300	<3300	<66	<66
Chrysene	<1700	<1700	<1700	<33	<33
Di-n-Octyl Phthalate	<3300	<3300	<3300	<66	<66
Benzo(b)Fluoranthene	<6600	<6600	<6600	<130	<130
Benzo(k)Fluoranthene	<6600	<6600	<6600	<130	<130
Benzo(a)Pyrene	<1700	<1700	<1700	<33	<33
Indeno(1,2,3-cd)Pyrene	<1700	<1700	<1700	<33	<33
Dibenzo(a,h)Anthracene	<5000	<5000	<5000	<99	<99
Benzo(g,h,i)Perylene	<3300	<3300	<3300	<66	<66
Alpha-BHC	<17000	<17000	<17000	<330	<330
Beta-BHC	<17000	<17000	<17000	<330	<330
Gamma-BHC	<17000	<17000	<17000	<330	<330
Delta-BHC	<17000	<17000	<17000	<330	<330
Heptachlor	<17000	<17000	<17000	<330	<330
Aldrin	<17000	<17000	<17000	<330	<330
Heptachlor Epoxide	<17000	<17000	<17000	<330	<330
Endosulfan I	<17000	<17000	<17000	<330	<330
Dieldrin	<17000	<17000	<17000	<330	<330
4,4'-DDE	<17000	<17000	<17000	<330	<330
Endrin	<17000	<17000	<17000	<330	<330
Endosulfan II	<17000	<17000	<17000	<330	<330
4,4'-DDD	<17000	<17000	<17000	<330	<330
Endrin Aldehyde	<17000	<17000	<17000	<330	<330
Endosulfan Sulfate	<17000	<17000	<17000	<330	<330
4,4'-DDT	<17000	<17000	<17000	<330	<330
PCB's	<17000	<17000	<17000	<330	<330
Surrogates	Percent Recovery (%)				
2-Fluorophenol	45	66	62	45	53
Phenol-d5	40	66	57	44	51
Nitrobenzene-d5	39	68	103	50	61
2-Fluorobiphenyl	55	91	76	61	68
2,4,6-Tribromophenol	@	@	@	@	@
p-Terphenyl-d14	67	85	65	62	74

@ - surrogate not recovered

Table 5. Semivolatile Organic Results

	Kleinfelder Sample ID	
8270 Compounds	S-B6-2.5 and S-B6-5.5 ug/kg	*method* blank ug/kg
Phenol	<33	<33
bis(2-Chloroethyl)Ether	<33	<33
2-Chlorophenol	<33	<33
1,3-Dichlorobenzene	<33	<33
1,4-Dichlorobenzene	<33	<33
1,2-Dichlorobenzene	<66	<66
bis(2-Chloroisopropyl)Ether	<33	<33
N-Nitroso-Di-n-Propylamine	<130	<130
Hexachloroethane	<66	<66
Nitrobenzene	<99	<99
Isophorone	<66	<66
2-Nitrophenol	<130	<130
2,4-Dimethylphenol	<99	<99
bis(2-Chloroethoxy)Methane	<66	<66
2,4-Dichlorophenol	<99	<99
1,2,4-Trichlorobenzene	<33	<33
Naphthalene	<33	<33
Hexachlorobutadiene	<66	<66
4-Chloro-3-Methylphenol	<33	<33
Hexachlorocyclopentadiene	<660	<660
2,4,6-Trichlorophenol	<66	<66
2-Chloronaphthalene	<33	<33
Dimethyl Phthalate	<33	<33
Acenaphthylene	<33	<33
Acenaphthene	<33	<33
2,4-Dinitrophenol	<660	<660
4-Nitrophenol	<260	<260
2,4-Dinitrotoluene	<66	<66
2,6-Dinitrotoluene	<99	<99
Diethylphthalate	<33	<33
4-Chlorophenyl-Phenylether	<33	<33
Fluorene	<33	<33
4,6-Dinitro-2-Methylphenol	<200	<200
N-Nitrosodiphenylamine	<130	<130
4-Bromophenyl-Phenylether	<33	<33
Hexachlorobenzene	<99	<99
Pentachlorophenol	<33	<33
Phenanthrene	<33	<33
Anthracene	<33	<33
Di-n-Butylphthalate	<66	<66

Table 5. Semivolatile Organic Results (continued)

	Kleinfelder Sample ID	
8270 Compounds	S-B6-2.5 and S-B6-5.5 ug/kg	method blank ug/kg
Fluoranthene	<99	<99
Pyrene	<66	<66
Butylbenzylphthalate	<99	<99
3,3-Dichlorobenzidine	<660	<660
Benzo(a)Anthracene	<33	<33
bis(2-Ethylhexyl)Phthalate	<66	<66
Chrysene	<33	<33
Di-n-Octyl Phthalate	<66	<66
Benzo(b)Fluoranthene	<130	<130
Benzo(k)Fluoranthene	<130	<130
Benzo(a)Pyrene	<33	<33
Indeno(1,2,3-cd)Pyrene	<33	<33
Dibenzo(a,h)Anthracene	<99	<99
Benzo(g,h,i)Perylene	<66	<66
Alpha-BHC	<330	<330
Beta-BHC	<330	<330
Gamma-BHC	<330	<330
Delta-BHC	<330	<330
Heptachlor	<330	<330
Aldrin	<330	<330
Heptachlor Epoxide	<330	<330
Endosulfan I	<330	<330
Dieldrin	<330	<330
4,4'-DDE	<330	<330
Endrin	<330	<330
Endosulfan II	<330	<330
4,4'-DDD	<330	<330
Endrin Aldehyde	<330	<330
Endosulfan Sulfate	<330	<330
4,4'-DDT	<330	<330
PCB's	<330	<330

Surrogates	Percent Recovery (%)	
2-Fluorophenol	53	60
Phenol-d5	51	59
Nitrobenzene-d5	58	68
2-Fluorobiphenyl	69	77
2,4,6-Tribromophenol	@	@
p-Terphenyl-d14	68	82

@ - surrogate not recovered

Table 6. Metals Results

Parameter	EPA Method	Kleinfelder Sample ID: S-B2-4.5 S-B2-7 Comp.	S-B3-3 S-B3-7 Comp.	S-B4-2	S-B5-3	S-B5-7
		mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Antimony	7041	<1	<1	<1	<1	<1
Arsenic	7060	6	13	2	4	2
Beryllium	7090	<1	<1	<1	<1	<1
Cadmium	7130	<1	<1	<1	<1	<1
Chromium	7190	36	29	33	34	24
Copper	7210	51	70	66	23	15
Lead	7420	41	104	44	<2	6
Mercury	7470	0.2	0.6	0.3	<0.1	<0.1
Nickel	7520	44	43	32	34	23
Selenium	7740	<1	<1	<1	<1	<1
Silver	7760	<1	<1	<1	<1	<1
Thallium	7841	<1	<1	<1	<1	<1
Zinc	7950	70	160	109	56	33

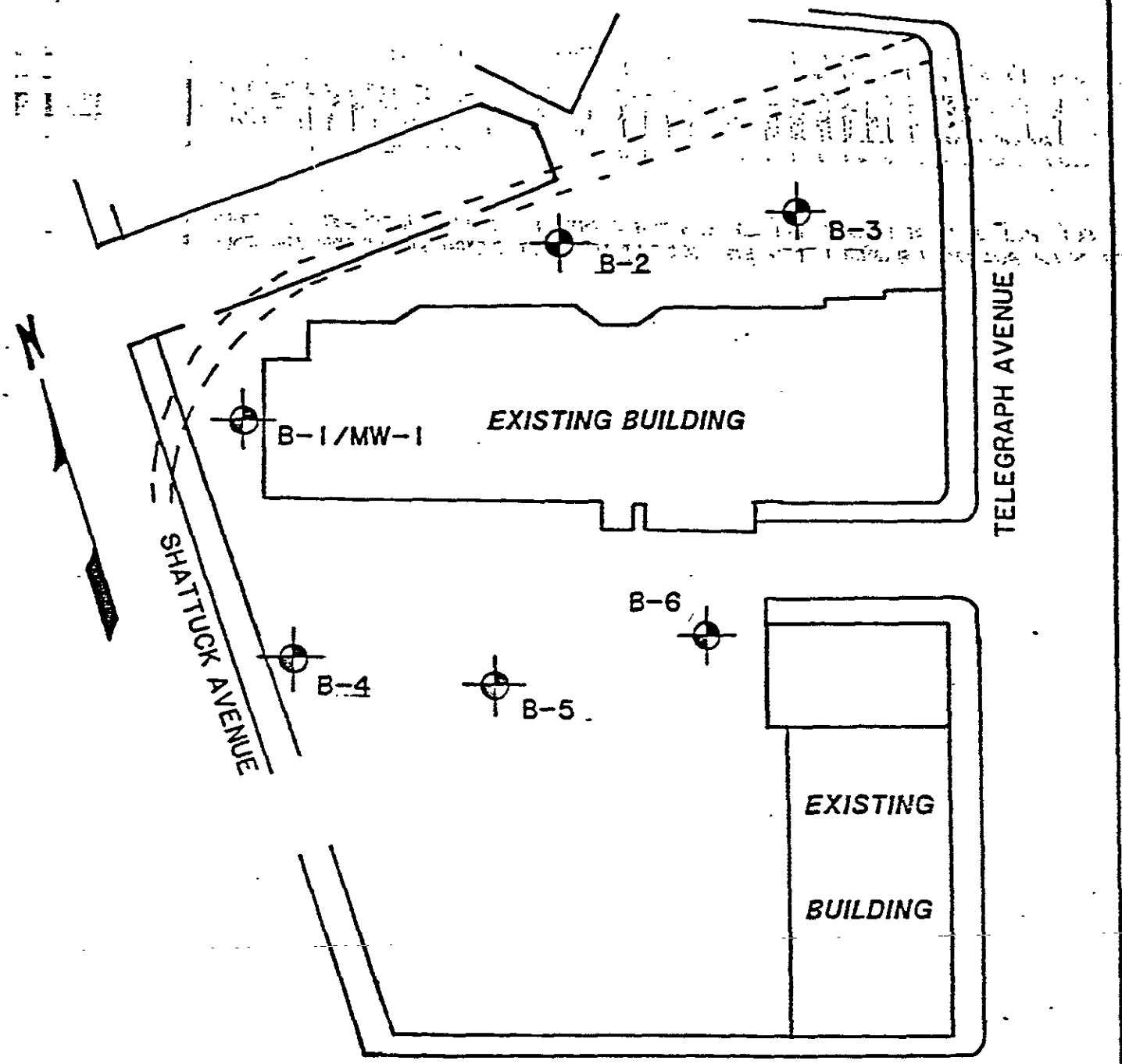
Table 6. Metals Results

Parameter	EPA Method	Kleinfelder Sample ID: S-B6-2.5 S-B6-5.5 Comp. mg/Kg	Method Blank mg/Kg
Antimony	7041	<1	<1
Arsenic	7060	5	<1
Beryllium	7090	<1	<1
Cadmium	7130	<1	<1
Chromium	7190	30	<1
Copper	7210	21	<1
Lead	7420	6	<2
Mercury	7470	<0.1	<0.1
Nickel	7520	36	<2
Selenium	7740	<1	<1
Silver	7760	<1	<1
Thallium	7841	<1	<1
Zinc	7950	54	<2

Table 6. Metals Results

Kleinfelder Sample ID

Parameter	EPA Method	W-MW-1	Method Blank
		mg/L	mg/L
Antimony	204.2	<0.01	<0.01
Arsenic	206.2	0.02	<0.01
Beryllium	210.1	<0.01	<0.01
Cadmium	213.1	<0.01	<0.01
Chromium	218.1	0.14	<0.01
Copper	220.1	0.06	<0.01
Lead	239.1	<0.02	<0.02
Mercury	245.1	<0.001	<0.001
Nickel	249.1	0.11	<0.02
Selenium	270.2	<0.01	<0.01
Silver	272.1	<0.01	<0.01
Thallium	279.2	<0.01	<0.01
Zinc	289.1	0.14	<0.02



LEGEND

MW-1
MONITORING WELL

B-2
SOIL BORING

EXISTING CULVERT EASEMENT

APPROXIMATE SCALE

0 100 FEET

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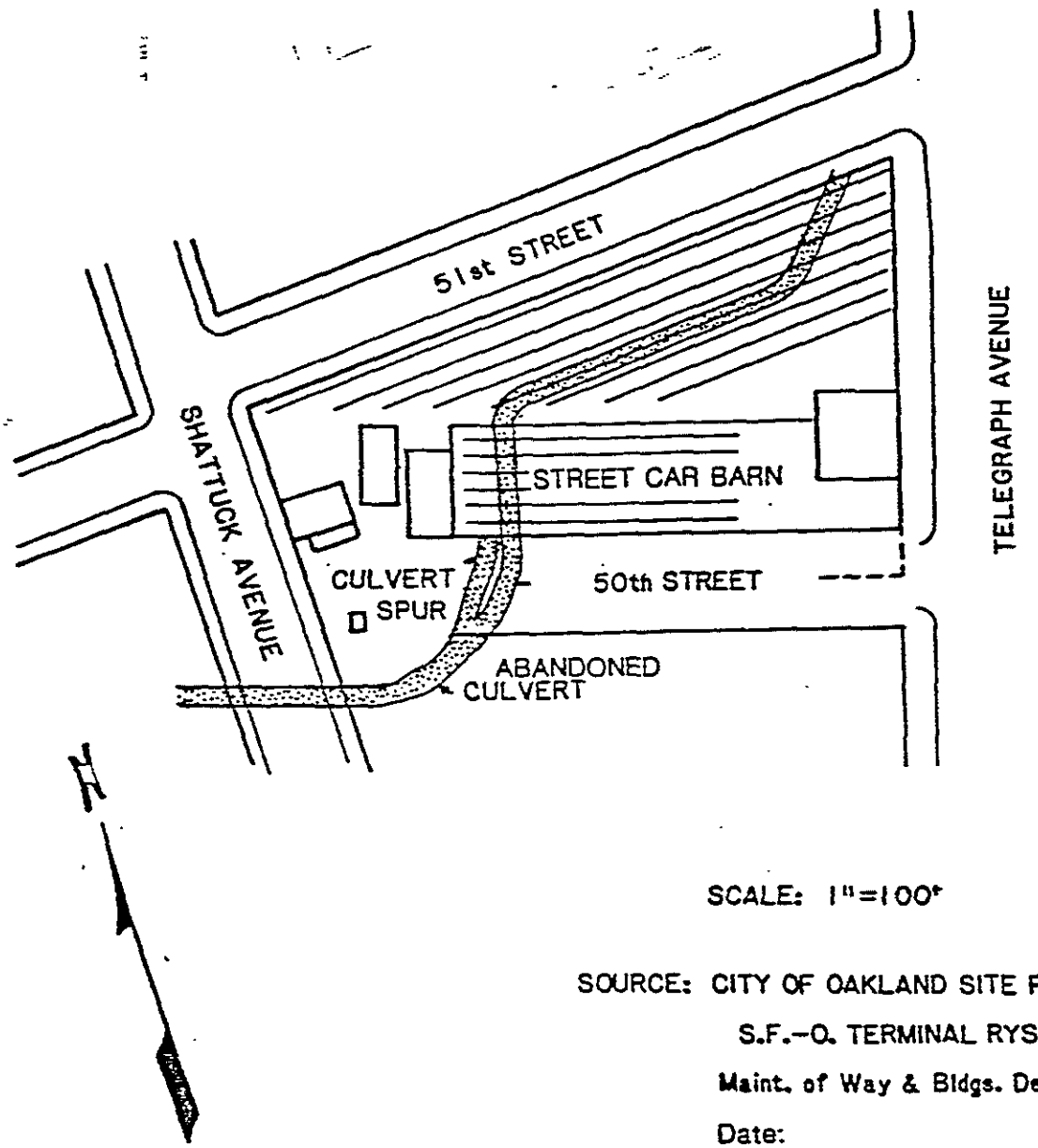
LAND AND WATER RESOURCES

PACIFIC RIM DEVELOPMENT
CONVENIENCE CENTER 51st & TELEGRAPH
OAKLAND, CALIFORNIA

PLATE
2



SCALE: 1"=100'

SOURCE: CITY OF OAKLAND SITE PLAN
S.F.-O. TERMINAL RYS.
Maint. of Way & Bldgs. Dept.
Date:

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OAKLAND, CALIFORNIA

PLATE
3

UNIFIED SOIL CLASSIFICATION SYSTEM

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

Standard penetration split spoon sample

Modified California (Porter) Sampler

Shelby tube sample

Water level observed in boring

No recovery

NFWE No free water encountered

NOSC No odor, scent, or fluid cut

NOTE: Blow count represents the number of blows of a 140-pound hammer falling 30 inches per blow required to drive a sampler through the last 12 inches of an 18-inch penetration.

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

Blank casing

Screened casing

Cement grout

Bentonite

Sand pack or gravel pack

Depth (feet)	Blow/ Ft.	Sample No.	USCS	Description	Well Const
				A C Paving	
2			ML	CLAYEY SANDY SILT, brown, dry to damp, with rock to 1/2-inch, soft, NOSC	
4	8	S-B1-3			
6			ML SM	CLAYEY SILTY SAND, mottled gray & brown, w 5% angular chert fragments to 1/4-inch, damp, medium dense, NOSC	
8	34	S-B1-7			
10	52	S-B1-10	SC	GRAVELLY SANDY CLAY, yellow-brown, gravel to 1/4-inch, chert, sandstone, shale, augular, stiff, NOSC	
12					
14	36	S-B1-15	SC/ SM	with zones of yellow-brown SILTY SAND and gravel-free reddish-brown SANDY CLay, NOSC	
16				▽ Stabilized water, 17'4"	
18				▽ 1st water, 19 feet.	
20	36	S-B1-20	SM	SILTY FINE SAND, light brown, saturated, medium dense, NOSC	
22					
24	23	S-B1-25	CH	SILTY CLAY, light gray-brown, damp, moderately stiff, NOSC	
26					
28			ML/ SM	CLAYEY SILT and SILTY SAND, damp to saturated, moderately stiff and medium dense, NOSC	
30	14	S-B1-30			
				Total Depth = 31 feet, D.Laduzinsky, 4/9/87	

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OAKLAND, CALIFORNIA

BORING LOG NO. B-1/MW-1

PLATE
5

Depth In Feet	Blow/ Ft.	Sample No.	USCS	DESCRIPTION	WELL CONST.
				AC Paving	
1			ML	SANDY SILT, with abundant 2" rock, wood debris and old brick, dry, moderately stiff, odor of rotting wood.	
2					
3	27		SM/ CL	Mixed SANDY CLAY and SILTY SAND no sample recovery, rock in sampler, damp, moderately stiff and medium dense	
4					
	16	S-B2-4.5	ML	CLAYEY SANDY SILT, dark brown, damp, moderately stiff, possible slight organic odor	
5					
6			SC	SANDY CLAY, dark yellow-brown, damp, moderately stiff, NOSC	
7	12	S-B2-7			
				Total Depth = 7.5 feet Logged by D. Laduzinsky 4/10/87	

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PACIFIC RIM DEVELOPMENT
CONVENIENCE CENTER 51st & TELEGRAPH
OAKLAND, CALIFORNIA B-2

PLATE 6

Depth in Feet	Blow/ Ft.	Sample No.	USCS	DESCRIPTION	Bell Const.
				AC Paving	
1			ML	CLAYEY SILT, black, with rock and debris, damp, soft to moderately stiff, NOSC	
2			SC	CLAYEY SAND, brown, with rock, old brick, and asphalt debris, damp, medium dense, NOSC, (rock in sample tip)	
3	50/4"	S-B3-3			
4					
5					
6			CL/ SC	CLAYEY SAND AND SANDY CLAY, with old brick and asphalt rubble, damp, NOSC	
7	26	S-B3-7			
				Total Depth = 7.5 feet Logged by D. Laduzinsky 4/10/87	

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PROJECT NO. 10-1689-01

PACIFIC RIM DEVELOPMENT
CONVENIENCE CENTER 51st & TELEGRAPH
OAKLAND, CALIFORNIA

BORING LOG NO. B-3

PLATE 7

Depth In Feet	Blow/Ft.	Sample No.	USCS	DESCRIPTION	WELL CONST.
				AC Paving	
1					
2	35	S-B4-2	SP	GRAVELLY SAND, blue, damp, gravel to 1" diameter, medium dense, hydrocarbon odor	
3					
4					
5				Drilled to refusal at 5 feet due to rock and debris; attempted 4 borings; all refused	
				Total Depth = 5 feet Logged by D. Laduzinsky 4/10/87	

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LAND AND WATER RESOURCES

PACIFIC RIM DEVELOPMENT
CONVENIENCE CENTER 51st & TELEGRAPH
OAKLAND, CALIFORNIA
BORING LOG NO. B-4

PLATE
8

Depth in Feet	Blow/ Ft.	Sample No.	USCS	DESCRIPTION	Well Const.
				AC Paving	
1–5			CH	SILTY CLAY, black, damp, moderately stiff, slight hydrocarbon odor, waste oil type odor from borehole	
3	21	S-B5-3			
5–10			CL	SANDY CLAY, yellow-brown, damp to moist, moderately stiff, NOSC	
7	28	S-B5-7			
9				mottled light gray and reddish brown, damp, with angular chert to 1/4-inch, NOSC	
10	33	S-B5-10			
				Total Depth = 10.5 feet Logged by D. Laduzinsky 4/10/87	

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LAND AND WATER RESOURCES

PROJECT NO. [illegible]

PACIFIC RIM DEVELOPMENT
CONVENIENCE CENTER 51st & TELEGRAPH
OAKLAND, CALIFORNIA

BORING LOG NO. B-5

PLATE 9

Blow/ Ft.	Sample No.	USCS	DESCRIPTION	WELL CONST.
			AC Paving	
5	S-B6-2.5	ML	CLAYEY SANDY SILT, black, dry to damp, soft, NOSC	
		CL	SANDY CLAY, mottled gray & reddish brown, with 5% angular chert to 1/8-inch diameter, damp, moderately stiff, NOSC	
			Total Depth = 6.0 feet Logged by D. Laduzinsky 4/10/87	

CHAIN OF CUSTODY RECORD

SAMPLERS: (Signature)
Dennis Ladoziusky
one: 415-938-5610

SHIP TO:
Acurex Corp

ATTENTION:

Phone No.

SHIPPING INFORMATION

Shipper J. H. Kleinfelder & Assoc
Address 1901 Olympic Blvd. #300
Date Shipped Walnut Creek, CA
Shipment Service
Airbill No.
Cooler No.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received for laboratory by*: (Signature) Valerie Toms	Date/Time 4/10/87

* Analysis laboratory should complete, "sample condition upon receipt", section below, sign and return top copy to 400p.
J. H. KLEINFELDER & ASSOCIATES, 1901 Olympic Blvd., Suite 300, Walnut Creek, California 94596

Sample Number	Site Identification	Date Sampled	Analysis Requested	Sample Condition Upon Receipt
S-B2-4.5 (composite)	10-1681-1	4/10/87	EPA 8240, EPA 8210, P.P. metals (All)	
S-B2-7 (composite)				
S-B3-3 (composite)				
S-B3-7 (composite)				
S-B4-2			+ Total heavy end hydrocarbon for S-B4-2	
S-B5-3			+ Total heavy end hydrocarbon for S-B5-3	
S-B5-7 (composite)				
S-B6-2.5 (composite)				
S-B6-5.5 (composite)				
W-MW-1			+ Total hydrocarbon.	

LAB INSTRUCTIONS: Laboratory reports should reference and be billed by site ID# and contain the following:

(2) summary of analytical methodology and QA work (blanks, spikes, duplicates)
dates for (a) sampling, (b) lab receipt, (c) extraction, (d) injection/analysis
(3) detection limits for all constituents analyzed for and reporting of all constituents detected which were not specifically designated
(4)
(5)

HAIN OF CUSTODY RECO' 7

SAMPLERS: *(Signature)*
Dennis Ladyzinsky
Phone: 415 - 938 - 5610

SHIP TO:
Acurex Corporation

ATTENTION:
Phone No.

SHIPPING INFORMATION

Shipper J.H. Kleinfelder & Assoc
Address 1901 Olympic Blvd Ste. 300
Date Shipped Walnut Creek CA 94596
Shipment Service
Airbill No.
Cooler No.

Relinquished by: *(Signature)*	Received by: *(Signature)*	Date/Time
Relinquished by: *(Signature)*	Received by: *(Signature)*	Date/Time
Relinquished by: *(Signature)*	Received by: *(Signature)*	Date/Time
Relinquished by: *(Signature)* Dennis Lad	Receive for laboratory by*: *(Signature)*	Date/Time 4/9/87 17:17

* Analysis laboratory should complete, "sample condition upon receipt", section below, sign and return top copy to J. H. KLEINFELDER & ASSOCIATES, 1901 Olympic Blvd., Suite 300, Walnut Creek, California 94596

Sample Number	Site Identification	Date Sampled	Analysis Requested	Sample Condition Upon Receipt
S-B1-3	10-1689-1	4/9/87	EPA 8240	
S-B1-7			EPA 8270	
			Priority Pollutant Metals	
S-B1-10			Total Hydrocarbon	
S-B1-15			Heavy End Hydrocarbons	

LAB INSTRUCTIONS: Laboratory reports should reference and be billed by site ID# and contain the following:

1) summary of analytical methodology and QA work (blanks, spikes, duplicates)
2) dates for (a) sampling, (b) lab receipt, (c) extraction, (d) injection/analysis
3) detection limits for all constituents analyzed for and reporting of all constituents detected which were not specifically designated
4) 2 composite samples as shown.
5) 3-5 DAY Turnaround