SOIL AND GROUND WATER TESTING REPORT FOR FORMER GRIMIT AUTO AND REPAIR SITE STID #553 1970 SEMINARY AVENUE OAKLAND, CALIFORNIA

April 22, 1996

Prepared by

HOEXTER CONSULTING, INC.
734 Torreya Court
Palo Alto, California 94303

415-494-2505 (ph/fax)

HOEXTER CONSULTING, INC.

734 Torreya Court
Palo Alto, California 94303

(415) 494-2505 (phone & fax)

ENVIRONMENTAL PROTECTION

96 APR 29 PM 2:53

TRANSMITTAL

TO Alameda County Health
Hazardous Materials Div -
1131 Harbor Bay Parkway Suite 250
Alameda CA 94502-6577
ATTENTION Dale Klettke

DATE 4/25/96
VIA US Mail
FAX NO. _____

PROJECT 1970 Seminary Ave
Oakland ~~Alameda~~ CA

JOB NO. E-10-1A-163A

DESCRIPTION
Hoexter Consulting report - 4/22/96

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COPY TO D. Grimit

BY David F. Hoexter

If enclosures are not as noted, kindly notify us at once

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Geology / Engineering Geology / Environmental Studies

HOEXTER CONSULTING, INC.
DAVID F. HOEXTER, RG/CEG/REA

734 Torreya Court
Palo Alto, California 94303

(415) 494-2505 (ph/fax)

April 22, 1996

E-10-1A-163A
HCEnvtInvestRpts:SeminaryOklnd/4/96

Mr. Doyle Grimit
14366 Lark Street
San Leandro, California 94578

RE: **SUBSURFACE INVESTIGATION**
FORMER GRIMIT AUTO AND REPAIR - STID 553
1970 SEMINARY AVENUE
OAKLAND, CALIFORNIA

Dear Mr. Grimit:

Enclosed is our subsurface investigation report for the property located at 1970 Seminary Avenue, Oakland, California. The report contains a description of our investigation, results of soil and ground water sample analyses, and our conclusions and recommendations regarding site environmental quality. The general scope of investigation was presented in our proposal dated June 25, 1995, and our work plan dated August 9, 1995 with addenda dated January 14, 1996 and March 11, 1996.

We appreciate the opportunity to provide services to you on this project and trust this report meets your needs at this time. If you have any questions, or require additional information, please do not hesitate to call.

Very truly yours,

HOEXTER CONSULTING, INC.

David F. Hoexter, RG/CEG/REA
Principal Geologist

SUBSURFACE
INVESTIGATION

For

STID 553 - Grimit Auto and Repair
1970 Seminary Avenue
Oakland, California

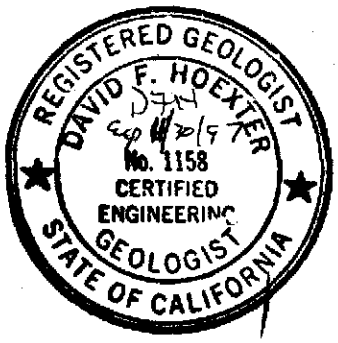
To

Mr. Doyle Grimit
14366 Lark Street
San Leandro, California 94578

Prepared by:

Hoexter Consulting, Inc.
734 Torreya Court
Palo Alto, California 94303

April 22, 1996



David F. Hoexter, RG/CEG/REA
Principal Geologist

EXECUTIVE SUMMARY

A total of six ground water monitoring wells and seven exploratory borings, as well as previously obtained excavation confirmation samples, have been used to evaluate a release of petroleum hydrocarbons and halogenated volatile organic compounds (HVOC) from a former service station, located in a residential area. Three gasoline and one waste oil underground storage tanks (UST) were removed from the site in 1989. Soil and ground water contaminant levels remain elevated near the former USTs. Ground water contaminant levels exceed California maximum contaminant levels (MCL) and ASTM risk based screening levels (RBSL) in wells removed from the source area, along the southwestern property line.

A program to evaluate the extent of off-site contamination is recommended. Vapor extraction performance testing of the source area is also recommended, to evaluate the potential for successful remediation of this area. Remediation of the source area, as opposed to the property periphery or off-site, may be warranted.

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SOIL AND GROUND WATER TESTING REPORT FOR FORMER GRIMIT AUTO AND REPAIR SITE STID #553 1970 SEMINARY AVENUE OAKLAND, CALIFORNIA

1.0 INTRODUCTION

This report presents the results of an investigation of soil and ground water quality at the former Grimit Auto and Repair site, located at 1970 Seminary Avenue, Oakland, California. The project location is shown on the Location Map, Figure 1, and the Topographic Map, Figure 2. This investigation has been conducted in response to requirements for subsurface investigation by the Alameda County Health Care Services Agency, specifically an initial letter to the property owner, Doyle Grimit, dated October 8, 1993, as well as subsequent discussions and letters, including a letter dated April 4, 1995.

A scope of investigation was presented in our proposal dated June 25, 1995, and our work plan dated August 9, 1995 with addenda dated January 14, 1996 and March 11, 1996. The scope of investigation as initially perceived (although subsequently modified), was approved by the County in a letter dated November 8, 1995. A subsequent letter dated January 19, 1996 approved the January 14, 1996 addendum. The March 11, 1996 addendum modifications were verbally approved by Dale Klettke of the County on March 8, 1996 (field meeting) and by subsequent telephone conversation on April 2, 1996. Note that some phases of the investigation as initially planned, such as vapor extraction performance testing and preliminary remedial design, have been postponed at the request of the County (see January 19, 1996 letter) based on revised Regional Water Quality Control Board guidelines related to the Lawrence Livermore petroleum hydrocarbon studies.

The scope of services generally provided during this investigation consisted of collecting and analyzing soil and ground water samples from three pre-existing ground water monitoring wells, three newly installed ground water monitoring wells, and four, additional, exploratory borings. The soil and ground water samples were analyzed for total petroleum hydrocarbons as gasoline (TPH-G) and for purgeable aromatic compounds (BTEX); for total oil and grease; and for halogenated volatile organic compounds (HVOC). Sampling locations and site layout are shown on Figure 3, Site Plan. The data evaluation included a limited ASTM RBCA Tier 1 Risk Based Screening Level (RBSL) evaluation.

Note that additional material presented in our work plan, such as detailed information on the removal of the underground storage tanks formerly utilized at the site, is not included in this report. Please refer to the work plan for this information.

2.0 BACKGROUND

2.1 Location and Site Description

The project site is located at 1970 Seminary Avenue, at the southern corner of the Seminary Avenue - Harmon Avenue intersection, in Oakland, Alameda County, California (Figures 1 and 2). The property is bordered by Seminary Avenue on the northwest and by Harmon Avenue on the northeast, and by residences to the southeast and southwest. The neighborhood generally consists of single family residences and one, two or three- story

apartment houses. A commercial retail shopping district is located along East 14th Street, approximately five blocks to the southwest.

The Grimit Auto site is on the order of 50 by 100 feet in plan dimension. The site consists of the service building with attached canopy and a small detached storage building. Although the storage building has the appearance of a pump house, Mr. Grimit states that there never has been a domestic or irrigation well on the site, and that this building has always been used for storage. The former tank excavations have been backfilled to the adjacent grade. Figure 3 indicates the locations of pertinent site features, including the existing buildings and former UST locations. The tank excavations are also indicated. The site is paved, with exception of the former UST locations.

2.2 Site Operation and Ownership

The site was formerly operated by Grimit Auto and Repair Service. The site is currently occupied by an auto electric and general repair facility, Amor's Auto Electric Repair. Amor's Auto Electric Repair is a tenant of the site, and to our knowledge is not a responsible party to the release.

The property is owned by Mr. Doyle Grimit, the former site operator and listed responsible party. Mr. Grimit's address is 14366 Lark Street, San Leandro, California 94578, and his telephone number is (510) 357-5133.

2.3 Site History

According to Mr. Grimit, four - approximately 550 gallon steel tanks were installed on the site in the 1930's. These or replacement tanks were used until fueling service was discontinued on September 30, 1989. Three of the tanks were used to store gasoline. The fourth tank was used to store waste oil. To our knowledge, there are currently no operating or additional abandoned underground tanks on the property.

There are no known estimates of quantity of fuel or waste oil lost.

Use of a hydraulic lift (Figure 3) on the site continued briefly after the UST removals. According to Mr. Grimit, the lift became inoperable following the October, 1989 Loma Prieta Earthquake, and has not been used since that time.

2.4 Site Closure and Excavations

The following discussion is based primarily on information and copies of documents and analytical data provided by Mr. Doyle Grimit, former operator of the property. Additional information was also provided by discussions with Mr. Thomas F. Peacock, Supervising HMS with the Hazardous Materials Division of the Alameda County Department of Environmental Health, Mr. Wayne Wellock of Petro Tech, Inc., and with Mr. Grimit. Relevant documents are listed in the References section of this report.

Tank Site closure was initiated on November 17, 1989. Closure was conducted by Petro Tech, of Santa Rosa, California, under permit to Alameda County, Department of Environmental Health. Mr. Larry Seto of the Alameda County Department of Environmental Health witnessed the tank excavation.

The tanks were constructed of steel. Holes were observed in one of the tanks. The inerted tanks were transported under manifest by H & H Ship Service, San Francisco, California, and disposed of at the Levin Metals Corporation, Richmond, California, as scrap metal.

Soil in the excavation appeared stained. Soil was not excavated, or excavated soils were temporarily returned to the excavations. Ground water was not encountered.

On [redacted] 1991, Petro Tech overexcavated the [redacted] to dimensions of approximately 7 by 10 by 2.5 feet deep. A total of approximately 40 cubic yards of soil was removed and stockpiled on site. Further excavation was limited due to the immediate proximity of the adjacent property line and service building. Water was not present in the pit. The four side walls were sampled, at a depth of approximately [redacted] below the ground surface. The pit bottom was also sampled at two locations. A single composite sample of the stockpile was also obtained. The contaminated soil was disposed of by the Remco, Richmond, California facility as "non-hazardous petroleum contaminated soils".

The excavations were backfilled with clean, imported soils.

Analytical test results of the confirmation testing are discussed in previous reports on the site, particularly our March 23, 1994 subsurface investigation report. These test results are included in appropriate tables in this report.

There were no reported unusual problems encountered during the tank closure or site excavation, other than the limited area available for excavation.

2.5 Previous Subsurface Investigations - Site

The initial site investigation was conducted by Kaldveer Associates (1990). The Kaldveer report is titled "Soil and ground Water Testing Report for 1970 Seminary Avenue, Oakland, California", and is dated September 28, [redacted] The Kaldveer investigation consisted of advancing three soil borings, two in the vicinity of the former waste oil tank, and one through the backfill of one of the fuel tanks; and drilling and installing [redacted] water monitoring well at a fourth location. The approximate boring and well locations are shown on Figure 3 of this report.

EB1-3

MW-1

An initial sample round of the monitoring well was conducted by Kaldveer for the 1990 report. Supplemental excavation of the waste oil tank pit was conducted on May 16, 1991. Hoexter Consulting provided three subsequent quarterly ground water sampling events, in January, April, and August, 1982.

Hoexter Consulting conducted a preliminary subsurface investigation during January and February 1994 and issued a report dated March 23, 1994. The investigation included the installation of [redacted] wells (bringing the total number of wells to three). Relatively low levels of petroleum hydrocarbons were detected in the two [redacted] (MW-2 and MW-3). The report recommended, due to the elevated levels of petroleum hydrocarbons near the source area but relatively low level of beneficial use of ground water in the vicinity and the relatively low levels of detected compounds further from the source, that consideration be given to a passive bioremediation program at the near-source monitoring well.

Hoexter Consulting continued to monitor ground water conditions at the site (Table 3 of this report includes all available previous ground water data). Contaminant levels in the near-source well (MW-1) continued to be elevated, although reduced from initial readings. The two down-gradient wells gradually increased in contaminant levels, although they remained relatively low. After discussions with the Alameda County Health Care Services representative, Hoexter Consulting recommended that additional investigation be conducted, to further evaluate the residual levels of contaminants in the soil, as well as the apparent presence of both "perched" and "deeper" contaminated ground water. The August

9, 1995 work plan reflects this recommendation, which included vapor extraction testing and preliminary remedial/source removal design. This plan was subsequently approved, with a later request to postpone the vapor extraction testing and preliminary remedial design pending results of the investigation.

2.6 Summary of Previous Soil and Ground Water Sampling

Previous soil sampling test results are included in our December, 1993 Work Plan. The results are summarized in the following discussion.

Confirmation samples from the initial tank removal were obtained by Trans Tech Consultants, of Santa Rosa, California, under contract to Petro Tech. A total of seven soil samples were obtained from below the tanks, and variously tested for gasoline, oil and grease, heavy total hydrocarbons, volatile organic compounds, and organic lead. Five of the seven samples were obtained from below the three gasoline tanks. The maximum detected total petroleum hydrocarbons as gasoline (TPH-G) was 21 mg/kg (equivalent to parts per million, or ppm), with two samples non-detect. Purgeable aromatic compounds (BTXE) were also detected, although generally present at relatively low levels. Organic lead was not detected in one sample, from the middle gasoline tank. Total oil and grease (TOG) was detected in the two waste oil tank samples, at 5,500 and 7,200 ppm, with lower detected levels of extractable petroleum hydrocarbons, diesel and motor oil. Of the volatile organic compounds, only purgeable aromatic compounds were detected.

The subsequent Kaldveer Associates soil investigation analytical testing was limited to TPH-g and TOG. TPH-g was tested for only in one boring extended through the backfill of the former fuel tanks, and ranged from 0.5 to 4 to 50 ppm. TOG was detected in both test borings adjacent to the former waste oil tank, at a maximum level of 4,200 ppm at a depth of 10 feet, but decreasing to non-detect and 150 ppm at 16 feet.

Confirmation sampling of the subsequent waste oil tank pit overexcavation side walls and bottom, and a composite of the excavated soil, were also conducted. Total oil and grease was detected on the order of several thousand ppm, with a maximum of 15,000. TOG was detected in both side walls and the excavation bottom. Other TPH and purgeable aromatic compounds were also detected. In addition, analysis of eight RCRA heavy metals was conducted. Various detections of metals, which most likely are attributable to naturally occurring levels, were made.

Previous ground water sampling results are summarized on Table 3A of this report. Well MW-1 has consistently exhibited TPH-G levels in excess of 44,000 ug/l (equivalent to parts per billion, ppb), with benzene levels in excess of 2600 ppb. Elevated levels of other BTEX compounds as well as oil have also been present. The more-recently installed "down-gradient" wells MW-2 and MW-3 exhibited 2300 and 470 ppb TPH-G and benzene, respectively.

2.7 Subsurface Investigations - Site Vicinity

According to Mr. Thomas Peacock, Alameda County Health Care Services Agency, UST Oversight Program Supervising HMS, there are no reported site investigations within the site vicinity which are close enough to the site to provide useful information.

3.0 SCOPE OF SERVICES

The work performed during this investigation consisted of the following tasks:

1. Review of previous investigations and information on the site.

2. Site reconnaissance to locate monitoring well locations and utilities.

3. Discussions with the property owner and the contractor who removed the tanks; and with Mr. Thomas F. Peacock, Supervising Hazardous Hazardous Materials Specialist, and Mr. Dale Klettke, Hazardous Materials Specialist, Alameda County Department of Environmental Health, UST Local Oversight Program.

4. Preparation of a work plan, dated August 9, 1995, and supplemented with addenda dated January 14, 1996 and March 11, 1996.

5. Drilling of four exploratory borings with a direct push (percussion) sampling rig, to a maximum depth 23.5 feet. Grab ground water samples were obtained from one of the borings. Grouting of the borings to the ground surface. Drilling of three additional borings and completion as ground water monitoring wells with a truck-mounted hollow stem auger rig, to a maximum depth of 35.5 feet. Development of the three new wells. Sampling of the three existing and three new monitoring wells. Water samples were obtained by using a teflon bailer in the developed and purged monitoring wells.

6. Analysis of soil and ground water samples by a contract analytical laboratory.

7. Evaluation of the data, including limited ASTM RBCA Tier 1 Risk Based Screening Level (RBSL) evaluation, and preparation of this report.

4.0 TOPOGRAPHIC AND GEOLOGIC SETTING

4.1 Topographic and Cultural Setting

The Grimit Auto and Repair property is situated at an elevation of approximately 41 feet MSL (Figure 2). The site is located on the East Bay Plain, a gently westward sloping feature underlain by a sequence of alluvial deposits with a maximum thickness of 1,100 feet. Ground water underlying the East Bay Plain flows westward from recharge areas along the eastern fringe of the plain, and locally from the central portion, towards San Francisco Bay (Alameda County Flood Control and Water Conservation District, 1988). The ground surface slopes gently to the west southwest, at an average gradient of one to 250 (vertical to horizontal).

The [redacted] is Arroyo Viejo, [redacted] of the site. [redacted] are located approximately 400 feet to the northwest and 2,000 feet to the southeast. It is possible that additional, buried, stream channels are located in the site vicinity. The site is approximately 4000 feet from tidal estuaries connected to San Francisco Bay.

The immediate site vicinity is generally not considered to be an area of active ground water recharge. However, some recharge may occur from the above-referenced ephemeral streams following periods of rainfall.

4.2 Regional Geology

The subject property is situated upon deposits of Quaternary age alluvium (Radbruch, 1969). According to Alameda County Flood Control and Water Conservation District (1988), the shallow alluvium in the general site vicinity is generally from 10 to 50 feet thick, and is mostly unsaturated, with localized perched ground water zones. It thus yields little to wells, and is not a ground water source except locally for generally non-potable domestic use. Ground water in the deeper aquifer of the East Bay Plain is confined, due to the deposition of clay and other fine-grained material over beds of relatively coarse, water-bearing sand and gravel.

4.3 Well Survey

A well survey was conducted as a part of our previous subsurface investigation. It is unlikely there have been significant additions to the well inventory.

5.0 FIELD INVESTIGATION

5.1 Monitoring Well and Exploratory Boring Rationale

The exploratory boring and monitoring well drilling locations were intended to be representative of subsurface conditions at the site. Three of the exploratory borings were intended to provide both soil and ground water quality information down-gradient of the former waste oil tank (EB-4) and at the location of the former fuel dispensers (EB-5 and EB-6). One additional boring (EB-7) was located between the existing wells MW-1 and MW-2, primarily to obtain a grab ground water sample to assist in determining the lateral extent of ground water contamination.

All wells were located within the property. Ground water conditions as established prior to this investigation consisted of an apparent perched water-bearing zone, represented by existing well MW-3, and a deeper (but possibly connected) water bearing zone, represented by wells MW-1 and MW-2. Well MW-4 was located as far in the regional up-gradient direction as feasible. Wells MW-5 and MW-6 were located as far in the regional down-gradient direction as feasible, to complement the completion depths of wells MW-3 and MW-2 (MW-3 and MW-4 are "shallow"; MW-5 and MW-6 are "deep"). The final well locations and depths were determined in the field on March 8, 1996 during a meeting between David Hoexter and Dale Klettke of Alameda County.

5.2 Drilling and Sampling

5.2.1 Exploratory Borings

Well and boring locations are shown on Figure 3. The field investigation was initiated on March 8, 1996. The four exploratory borings and grab ground water sampling were accomplished on that day. The three additional monitoring wells were installed on March 18 and 19, 1996. The initial borings were completed by Precision Drilling of San Rafael, California. The wells were drilled by PC Exploration of Fremont, California. The drillers hold valid C-57 contractor's licenses. The monitoring well and exploratory boring permits issued by the Alameda County Zone 7 Water Agency are included in Appendix A.

The four exploratory borings were advanced with a portable, hydraulic hammer-driven soil coring system, which is capable of obtaining continuous soil samples. The samples were obtained by using the hammer to drive steel sampling rods into the ground. Two nested sampling rods were driven simultaneously, a small diameter inner sampling rod to obtain and retrieve the soil cores, and a larger diameter outer rod, which serves as a temporary drive casing to prevent sloughing of the formation while the inner rods are withdrawn from the hole. As the casing and inner rods were advanced, soil was driven into a 1-5/8 inch diameter, three foot long sample barrel attached to the end of the inner rods. The system provides for a representative grab ground water sample, obtained by bailing inside a slotted PVC casing placed within the inner rods.

Each of the drive borings were visually logged by examining the samples, which were obtained continuously. The soil samples were visually classified by our geologist according to the Uniform Soil Classification System.

All drilling and sampling equipment were steam-cleaned prior to use and between borings. All steam-cleaning and wash water generated by the drilling and sampling activities was contained and stored on-site within steel drums, for future disposal. At the completion of the sampling activities, all borings were backfilled to surface grade with concrete grout.

Soil samples were collected in 1-1/2 inch diameter by six-inch long stainless steel sleeves inside the sample barrel. After being driven three feet, the inner rods were removed from the borehole with a hydraulic winch. The stainless steel sleeves containing the soil samples were removed from the sampler, and the samples extracted in the field for visual examination.

Upon retrieval, the soil samples retained for chemical analysis were contained with a plastic cap over a teflon seal, and taped at each end. The samples were stored in a cooled ice chest (a temperature gauge was used to verify storage at approximately four degrees Centigrade). The samples were delivered under chain-of-custody protocol to the analytical laboratory.

Grab ground water samples were obtained from one of the borings. Water did not collect in the other three borings. The ground water sample was collected at the depth of first ground water encountered during drilling at a depth to provide a sufficient volume of water for analysis. The water sample was obtained by lowering a stainless steel bailer into the boring. A clean steam-cleaned bailer was used for the boring, to reduce the potential for cross-contamination between samples. The water samples were collected and decanted into appropriate glassware supplied by the analytical laboratory, labeled, placed in refrigerated storage, and delivered to the laboratory under chain-of-custody protocol. The method of grab ground water sampling provides a qualified ground water sample which is generally satisfactory for a preliminary investigation such as this. Although relatively accurate, the chemical analyses may not be precisely reproducible.

The borings intended for completion as monitoring wells were drilled with a truck-mounted drill rig, equipped 8-inch diameter hollow stem augers. Soils encountered during drilling were classified in the field by our geologist by visual examination, in accordance with the Unified Soil Classification System. A log of the borings and monitoring well completion is presented in Appendix A.

Soil samples were collected with a two-inch diameter Modified California type split spoon sampler at approximately four to five-foot intervals to the total depth drilled. The samples were retained in stainless steel tubes (liners). The sampler was driven with a standard 140-pound hammer falling 30 inches. The number of blows required to drive the sampler the final 12 inches of an 18-inch drive, or the actual distance driven if less than 18 inches, is

recorded as the penetration resistance (blows/foot) on the boring logs. The samples were examined for logging, sealed with teflon tape and teflon lids, secured with "duct tape", labeled and immediately placed in refrigerated storage. A chain-of-custody form was initiated in the field and accompanied the samples to the analytical laboratory.

The augers were steam-cleaned prior to drilling and between borings. The sampler was thoroughly cleaned with an "Alconox" / tri-sodium phosphate (TSP) solution between samples, to reduce the potential for cross-contamination.

5.2.2 Well Construction Details

Details of the well installation are included in Appendix A, along with the boring log for the well. Well construction commenced immediately following the drilling and sampling of the boring.

The wells were completed to two different depths. Wells MW-4 and MW-5 were completed to depths and intervals similar to MW-1 and MW-2; well MW-6 was completed to a greater depth than MW-3. Wells MW-4 and 5 were completed to approximately 35 feet below the ground surface using 20 feet of 0.01 inch slotted Schedule 40 PVC well screen packed with 2/16 washed RMC Lonestar sand filter material. Well MW-6 was completed to approximately 20 feet below the ground surface, using 10 feet of well screen. The sand was placed to approximately one to two feet above the top of the perforations. The well seal consisted of 12-inches of 3/8-inch, hydrated bentonite pellets added to the top of the filter pack, and then filling the remaining annular space with a Portland cement grout mixture. The wells were completed at the ground surface with a locking cap and traffic-rated water-tight box, standing slightly above grade.

5.2.3 Well Development

Well development was performed on March 21 and 22, 1996, using a tight-fitting surge block, purge pump to remove sediment and produced water, and a bailer to remove additional water.

5.2.4 Well Sampling

The wells were sampled by our staff on March 25 and 26, 1996. Depth to ground water was initially measured with an electronic well sounder. A new, disposable teflon bailer was used to purge and sample each well.

A sounding with the bailer for floating product was then conducted. No measurable product was observed, although a visible sheen was present, as during previous sampling events, on the water from MW-1. In excess of four casing volumes of water were then purged from each well with a teflon bailer prior to sampling. Temperature, pH and conductivity were monitored while each well volume was purged. Ground water samples were collected from the well with the teflon bailer following the purging. The samples were decanted with a low-flow spigot attached to the bottom of each bailer, into laboratory-supplied containers, labelled and placed in refrigerated storage immediately after sampling.

The samples were delivered under chain of custody control to the laboratory on March 27, 1996. Purge water collected during the well sampling was held for appropriate disposal. Well purge and sampling logs are attached to this report as a part of Appendix C.

The well development and sampling equipment were cleaned with a TSP and "Alconox" solution, and rinsed with water, and then purified water.

5.3 Surveying

The three previously installed and the three new wells were surveyed on March 21, 1994 to the City of Oakland datum by Andreas Deak, California Licensed Land Surveyor. The elevation data are summarized on Table 1, and a copy of the well elevation survey is included in Appendix A. Note that the elevations of two of the three pre-existing wells varied slightly from the previous survey. The most recent survey elevations have been utilized for ground water elevation calculations in all six wells in this investigation.

5.4. Subsurface Conditions

Figures 4A through 4D, Cross Sections A-A' through D-D', illustrate our **interpretation** of the strata encountered in the investigation. Note that the stratigraphic descriptions were made by two individuals, so there may be some difference in interpretation. Also, although four borings (EB-4 through EB-7) were continuously sampled, the other borings and the wells were sampled at approximate five (5) foot intervals. The obvious relatively thin lensing indicated in the continuously sampled borings suggests that the five-foot interval descriptions may not be completely representative of subsurface conditions. Nevertheless, it is clear that the site is underlain by relatively thinly lensed sediments of limited lateral extent. Silty and clayey deposits predominate, with relatively limited deposits of "clean" sand or gravel.

Petroleum hydrocarbon odors were observed in each boring, varying from very slight to strong. Observed odors are noted on the individual boring logs.

Ground water was initially noted at various depths during drilling. Ground water was subsequently measured as shown on Figures 5A ("deeper" wells) and 5B ("shallower" wells), following development, at depths ranging from approximately 7 to 15 BGS. Wells MW-3 and MW-6, the two wells completed in the "shallow" or "perched" zone, indicated the highest ground water levels. Of particular interest was the very long time, several hours, required for the wells to equilibrate, particularly MW-2, which required in excess of a full day (more likely two to three days - see discussion in following section); and the failure for water to flow to each of the open borings EB-5 and EB-7, which were left open to the atmosphere for four (4) and one (1) hours respectively prior to being backfilled with grout. Also note that the levels in wells MW- 1, 2 and 3 on March 8, 1996, measured over a several hour period and stabilized in MW-1 and MW-3, varied by as much as four feet from the March 25-26, 1996 readings.

The attached boring logs and related information (Appendix A) depict location-specific subsurface conditions encountered during our field investigation. The approximate location of the exploratory borings and monitoring wells were determined by taping and should be considered accurate only to the degree implied by the method used. The passage of time could result in changes in the surface or subsurface conditions due to natural occurrences or human intervention.

5.5. Ground Water Flow

Ground water levels were measured in each well using the top of 2-inch PVC casing (north side) as reference point. Well-top elevations, depth to water, and calculated water-surface elevations are presented in Table 1. These data have been used to generate the Ground Water Data Maps, Figures 5A and 5B. Figure 5A, representing the "deeper" wells, presents our interpretation of ground water elevation contours and flow.

During previous sampling events, it was noted that the water levels did not readily equilibrate. This was particularly the case with well MW-2. On March 18, 1996 the three existing wells were left open and ground water levels periodically measured. MW-1 and MW-3 appeared to stabilize; well MW-3 did not stabilize. Stabilized ground water levels within all six wells were measured on March 25 and 26, 1996. The depth to water was measured periodically in each well on March 21 and 22, 1996, as wells MW-4, 5, and 6 were developed. All six wells were then secured with the caps sufficiently loose to allow venting, and left over the following weekend to equilibrate. The depth to water was again measured on March 25 and 26, 1996. All six wells thus had at least three days to stabilize.

The ground water data for the two "shallow" wells appears to indicate an apparent flow towards Seminary Avenue. The two wells are relatively close together, and there is not a third well to provide a triangular configuration for water flow calculation. The data for the six "deeper" wells appears to indicate flow away from Seminary towards the south. The apparent flow gradient varies from approximately 0.065 foot per foot on the east to approximately 0.134 foot per foot on the west. Due to the presence of sediment lenses and apparent inconsistencies of the ground water data, particularly in well MW-2, the isoelevation contours and ground water flow direction should be considered to be tentative and preliminary.

The data, although possibly inconsistent, appear to indicate a downward gradient from a relatively shallow (perched ?) zone represented by the two "shallow" wells, to the deeper zone represented by the four "deeper" wells. Based on the slow equilibration and recovery time following purging, we infer a relatively slow ground water flow rate.

6.0 ANALYTICAL RESULTS

6.1 Laboratory Procedures

The soil and grab ground water samples obtained on March 8, 1996 from exploratory borings EB-4, 5, and 6 were analyzed by Sequoia Analytical of Redwood City, California. The soil samples obtained on March 18 and 19, 1996 (wells MW-4, 5, and 6) and the ground water samples from these wells obtained on March 25 and 26, 1996 were analyzed by McCampbell Analytical of Pacheco, California. Both laboratories are certified by the State of California Environmental Protection Agency for the requested analyses.

The majority of samples were discretely analyzed. Selected samples were composited (maximum of two samples per composite) by the laboratory as one sample.

The samples were variously analyzed for:

- total petroleum hydrocarbons as gasoline (TPH-G) with purgeable aromatic compound [benzene, toluene, ethylbenzene, and xylenes ("BTEX")] distinction (EPA 8015/8020).
- oil and grease (total recoverable petroleum, TRPH, using SM 5520B/F, gravimetric with cleanup).
- halogenated volatile organic compounds (HVOC, EPA 8010).

6.2 Analytical Results

6.2.1 Soil Samples

Results of the soil sample analyses, as well as all previous soil sampling, are presented on Table 2, and the laboratory reports (this investigation only) are attached to this report as a portion of Appendix B and Appendix C. Table 2 also includes soil analyses from the previous sampling events.

TPH-G was detected at a maximum concentration of [redacted] in this investigation [redacted] at a depth of [redacted] feet. A previous sample in well MW-2 contained 910 ppm TPH-G. The maximum detected level of benzene was 0.21 ppm. Oil was detected at a maximum concentration of 3600 ppm, near the waste oil tank and hydraulic lift. Further from potential source areas, the maximum detected level of oil was 620 ppm in boring EB-7, at a depth of 23 feet.

A limited number of soil samples were analyzed for HVOC. HVOC [redacted] detected in two of the four analyzed samples, in the deeper [redacted] and the deeper [redacted] sample [redacted] feet. Only three compounds were detected, [redacted], and 1, 2 dichlorobenzene, at a maximum concentration of 1.8 ppm.

6.2.2 Ground Water Samples

Results of the ground water sample analyses, as well as all previous sampling, are presented on Table 3, and the laboratory reports (this investigation only) are attached to this report as a portion of Appendix B and Appendix D. The ground water analyses included one grab water sample from EB-4, and each of the six monitoring wells.

The maximum detected TPH-G was 45,000 ppb in well MW-1, essentially unchanged from the two previous 1995 sampling events. TPH-G was detected in the grab sample from boring EB-4 at 15, 000 ppb, and in each of the remaining five wells, ranging from 1200 to 9900 ppb. The maximum detected benzene was 4000 ppb in MW-4, located within the former UST backfill (but completed below the 1989 excavation) in native soils. Benzene and other purgeable aromatic compounds (BTEX) were also detected at lesser concentrations in each of the other water samples. Oil was not detected in the water samples, with the exception of the two near-source sample locations, EB-4 (7.5 ppm) and MW-1 (46 ppm).

Nine HVOC compounds, primarily perchloroethene (PCE), trichloroethene (TCE), and cis 1, 2 Dichloroethene (cis 1, 2 DCE), [redacted] The respective maximum detections were 130, 340, and 300 ppb.

7.0 PRELIMINARY "RBCA" RISK ANALYSIS

7.1 Introduction

The data analysis included a limited ASTM RBCA Tier 1 Risk Based Screening Level (RBSL) evaluation. In 1994, the American Society for Testing and Materials (ASTM) issued a **risk based** guidance document for evaluation of the need for **corrective action** ("RBCA") applied primarily to petroleum release sites. The methodology can also be applied for solvents and other contaminants, although to our knowledge guidelines for most solvents have not yet been issued by ASTM. The RBCA methodology provides a decision making process for the assessment and response to subsurface (soil and ground water) contamination based on risk to human health and environmental resources. The

RBCA process recognizes the variability in complexity, physical and chemical characteristics and risk to human health and environmental resources of sites and utilizes a tiered approach to match appropriate assessments and remedial activities in consideration of more cost-effective remedial action.

The ASTM-RBCA document outlines general assessment criteria based on the risk of exposure to the contaminated soil (by off-gassing and/or direct contact) and by the potential for contaminants leaching to the ground water. The RBCA evaluation also utilizes cancer risk factors of 10^{-4} and 10^{-6}, and applies to both residential and commercial/industrial areas. The document provides a "look-up" table of values for six compounds, including the four "BTEX" compounds.

The ASTM-RBCA methodology has been endorsed by an evaluation of fuel leak cases in California, conducted by the Lawrence Livermore National Laboratory (1995). The Lawrence Livermore study has, in turn, been endorsed by the State Water Resources Control Board and the California Regional Water Quality Control Board, San Francisco Bay Region (see references).

7.2 Assumptions

The ASTM document does not include screening levels for HVOCs. Thus, the risk analysis for this investigation is for petroleum hydrocarbons only. Current maximum contaminant levels for the detected HVOC compounds are approximately one order of magnitude greater than for benzene, the petroleum hydrocarbon compound of greatest concern. There is no procedure in the ASTM document for cumulative or additive risk of both the petroleum hydrocarbon and HVOCs being present.

As the site is located within a residential area, residential, and not commercial/industrial, criteria have been employed. Residential criteria are more conservative than commercial/industrial criteria. The contaminants are located within the subsurface, generally at a depth of at least 10 feet. Most of the site is covered with structures located on a concrete slab, or with asphalt. Direct contact of individuals with the soil is not anticipated, and is thus not evaluated. Soil contamination is generally limited to depths greater than approximately 10 feet, particularly around the property perimeter (with the possible exception of the waste oil tank vicinity). Although soil volatilization to the outdoor air has been analyzed, it si not considered a significant risk due to the most of the site being covered with asphalt or concrete.

The ASTM RBCA processes uses cancer risk values of both 10^{-4} and 10^{-6}. Values for both risk levels have been used in our evaluation. To our knowledge, there is no ground water utilization for drinking water in the site vicinity (see March 23, 1994 Hoexter Consulting report), although one well used for garden irrigation is located approximately 250 feet west of the site. Based on the very low potential that known or undocumented wells are used for drinking water, a risk factor of 10^{-4}, as opposed to 10^{-6}, has been employed for this category.

The contaminant levels used for the evaluation are based on the particular exposure pathway and receptor. Thus, for example, the maximum *regional* down gradient value for benzene in ground water (MW-6; 1,000 ppb) is employed for vapor intrusion to buildings and for ingestion, instead of the maximum detected value (MW-4, 4,000 ppb), located near the source area. In the case of volatilization of soil vapor to the outside air, the maximum detected level (0.21 ppm) was utilized, although the depth of the sample is from considerably beneath the water table. The maximum detected value of benzene, 2.4 ppm,

was obtained during the initial tank removal confirmation testing (north tank). This value in our opinion is not considered to be representative of the site as a whole, and therefore has not been utilized.

As required by the January 5, 1996 San Francisco Bay Region Water Quality Control Board memorandum, benzene levels in the ASTM document have been multiplied by a factor of 0.29.

7.3 Evaluation

The RBSL and contaminant data utilized in this evaluation are summarized on Table 4. The table indicates risk value on the left of each entry, and the selected site value (analytical test result) on the right of each entry. Contaminant levels exceeding the RBSL are indicated in **bold** typeface on the table. The RBSL is exceeded for the following:

* soil volatilization to outdoor air at a cancer risk level of 10^{-6};
* vapor intrusion of [illegible] at a cancer risk level of 10^{-6};
* ground water ingestion at a cancer risk level of 10^{-6}.

These conditions are primarily for data at the *regional* down-gradient property perimeter, represented by wells MW-2, 3, 5, and 6. These wells are situated adjacent to neighboring residential areas, as opposed to wells MW-1 and MW-4.

8.0 DISCUSSION

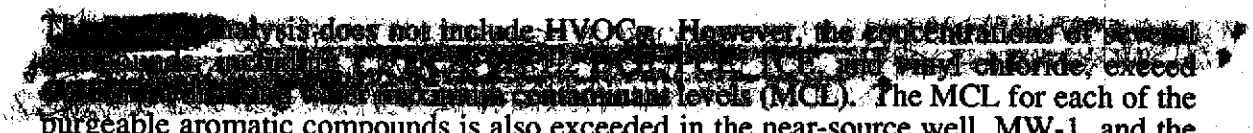
The purpose of this investigation was to obtain representative soil and ground water samples, and to analyze these samples for the compounds most likely from on-site sources. There are no known off-site sources. Soil and ground water samples obtained as a part of the present investigation are from six monitoring wells and four exploratory borings. Data from previously obtained excavation confirmation and drilling samples are also included in this evaluation. The monitoring wells and borings were placed in representative locations to obtain both soil and ground water samples. The analytical test results and our field observations indicate that elevated levels of petroleum hydrocarbon compounds and of HVOC are present at the site, particularly in the ground water.

Based on our field observations and the test results, TPH-G and related compounds are present in the soil at depths below seven (7) feet. HVOC are present in the soil at relatively low levels, and primarily in the near-source EB-4. Oil was detected primarily at depths below 20 feet, with the exception of EB-4, near the waste oil tank.

Ground water levels of TPH-G and benzene, as well as the other purgeable aromatic compounds, remain elevated. The concentrations of these compounds generally increased in the three previously existing wells (MW-1, 2, and 3). Of particular note is the increase in petroleum hydrocarbons in MW-2. The levels of TPH-G and benzene in wells MW-4 and MW-6 were elevated; TPH-G was 9,900 ppb in both wells, and benzene was 4,000 ppb in MW-4. Benzene was detected at 1,000 ppb in MW-6, the *regional* down-gradient well.

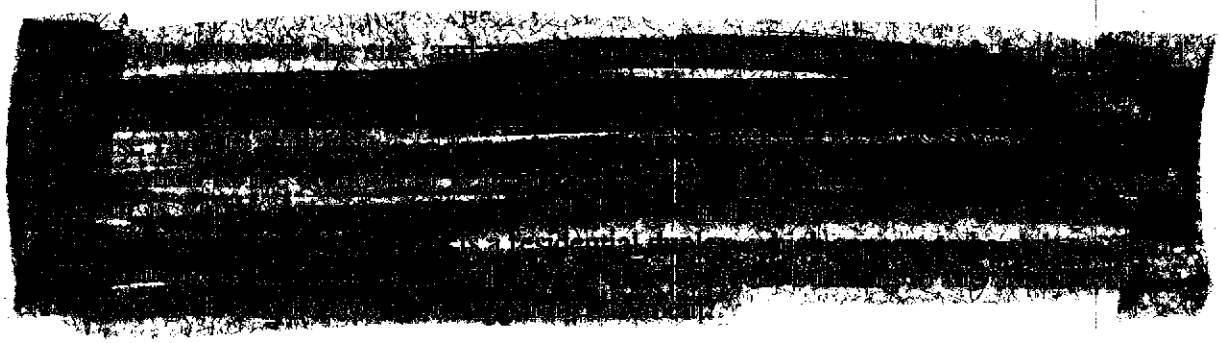
There is no clear correlation between well completion and contaminant levels in the down-gradient wells, nor between stratigraphy and contaminant levels. Continued ground water monitoring may result in a correlation of these factors.

Ground water elevation data may be inconsistent. Thus it is not possible to reliably determine the ground water flow direction, although Figure 5A indicates an interpretation of the available data. The very lengthy time for wells to equilibrate when the well cap is removed for sampling suggests relatively low permeability in the water bearing sediments. As indicated on the cross sections (Figures 4A through 4D), soil strata are lensed and discontinuous.



analysis does not include HVOCs. However, the concentrations of several [illegible], and vinyl chloride, exceed [illegible] contaminant levels (MCL). The MCL for each of the purgeable aromatic compounds is also exceeded in the near-source well, MW-1, and the MCL for each of these compounds, except xylenes, is exceeded in other wells.

The RBCA analysis indicates that the ASTM Tier 1 screening levels, based primarily on benzene, are exceeded for soil volatilization to the air, soil and ground water vapor intrusion to buildings, and ground water ingestion. A relatively conservative one-in-one million (10^{-6}) risk level, has generally been employed, due to the adjacent presence of residential properties. In addition, the less conservative ground water ingestion risk, with a level of 10^{-4}, is exceeded. In our opinion, ground water consumption in the site vicinity is minimal or does not exist, and therefore this particular route of entry / exposure pathway is not of concern.



Borings EB-5 and EB-6 were located directly under the two former fuel dispensers. Shallow samples were non-detect. Thus, the dispenser area does not appear to be a source of contamination. Although the former USTs have been removed, residual contamination from the gasoline tanks, where over-excavation has not been conducted, and from the waste oil tank, where contaminated soil has been partially removed, still exists. Further excavation at either location is limited by the presence of the existing building, property line, and Harmon Avenue, and both areas have been backfilled.

A final potential source of contamination is the hydraulic lift, which was removed from service shortly after the waste oil tank was excavated. HVOC was not detected in the two initial waste oil tank confirmation samples. The laboratory detection limits of the samples were not elevated (generally 25 ppb). Analysis of subsequently excavated soil, and the subsequent confirmation samples, did not include HVOC. HVOC was detected in only the *deeper* of the two EB-4 soil samples (14.5 feet), as opposed to the shallower sample (7.5 feet), which was non-detect for HVOC but contained 820 ppm oil. These data, in our opinion, suggest that the lift, with a probable maximum ram depth of approximately six (6)

feet, is not the source of the HVOC, despite the apparent HVOC absence in the earlier waste oil sampling.

[redacted]

Following are the specific conclusions of this study.

1. Ground water flow is heterogeneous, occurring within lenses and possibly filled channels.

2. The "shallower" (10 to 20') and "deeper" (15 to 35') ground water zones are both contaminated.

3. Ground water contamination extends off site, primarily on the northeast, southeast, and southwest sides, and possibly on the northwest. However, contaminant levels decline significantly from the near-source areas (e.g. boring EB-4 and wells MW-1 and 4), to the *regional* down-gradient wells (MW-2, 3, 5 and 6). The rate of decline in other directions is unknown.

4. Contamination consists of TPH-G, purgeable aromatic compounds (BTEX), and halogenated volatile compounds (HVOC). BTEX and individual HVOC levels exceed California MCLs, and the ASTM RBCA [redacted] In our opinion, the primary concern is soil and ground water vapor intrusion to the adjacent residential buildings. These buildings, however, do not appear to have basements.

5. Primary source locations (gasoline and waste oil USTs and fuel dispensers) have been remediated. Residual soil and ground water contamination remains at both the gasoline and waste oil locations.

Contaminant levels remain elevated near the source areas. The rate of off-site contaminant decline is unknown. Levels of concern most likely decrease rapidly with distance from the site. Thus, it is our opinion that, based on the above analysis and on current guidelines, further evaluation of the site, and possibly remediation within the source area, is warranted. At this time, it is our opinion that source control, as opposed to large-scale remediation of the peripheral areas, should be considered.

10.0 RECOMMENDATIONS

Our recommendations are as follows.

1. Conduct a minimum of one additional ground water sampling round, to verify the analytical test results and to further evaluate ground water flow.

2. Installation of a minimum of one well, screened below the maximum depth penetrated and screened thus far (e.g. from approximately 40 to 60 feet BGS), to evaluate the potential of deeper ground water contamination.

3. Conduct a soil-gas survey of the immediately adjacent streets, and of private properties, if feasible, to define the ground water contaminant

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plume boundaries. Entry agreements with adjacent owners, and encroachment permits from the City of Oakland, would be required.

4. Installation of additional off site wells at accessible locations, based on the results of the soil-gas survey. We preliminarily recommend consideration of locating two wells along Harmon Avenue, two along Seminary Avenue, and one along Holway Street (Figure 1). Encroachment permits would be required from the City of Oakland. We recommend omission of the current "shallow' and "deeper" well system, and screening of the new wells from 10 to 30 feet depth.

5. Conduct a vapor extraction performance test to evaluate both connectivity of the saturated units and remediation feasibility within the near-source area.

11.0 LIMITATIONS

This report has been prepared according to generally accepted geologic and environmental practices. No other warranty, either expressed or implied as to the methods, results, conclusions or professional advice provided is made. It should be recognized that certain limitations are inherent in the evaluation of subsurface conditions, and that certain conditions may not be detected during an investigation of this type. If you wish to reduce the level of uncertainty associated with this study, we should be contacted for additional consultation.

The analysis, conclusions and recommendations contained in this report are based on site conditions as they existed at the time of our investigation; review of previous reports relevant to the site conditions; and laboratory results from an outside analytical laboratory. Changes in the information or data gained from any of these sources could result in changes in our conclusions or recommendations. If such changes do occur, we should be advised so that we can review our report in light of those changes.

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TABLE 1

GROUND WATER ELEVATION DATA

(All Measurements in Feet)

Well Number and Date of Measurement	Reference Elevation (2)	Depth to Water	Relative Ground Water Elevation (2)
MW-1			
8/6/90	37.0	21.5	15.5
1/28/92		21.0	16.0
4/27/92		20.95	16.05
8/10/92		22.20	14.8
2/11/94		15.93 (3)	21.07 (3)
2/28/94		13.85 (4)	23.15 (4)
9/9/94		20.19	16.81
12/28/94		14.91	22.09
4/13/95		14.18	22.82
11/1/95		20.90	16.10
3/8/96		11.82	25.18
3/25-26/96	36.97	13.54	23.43
MW-2			
2/11/94	36.40	14.16 (3)	22.24 (3)
2/28/94		16.01 (4)	20.39 (4)
9/9/94		18.96	17.44
12/28/94		21.42	14.98
4/13/95		19.69	16.71
11/1/95		21.91	14.49
3/8/96		14.56 (6)	21.84 (6)
3/25-26/96	36.39	10.84	25.55
MW-3			
2/11/94	36.94	6.97 (3)	29.97 (3)
2/28/94		7.74 (4)	29.20 (4)
9/9/94		9.68	27.26
12/28/94		8.15	28.79
4/13/95		8.05	28.89
11/1/95		7.82	29.12
3/8/96		5.69	31.25
3/25-26/96	36.94	6.91	30.03

Table 1 continued

Well Number and Date of Measurement	Reference Elevation (2)	Depth to Water	Relative Ground Water Elevation (2)
MW-4			
3/25-26/96	36.46	14.14	22.32
MW-5			
3/25-26/96	36.77	15.63	21.14
MW-6			
3/25-26/96	36.42	8.52	27.90

Notes

(1) N/A = Not applicable.
(2) Elevations from a survey conducted by Andreas Deak, California Licensed Land Surveyor, March 21, 1996, City of Oakland datum.
(3) Well under pressure when locking cap removed; water level may not have been stabilized.
(4) Depth to water was measured over a 120 minute period; indicated depths appear to be stabilized readings.
(5) Surveyed elevations of wells MW 1 and MW-2 varied to 0.02 foot on March 21, 1996 survey as compared to February 11, 1994 survey; previously calculated measurements of elevation have **not** been modified to reflect the new survey data.
(6) Well not stabilized (water level rising).

TABLE 2A

SOIL

SUMMARY OF ANALYTICAL TEST RESULTS - PETROLEUM HYDROCARBONS

(Results reported in parts per million, mg/kg) (1) (2)

Sample	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylenes	Oil and Grease	HVOC
Initial UST Removal Confirmation Testing							
Gasoline USTs							
South tank	22	ND	ND	ND	ND	NA	NA
	ND	ND	ND	ND	ND	NA	NA
Center tank	20	ND	[redacted]	ND	[redacted]	NA	NA
North tank	ND	0.068	ND	ND	ND	NA	NA
	21	[redacted]	2.9	0.320	1.7	NA	NA
Waste Oil UST							TPHd
1	NA	0.093	0.510	0.480	1.7	5500/760 (6)	ND 360
2	NA	0.160	0.400	0.810	2.4	7200/460 (6)	ND 190
Previous Kaldveer Investigation							
EB-1							
16.0	4	NA	NA	NA	NA	NA	NA
21.0	0.5	NA	NA	NA	NA	NA	NA
26.0	50	NA	NA	NA	NA	NA	NA
EB-2							
10.0	NA	NA	NA	NA	NA	4,200	NA
16.0	NA	NA	NA	NA	NA	ND	NA
EB-3							
10.0	NA	NA	NA	NA	NA	2,800	NA
16.0	NA	NA	NA	NA	NA	150	NA

SOIL

	TPHg	B	T	E	X	O&G	HVOC
Waste Oil Tank Overexcavation Confirmation Testing							
1 (south side)	190	ND	ND	0.58	1.3	15,000/2700 9,800	NA
2 (west side)	ND	ND	ND	ND	ND	1,200/61 890	NA
3 (east side)	4.4	ND	ND	0.0083	0.021	11,000/4400 7,500	NA
4 (north side)	12	0.0042	ND	0.0091	0.021	410/250 230	NA
5 (west floor)	270	ND	3.5	1.3	ND	5,500/670 3,700	NA
6 (east floor)	260	ND	ND	1.2	2.5	3,500/680 2,200	NA
Stockpile	11	0.0031	ND	0.044	0.094 1,000	1,500/710	
Previous Hoexter Investigation							
MW-2							
10.5-11.0	[redacted]	ND	0.76	4.2	6.1	38	NA
16.0-16.5	ND	ND	0.022	ND	ND	ND	NA
20.5-21.0							
25.5-26.0 (3)	ND	ND	ND	ND	ND	ND	NA
MW-3							
10.5-11.0	ND	ND	0.020	ND	ND	ND	NA
20.5-21.0	1.2	0.17	0.047	ND	0.085	NA	NA
Current Investigation							
EB-4							
7.5-8.0	300	ND	ND	3.3	8.3	820	**ND**
14.5-15.0	63	ND	ND	ND	0.82	3600	**Det** (5)
EB-5							
3.5-4.0	ND	ND	ND	ND	ND	NA	NA
7.5-8.0	130	ND	ND	0.55	1.3	NA	NA
12.5-13.0	120	ND	ND	0.84	1.4	NA	NA
18.0-18.5							
19.5-20.0 (3)	4.5	0.025	0.015	0.028	0.078	240	**Det** (5)
EB-7							
9.0-9.5	ND	ND	ND	ND	ND	ND	NA
14.0-14.5	ND	ND	ND	ND	ND	NA	NA
20.0-20.5							
23.0-23.5 (3)	130	ND	0.38	1.9	2.9	620	**ND**

Soil

	TPHg	B	T	E	X	O+G	HVOC
MW-4							
16.0-16.5	13	0.038	0.015	ND	0.023	NA	NA
26.0-26.5							
31.0-31.5 (3)	68	0.21	0.092	0.15	0.39	190	NA
36.0-36.5	5.4	ND	0.008	0.015	0.011	NA	NA
MW-5							
11.0-11.5	9.7	ND	0.019	ND	0.038	NA	NA
21.0-21.5	ND	ND	ND	ND	ND	NA	NA
21.0-21.5							
35.5-36.0 (3)	NA	NA	NA	NA	NA	ND	NA
MW-6							
11.0-11.5							
16.0-16.5 (3)	10	0.037	0.033	0.18	0.46	ND	NA

Notes

(1) ND = non-detect
(2) NA = not applicable
(3) Composite
(4) Chromatogram patterns/comments
    G - gas
    WG - weathered gas
    NGM - non-gas mix, > C9
    NDM - non-diesel mix, generally C7 - C12/13
(5) Detected: see Table 2B
(6) TOG/Motor Oil

TABLE 2B

SOIL

SUMMARY OF ANALYTICAL TEST RESULTS - HALOGENATED VOLATILE ORGANIC COMPOUNDS

(Results reported in parts per **million**, mg/kg) (1) (2)

Sample	CA	1,2 DCB	1,2 DCA	cis 1,2 DCE	trns 1,2 DCE	1,2 DCP	PCE	TCE	VCL
EB-4									
7.5-8.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
14.5-15.0	ND	1.7	ND	ND	ND	ND	1.8	0.82	ND
EB-5									
18.0-18.5									
19.5-20.0 (3)	ND	ND	ND	ND	ND	ND	0.32	ND	ND
EB-7									
20.0-20.5									
23.0-23.5 (3)	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes on following page

Table 2B Notes

(1) ND = non-detect
(2) NA = not applicable
(3) Composite
(4) Abbreviations as follows:

CA	Chloroethane
1,2 DCB	1,2 Dichlorobenzene
1,2 DCA	1,2 Dichloroethane
cis 1,2 DCE	cis 1,2 Dichloroethene
trans 1,2 DCE	trans 1,2 Dichloroethene
1,2 DCP	1,2 Dichloropropane
PCE	Tetrachloroethene (perchloroethene)
TCE	Trichloroethene
VCL	Vinyl chloride

TABLE 3A

GROUND WATER

SUMMARY OF ANALYTICAL TEST RESULTS - PETROLEUM HYDROCARBONS

(Results reported in parts per ***billion***, ug/l) (1)

Well and Date	TPH Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes	Oil & Grease HVOC (7)
MW-1						
8/6/90 (2)	54,000	3,500	3,200	1,900	9,400	7,600
1/28/92	2,000,000	7,400	17,000	28,000	120,000	75,000 (5)
4/27/92 (3)	500,000	3,400	6,400	10,000	45,000	440,000 (6)
4/27/92 (4)	175,000	4,200	4,400	3,200	14,600	N/A
8/10/92	170,000	4,200	4,200	3,300	15,900	120,000 (6)
2/11/94	1,800,000	ND	5,100	5,200	23,900	16,000 (6)
9/9/94	23,000,000	56,000	61,000	9,100	137,000	880,000 (6)
12/28/94	55,000	3,700	5,300	1,400	5,800	83,000 (6)
4/13/95	45,000	2,800	3,400	1,200	5,100	50,000 (5)
11/1/95	44,000	2,600	3,400	1,400	5,900	52,000 (5)
3/25/96	45,000	3,000	4,100	1,600	6,800	46,000 (5) (7)
MW-2						
2/11/94	130	22	1.1	5.2	7.3	ND (6)
9/9/94	1,000	89	ND	ND	6.9	ND (6)
12/28/94	330	100	3.8	5.4	4.7	5100 (6)
4/13/95	1300	280	6.9	33	23	ND 5)
11/1/95	100	9.9	ND	ND	ND	ND (5)
3/25/96	500	470	57	220	280	ND (5) (7)
MW-3						
2/11/94	ND	ND	ND	ND	ND	ND (6)
9/9/94	710	10	ND	ND	3.5	ND (6)
12/28/94	2,300	7.8	ND	130	73	ND (6)
4/13/95	1,700	2.9	ND	61	24	ND (5)
11/1/95	1,100	4.4	ND	27	22	ND (5)
3/25/96	2,300	4.0	0.96	120	65	ND (5) (7)
MW-4						
3/26/96	9,900	1,000	40	71	100	ND (5) (7)
MW-5						
3/26/96	1,200	12	8.2	083	95	ND (5) (7)

	TPHg	B	T	E	X	OtG	HVOC(7)
MW-6							
3/26/96	[illegible]	[illegible]	150	470	720	ND	(5) (7)
EB-4							
3/8/96	[illegible]	780	840	1,300	590	7,500	(5) (7)
MCL	NA	1	150	700	1750	NA	

Notes

(1) ND - non-detect; N/A - not applicable
(2) Kaldveer Associates report, September, 1990
(3) Sequoia Analytical Laboratory
(4) Applied Remediation Laboratory
(5) Gravimetric Method
(6) Infrared Method
(7) **HVOC detected**: see table 3B

TABLE 3B

GROUND WATER

SUMMARY OF ANALYTICAL TEST RESULTS - HALOGENATED VOLATILE ORGANIC COMPOUNDS

(Results reported in parts per **billion**, ug/l) (1) (2)

Sample	CA	1,2 DCB	1,2 DCA	cis 1,2 DCE	trns 1,2 DCE	1,2 DCP	PCE	TCE	VCL
MW-1 3/25/96	ND	7.2	5.3	82	ND	ND	ND	7.8	25
MW-2 3/25/96	ND	ND	8.7	11	ND	1.0	ND	3.2	0.92
MW-3 3/25/96 ND	ND ND	ND ND	0.56	1.2	ND	ND			
MW-4 3/26/96	ND	[illegible]	ND	[illegible]	[illegible]	ND	[illegible]	[illegible]	[illegible]
MW-5 3/26/96	1.4	ND	2.1	6.2	ND	ND	ND	ND	10
MW-6 3/26/96	ND	ND	3.9	15	ND	1.9	0.77	2	ND
EB-4 3/8/96 (grab)	ND	ND	ND	42	ND	ND	130	340	ND
MCL	NA	600	0.5	6	10	5	7	5	.5

Notes on following page

Table 3B Notes

(1) ND = non-detect
(2) NA = not applicable
(3) Composite
(4) Abbreviations as follows:

CA	Chloroethane	1,2 DCP	1,2 Dichloropropane
1,2 DCB	1,2 Dichlorobenzene	PCE	Tetrachloroethene (perchloroethene)
1,2 DCA	1,2 Dichloroethane	TCE	trichloroethene
cis 1,2 DCE	cis 1,2 Dichloroethene	VCL	vinyl chloride
trans 1,2 DCE	trans 1,2 Dichloroethene		

TABLE 4

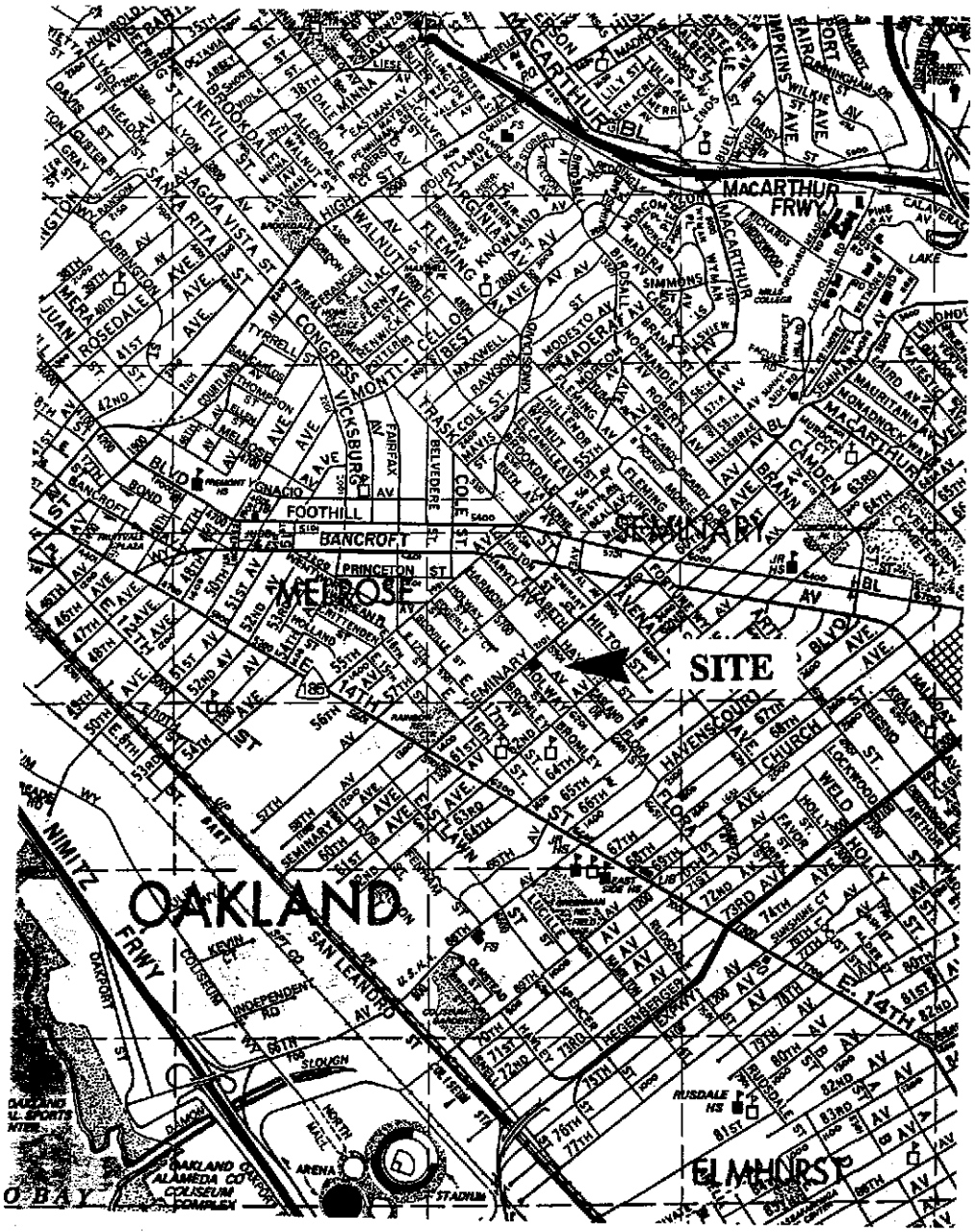
Risk Based Screening Level Data

(Results presented in parts per **million**, mg/kg or mg/l)

Exposure Pathway and Receptor	Residential Cancer Risk	Compound RBSL/Site (1)			
Soil		**Benzene (5)**	**Toluene**	**Ethylbenzene**	**Xylenes**
Volatilization to outdoor air	10^{-6}	0.079/**0.21** (9)	–	–	–
	10^{-4}	7.89/0.21 (9)			
	Chronic HQ=1	–	RES (2)	RES	RES
Vapor intrusion from soil to buildings	10^{-6}	0.0016/**0.21** (9)	–	–	–
	10^{-4}	0.156/**0.21** (9)			
	Chronic HQ=1	–	20.8/0.76	34.6/4.2	RES
Leachate to protect ground water ingestion	10-4	0.499/0.21 (6)			
	Chronic HQ=1	–	129/0.76	47.5/4.2	RES
Ground Water					
Volatilization to outdoor air	10^{-6}	3.19/2.0 (7)	–	–	–
	10^{-4}	319/2.0 (7)			
	Chronic HQ=1	–	>S (3)	>S	>S
Ingestion	10^{-4}	0.085/**1.0** (8)			
		0.085/**4.0** (6)			
	Chronic HQ=1	–	7.3/0.76	3.65/**4.2**	73/8.3
Vapor intrusion from ground water to buildings	10^{-6}	0.023/**1.0** (8)	--	--	--
	10^{-4}	2.35/1.0 (8)			
	Chronic HQ=1	–	114	>S	>S

Notes

(1) Risk value (left side of entry) / site value (right side of entry): RBSL = ASTM Risk Based Screening Level (Table 4, ASTM ES 38-94, July, 1994); Site = applicable contaminant level from site (**bold** if site value exceeds RBSL value)
(2) RES = selected risk level not exceeded for pure compound present at any concentration
(3) >S = selected risk level not exceeded for all possible dissolved levels
(4) HQ = health quotient
(5) Benzene risk value is ASTM RBSL multiplied by 0.29 per RWQCB requirement.
(6) Worst case value
(7) Reasonable value based on all wells
(8) Highest regional down-gradient well
(9) Samples <10' are ND or no odor (none or very low levels of contamination)



ALAMEDA COUNTY

1991 *Thomas Guide*

0 ¼ ½ ¾ 1 MILES
0 .1 .2 .5 KILOMETERS

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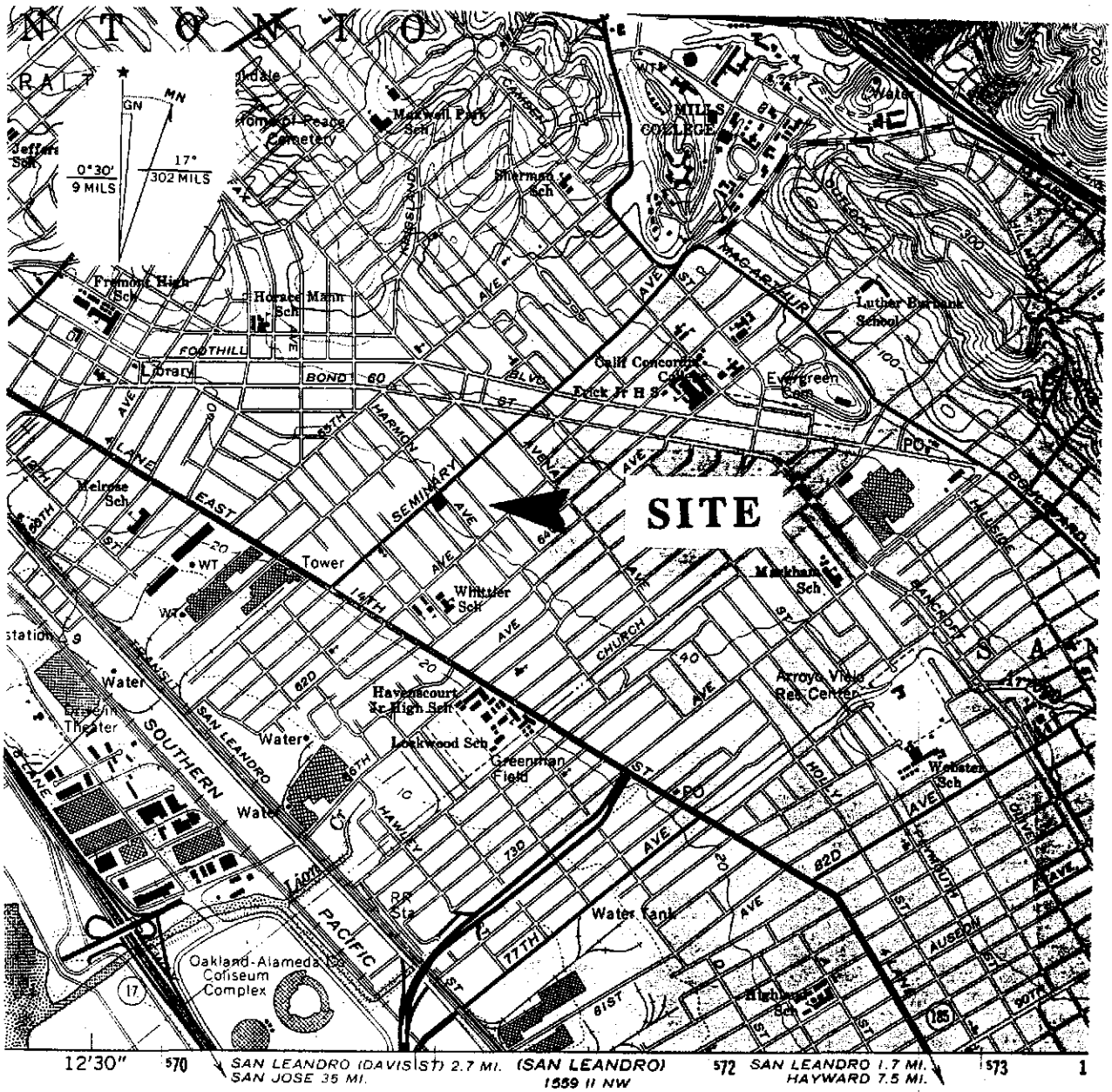
Environmental Studies

LOCATION MAP

1970 Seminary Ave.
Oakland, California

Project No.	Date	Figure 1
E-10-1A-163A	April, 1996	



Base: Oakland East 7.5" Quad, 1959 photorev. 1968, 1973, USGS

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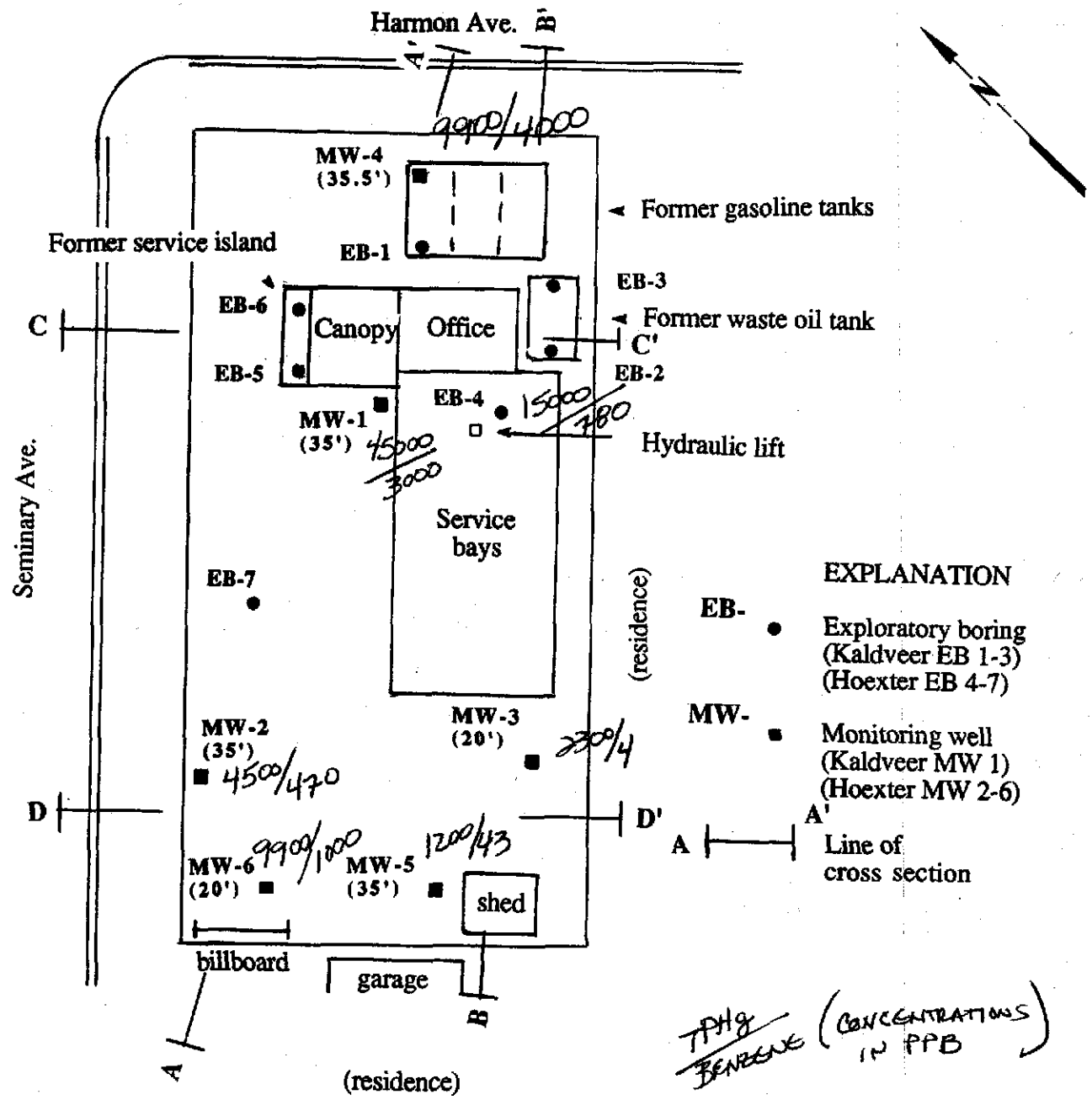
Environmental Studies

TOPOGRAPHIC MAP

1970 Seminary Ave.
Oakland, California

Project No.	Date	Figure 2
E-10-1A-163A	April, 1996	



Base: A. Deak, Licensed Land Surveyor, 3/21/96 (wells, streets & property line); Hoexter field sketch, 10/25/93 (explor. borings, other features)

20 0 20 40

Approximate Scale in Feet

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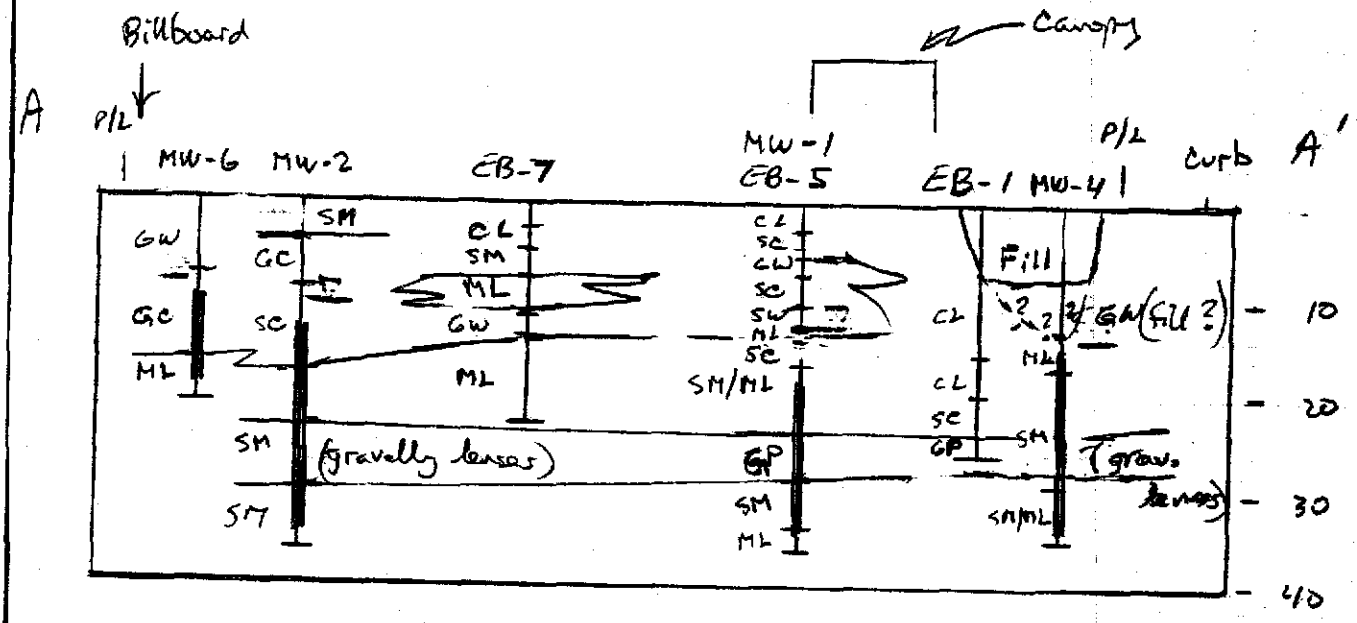
SITE PLAN

1970 Seminary Ave.
Oakland, California

Project No.	Date	Figure 3
E-10-1A-163A	April, 1996	

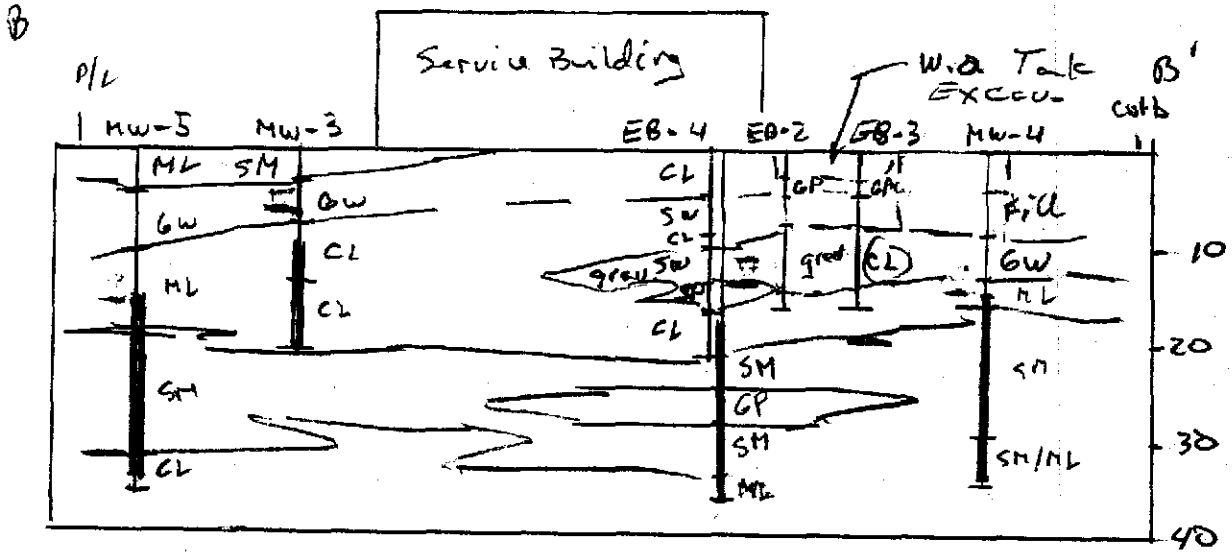


Stabilized ground water
3/25-26/96

Vertical = horizontal scale

See Figure 3 for location of section

HOEXTER CONSULTING Geology Engineering Geology Environmental Studies	CROSS SECTION A-A' 1970 Seminary Ave. Oakland, California		
	Project No.	Date	Figure 4A
	E-10-1A-163A	April, 1996	



▼ Stabilized ground water
3/25-26/96

Vertical = horizontal scale

See Figure 3 for location of section

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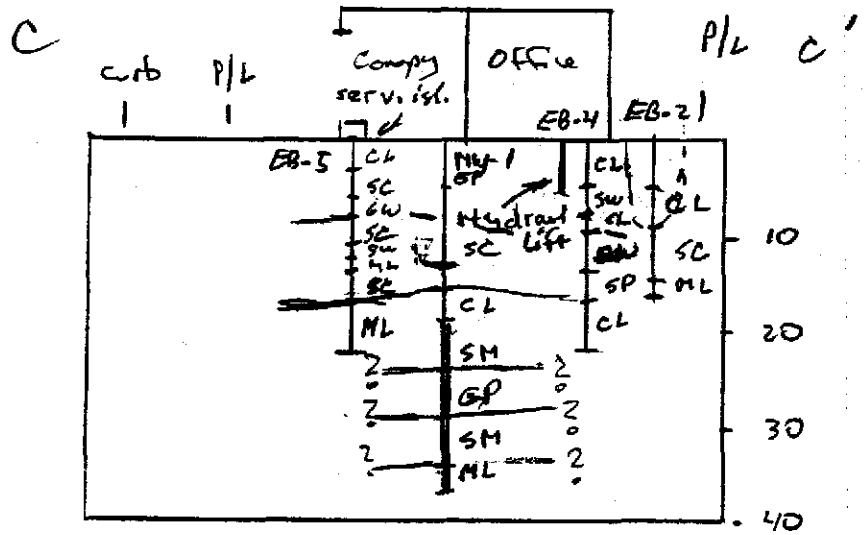
Environmental Studies

CROSS SECTION B-B'

1970 Seminary Ave.
Oakland, California

Project No.	Date	Figure 4B
E-10-1A-163A	April, 1996	

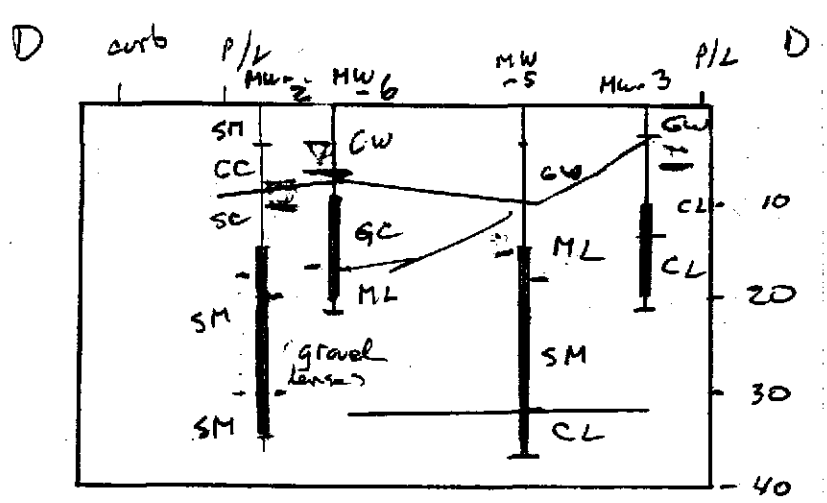


▼ Stabilized ground water
3/25-26/96

Vertical = horizontal scale

See Figure 3 for location of section

HOEXTER CONSULTING Geology Engineering Geology Environmental Studies	CROSS SECTION C-C' 1970 Seminary Ave. Oakland, California	
	Project No.: E-10-1A-163A	Date: April, 1996
		Figure 4C

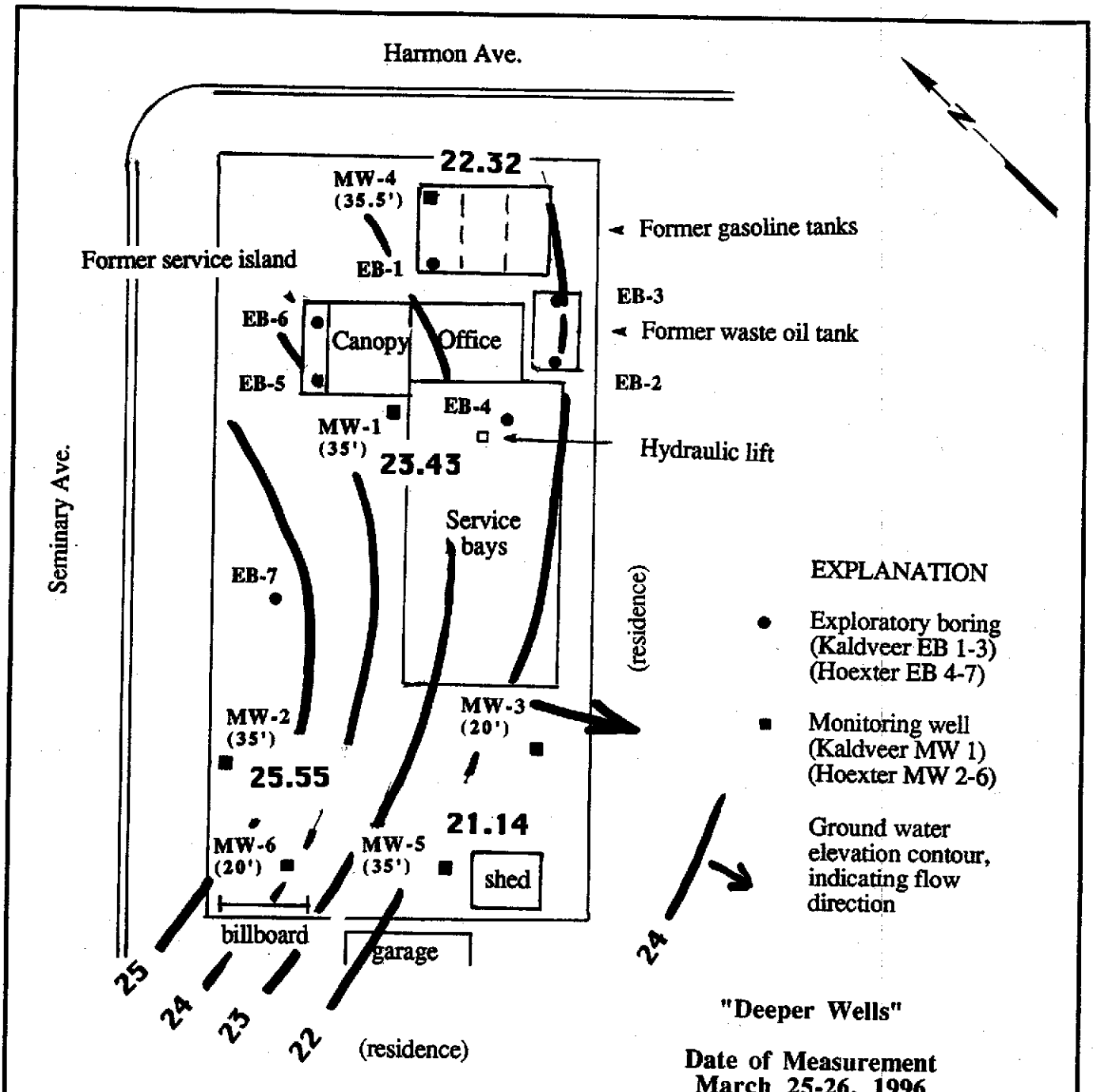


Stabilized ground water
3/25-26/96

Vertical = horizontal scale

See Figure 3 for location of section

HOEXTER CONSULTING Geology Engineering Geology Environmental Studies	CROSS SECTION D-D' 1970 Seminary Ave. Oakland, California	
	Project No. E-10-1A-163A	Date April, 1996
		Figure 4D



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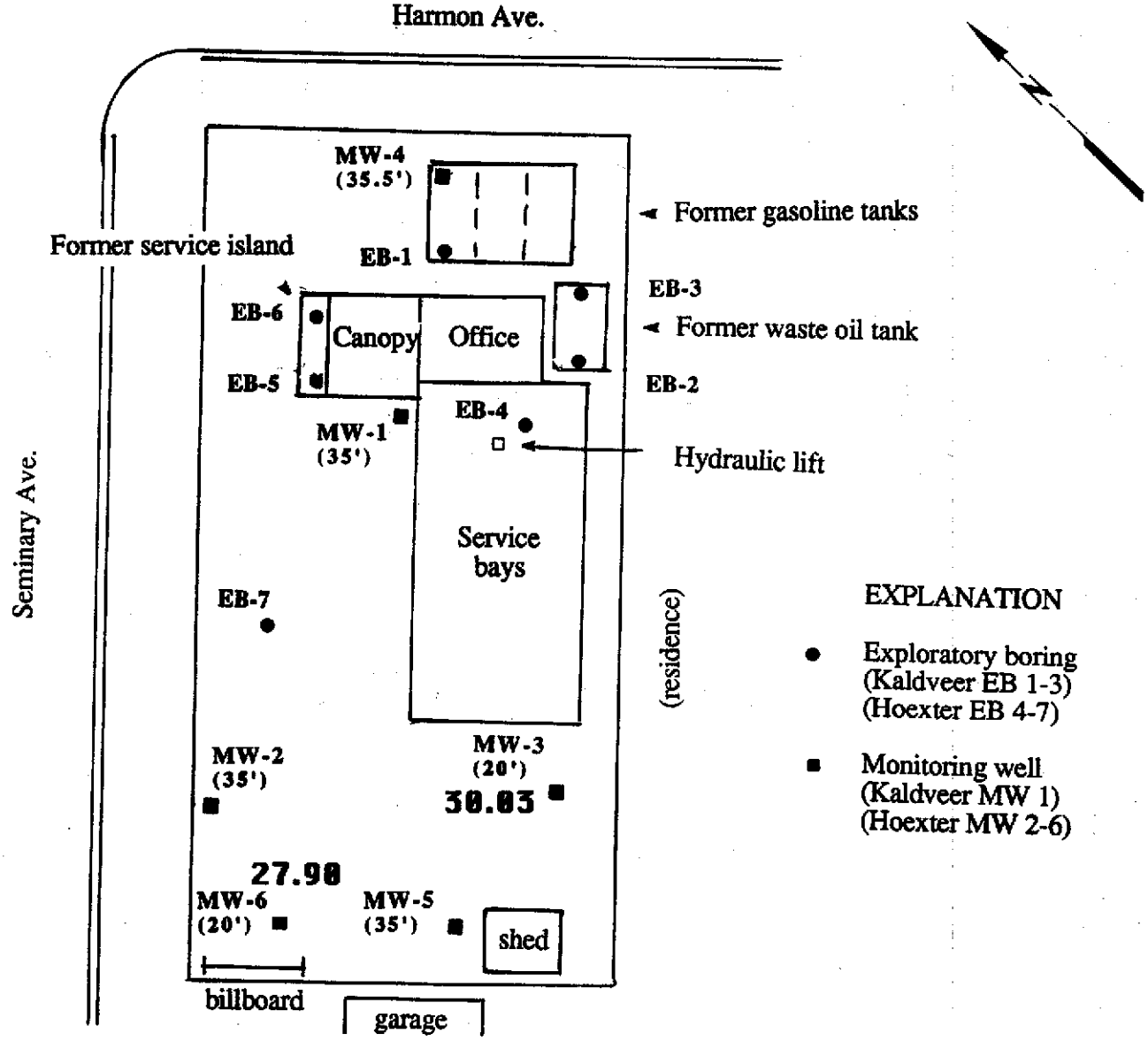
GROUND WATER DATA MAP

1970 Seminary Ave.
Oakland, California

Project No.	Date	Figure
E-10-1A-163A	April, 1996	5A



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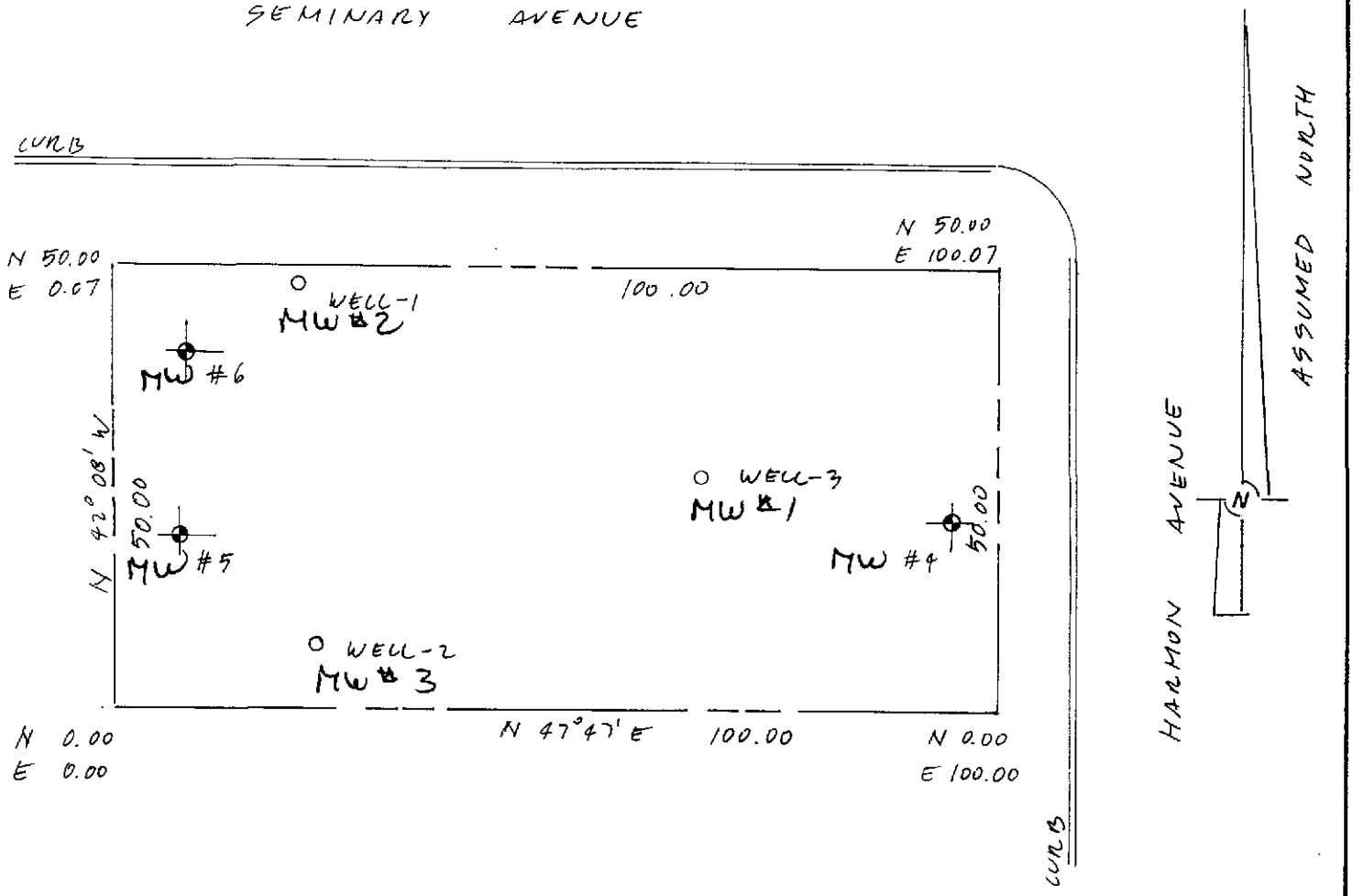
GROUND WATER DATA MAP

1970 Seminary Ave.
Oakland, California

Project No.	Date	Figure 5B
E-10-1A-163A	April, 1996	

APPENDIX A

SURVEY DATA
MONITORING WELL AND EXPLORATORY BORING PERMITS
EXPLORATORY BORING AND WELL COMPLETION LOGS
AND EXPLANATION



WELL NO	N	E	RIM EL.	02-11-1999 P.V.C. PIPE EL	CASING EL. MARCH 21 96
1 (#2)	48.75	21.25	36.703	36.402	36.392
2 (#3)	7.26	22.82	37.296	36.940	36.938
3 (#1)	26.69	66.31	37.312	36.996	36.971
#4 NEW 3-21-96	21.31	94.52	36.966		36.457
#5 3-21-96	19.83	7.39	37.152		36.772
#6 3-21-96	40.31	8.21	36.762		36.419

ELEVATIONS ON MONITORING WELLS AT HIGHEST POINT.

CLIENT: HOEXTER CONSULTING

ANDREAS DEAK
LICENSED LAND SURVEYOR
2116 BUENA VISTA AVENUE ALAMEDA CA 94501
PHONE: 865-4289

DATE MARCH 21 1996 FEB 11 1999
SCALE 1" = 20'
SURVEY DEAK
PLAT DEAK
APN 38-3211-1-4
JOB NO.

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 1970 Seminary Ave Oakland

CLIENT
Name Doyle Grimit
Address 14366 Lark St Voice [redacted] 510-357-5133
City San Leandro CA Zip 94578

APPLICANT
Name Hoexter Consulting Inc
Attn: David Hoexter Fax 415-494-2505
Address 734 Torreya Ct. Voice 415-494-2505 } same
City Palo Alto CA Zip 94303

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	___
Monitoring	10	Well Destruction	___

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. 265556 (Re Expl.)

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 35 ft.
Surface Seal Depth 5 ft. Number 5 max (4 probable)

GEOTECHNICAL PROJECTS
Number of Borings ___ Maximum
Hole Diameter ___ in. Depth ___ ft.

ESTIMATED STARTING DATE 3/15/96
ESTIMATED COMPLETION DATE 3/22/96 - 2 days of work within this period -

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE D. Hoexter Date 3/6/96

FOR OFFICE USE

PERMIT NUMBER 96193
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 14 Mar 96
Wyman Hong

91992

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions		grf	ltr	Description
Coarse Grained Soils	Gravel And Gravely Soils		gw	Well-graded gravels or gravel sand mixtures, little or no fines
			gp	Poorly-graded gravels or gravel sand mixture, little or no fines
			gm	Silty gravels, gravel-sand-silt mixtures
			gc	Clayey gravels, gravel-sand-clay mixtures
	Sand And Sandy Soils		sw	Well-graded sands or gravelly sands, little or no fines
			sp	Poorly-graded sands or gravelly sands, little or no fines
			sm	Silty sands, sand-silt mixtures
			sc	Clayey sands, and-clay mixtures

Major Divisions		grf	ltr	Description
Fine Grained Soils	Silts And Clays LL < 50		ml	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			cl	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			ol	Organic silts and organic silt-clays of low plasticity
	Silts And Clays LL > 50		mh	Inorganic silts, micaceous or diatomaceous fine or silty soils, elastic silts
			ch	Inorganic clays of high plasticity, fat clays
			oh	Organic clays of medium to high plasticity
Highly Organic Soils			pt	Peat and other highly organic soils

SYMBOLS

- Standard penetration split spoon sample
- Modified California (Porter) sample
- Shelby tube sample
- Water level observed in boring
- Stable Water level in monitoring well
- Blank casing
- Screened Casing
- Cement grout
- Bentonite
- Filter Pack

Visual Relative Moisture Content
Increasing Moisture Content

Dry
Damp
Moist
Wet
Saturated

Note(1): Penetration resistance values are recorded as the number of blows of a 140-pound hammer falling 30-inches required to drive a sampler through the last 12 inches of an 18-inch drive. Blow count for samples obtained using a Modified California sampler (indicated by an asterisk) should be multiplied by a factor of 0.8 to obtain equivalent standard penetration resistance values.

Note(2): The lines separating strata on the logs represent approximate boundaries only. 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.

Kaldveer Associates
Geoscience Consultants
A California Corporation

BORING LOG LEGEND

1970 SEMINARY AVENUE
Oakland, California

PROJECT NO.	DATE	FIGURE NO
KE1220-1-133	SEPTEMBER, 1990	A-1

DRILL RIG	Hollow Stem Auger	SURFACE ELEVATION	--	LOGGED BY	LAG
DEPTH TO GROUNDWATER	25.0 -feet	BORING DIAMETER	8-inch	DATE DRILLED	8/3/90

DESCRIPTION AND CLASSIFICATION		DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	PID READING	REMARKS	WELL CONSTRUCTION
DESCRIPTION AND REMARKS	SOIL TYPE						
SANDY GRAVEL (GP), brown, dry, angular gravel upto 1/4" diameter, fine to coarse grained sand, FILL, NOSC		5					
SANDY CLAY (SC), light brown, dry, paaatches of red, yellow and black, dry, dry, dense, fine to medium grained sand, some fine to coarse angular graval upto 1/4" diameter, chert fragments, slight petroleum hydrocarbon odor		10		40*			
grading more gravel		15		28*			
SILTY CLAY (CL), brown with patches of orange, gray mottled, damp, very stiff, some angular gravel upto 1/4" diameter, slight petroleum hydrocarbon odor		20		12*			
CLAYEY SILTY SAND (ML), yellowish-brown, some gray and black mottled, damp, stiff, fine grained sand, clay binder, some angular gravel upto 1/8" diameter, slight petroleum hydrocarbon odor							
SANDY GRAVEL (GP), grayish-green, saturated, dense, fine to coarse angular							

Kaldveer Associates
Geoscience Consultants
A California Corporation

EXPLORATORY BORING LOG

1970 SEMINARY AVENUE
Oakland, California

PROJECT NO.	DATE	BORING NO
KE1220-1-133	SEPTEMBER, 1990	EB-1

DRILL RIG	Hollow Stem Auger	SURFACE ELEVATION	--	LOGGED BY	LAG
DEPTH TO GROUNDWATER	25.0 -feet	BORING DIAMETER	8-inch	DATE DRILLED	8/3/90

DESCRIPTION AND CLASSIFICATION		DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	PID READING	REMARKS	WELL CONSTRUCTION
DESCRIPTION AND REMARKS	SOIL TYPE						
gravel upto 1/4" diameter, fine to coarse grained sand, with clay binder, moderate petroleum hydrocarbon odor				66*			
Bottom of Boring = 26.5 Feet							

Notes:

1. NOSC = No odor on soil cuttings.
2. Ground water was encountered at 25 feet at time of drilling.
3. Blow counts followed by an asterisk (*) should be multiplied by a factor of 0.8 to obtain standard penetration resistance.
4. The stratigraphy is approximate.

Kaldveer Associates
Geoscience Consultants
A California Corporation

EXPLORATORY BORING LOG

1970 SEMINARY AVENUE
Oakland, California

PROJECT NO.	DATE	BORING NO
KE1220-1-133	SEPTEMBER, 1990	EB-1

DRILL RIG	Minute Man	SURFACE ELEVATION	–	LOGGED BY	LAG
DEPTH TO GROUNDWATER	Not Enc.	BORING DIAMETER	3-inch	DATE DRILLED	8/13/90

DESCRIPTION AND CLASSIFICATION		DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	PID READING	REMARKS	WELL CONSTRUCTION
DESCRIPTION AND REMARKS	SOIL TYPE						
ASPHALT (2")							
SANDY GRAVEL (GP), light brown, dry, angular gravel upto 2" diameter, fine to coarse grained sand, NOSC							
SILTY CLAY (ML), grayish-black, dry, some gravel upto 1" diameter, NOSC							
SANDY GRAVEL (GP), grayish-black, dry, angular gravel upto 2" diameter, fine to coarse grained sand, NOSC		5					
CLAY (CL), grayish-black, dry, some angular gravel, slight petroleum hydrocarbon odor grading more gravel							
GRAVELLY SANDY CLAY (SC), light brown, dry, some angular gravel upto 1/2" diameter, fine grained sand, some oil staining along fractures, slight petroleum hydrocarbon odor grading to more sand (greenish-gray)		10					
SILTY CLAY (ML), light brown, black mottling, damp, trace fine grained sand, slight petroleum hydrocarbon odor		15					
Bottom of Boring = 16.5 Feet							

Notes:
1. NOSC = No odor on soil cuttings.
2. N/E = Ground water was not encountered at time of drilling.
3. Blow counts followed by an asterisk (*) should be multiplied by a factor of 0.8 to obtain standard penetration resistance.
4. The stratigraphy is approximate.

Kaldveer Associates
Geoscience Consultants
A California Corporation

EXPLORATORY BORING LOG

1970 SEMINARY AVENUE
Oakland, California

PROJECT NO.	DATE	BORING NO
KE1220-1-133	SEPTEMBER, 1990	EB-2

DRILL RIG	Minute Man	SURFACE ELEVATION	–	LOGGED BY	LAG
DEPTH TO GROUNDWATER	Not Enc.	BORING DIAMETER	3-inch	DATE DRILLED	8/13/90

DESCRIPTION AND CLASSIFICATION	SOIL TYPE	DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	PID READING	REMARKS	WELL CONSTRUCTION
ASPHALT (2")							
SANDY GRAVEL (GP), light brown, dry, angular gravel upto 2" diameter, fine to coarse grained sand, NOSC — CL ?							
SILTY CLAY (ML), grayish-black, dry, some gravel upto 1" diameter, NOSC							
SANDY GRAVEL (GP), grayish-black, dry, angular gravel upto 3/4" diameter, fine to coarse grained sand, NOSC		5					
SANDY CLAY (CL), grayish-black, dry, fine to medium grained sand, some angular gravel, oil staining on cuttings, moderate petroleum hydrocarbon odor ? CL							
GRAVELLY SANDY CLAY (SC), light brown with red, orange, andblack mottling, dry fine to coarse grained sand, angular gravel upto 1" diameter, oil staining along fractures, slight petroleum hydrocarbon odor		10					
grading more gravel ? CL		15					
SILTY CLAY-(ML), light brown with black mottling, damp, trace fine grained sand, some angular gravel, slight petroleum hydrocarbon odor							
Bottom of Boring = 16.5 Feet							

Notes:
1. NOSC = No odor on soil cuttings.
2. N/E = Ground water was not encountered at time of drilling.
3. Blow counts followed by an asterisk (*) should be multiplied by a factor of 0.8 to obtain standard penetration resistance.
4. The stratigraphy is approximate.

Kaldveer Associates
Geoscience Consultants
A California Corporation

EXPLORATORY BORING LOG

1970 SEMINARY AVENUE
Oakland, California

PROJECT NO.	DATE	BORING NO
KE1220-1-133	SEPTEMBER, 1990	EB-3

PROJECT: 1970 Seminary Avenue, Oakland, California | BORING NO: EB-1

DATE DRILLED/LOGGED BY 3/8/96/DFH

TYPE OF BORING/DIAMETER ContDriven1.7"

SURFACE ELEVATION Grade

HAMMER WEIGHT N/A

DESCRIPTION OF MATERIALS:

SAMPLES

DEPTH IN FT.	SAMPLE	NUMBER - DIAMETER	BLOWS/FT.	PID - PPM	GROUND WATER LEVEL	OTHER TESTS	COMMENTS
Concrete approx.4"; 4 - 12" not logged CL: sandy fine gravelly clay, dark brown, very stiff, slightly moist		1		No			
SW: fine gravelly sand with ca. 5% clay, dark brown, dense, sl. moist; free moisture at 6'; sand fine to coarse; grades dark gray-brown ca. 7.5'	5	2		Odor from 6'	▽		Ground water level may not be stabilized
		7.5-8.0					
CL: fine sandy clay, mottled orange and gray; very stiff, moist.		3					
SW: gravelly sand with clayey lenses, yellow-brown, very dense, moist.	10	4		Slight odor 10-13'			
SP: fine sand, brown to yellow-brown, dense, very moist to nearly wet (not saturated).	15	5 14.5-15.0		No odor from 14'			
CL: fine to coarse sandy clay, yellow-brown, very stiff, moist to very moist. grades light gray-brown	20	6 7					
TD = 22.0' Temporarily placed 1" PVC casing; no ground water 11:00 AM; water 7.3' ca. 12:00 noon; obtained grab ground water samples ca. 14:00. Grouted boring to surface after sampling Note: The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.	25 30	Drilled by Precision Sampling					

JOB NO: E-10-1A-163A | **HOEXTER CONSULTING, INC.** | **FIGURE:** [redacted] 1/1

PROJECT: 1970 Seminary Avenue, Oakland, California | **BORING NO:** EB-5

DATE DRILLED/LOGGED BY 3/8/96/DFH

TYPE OF BORING/DIAMETER ConDriven1.7"

SURFACE ELEVATION Grade

HAMMER WEIGHT N/A

DESCRIPTION OF MATERIALS:

SAMPLES

DEPTH IN FT.	SAMPLE	NUMBER – DIAMETER	BLOWS/FT.	PID – PPM	GROUND WATER LEVEL	OTHER TESTS	COMMENTS
Gravel backfill: former dispenser loc.							
CL: Fine sandy clay, dark brown, stiff, moist; occ. plant material (native soil).		1		No odor			
SC: clayey fine sand, brown, loose; gravelly from 5'.	5	3.5-4.0 2		No odor			
GW: sandy fine to coarse gravel, dark blue-gray, dense.		7.5-8.0		Mod. Odor from 7.0'			
SC: clayey gravelly fine to coarse sand, gray-brown, very dense.	10	3					
SW: gravelly fine to coarse sand with variable clay, gray-brown, dense; occ. wet surfaces (not saturated).		4 12.5-13.0					
ML: fine sandy silt / clayey silt, yellow brown.	15	5					
SC: clayey sand, gray-brown, dense, moist; grades to sandy gravel lense at base.		6 18.0-18.5		Slight odor			
ML: fine sandy clayey silt, gray-brown, stiff, moist.	20	19.5-20.0		Strong odor from 20'			No water 4 hours after drilling.
ML: fine sandy clayey silt, brown-gray, soft, very moist to wet (?).		7					
TD = 22.0'							
Temporarily placed 1" slotted PVC casing following completion; no water following 4 hours, and thus no grab ground water samples were obtained.	25						
Boring grouted to surface after casing withdrawn.							
Note: The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.	30						

JOB NO: E-10-1A-163A

HOEXTER CONSULTING, INC.

FIGURE: EB-5. 1/1

PROJECT: 1970 Seminary Avenue, Oakland, California | **BORING NO:** EB-6

DATE DRILLED/LOGGED BY 3/8/96/DFH

TYPE OF BORING/DIAMETER ConDriven1.7"

SURFACE ELEVATION Grade

HAMMER WEIGHT N/A

DESCRIPTION OF MATERIALS:

SAMPLES

DEPTH IN FT.	SAMPLE	NUMBER - DIAMETER	BLOWS/FT.	PID - PPM	GROUND WATER LEVEL	OTHER TESTS	COMMENTS
		1	2.0-2.5	No odor			
5		2	5.5-6.0	Odor from 5'			
10							
15							
20							
25							
30							No water

Gravel backfill: former dispenser loc.

CL: Fine sandy clay, dark brown, stiff, moist; occ. plant material (native soil).

SC: clayey fine sand, brown, loose; gravelly from 5'.

GW: sandy fine to coarse gravel, dark blue-gray, dense.

TD = 7.0'

Boring grouted to surface

Note: The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.

JOB NO: E-10-1A-163A

HOEXTER CONSULTING, INC.

FIGURE: EB-6, 1/1

PROJECT: 1970 Seminary Avenue, Oakland, California | **BORING NO:** EB-7

DATE DRILLED/LOGGED BY 3/8/96/DFH

TYPE OF BORING/DIAMETER ContDriven1.7"

SURFACE ELEVATION Grade

HAMMER WEIGHT N/A

DESCRIPTION OF MATERIALS:

SAMPLES

DEPTH IN FT.	SAMPLE	NUMBER - DIAMETER	BLOWS/FT.	PID - PPM	GROUND WATER LEVEL	OTHER TESTS	COMMENTS
		1		No odor			
5		2		No odor			
		3	9.0-9.5	No odor			
10		4		No odor			
15		5	14.0-14.5	Slight(?) odor			
		6		No odor			
20		7	20.0-20.5	Slight odor			
		8	23.0-23.5				
25							
30							

GC: clayey gravel (old fill ?), not logged in detail

CL: fine sandy silty clay, very dark brown, stiff, slightly moist.

SM: clayey silty sand, med. brown, dense, moist.

ML: fine sandy clayey silt, yellow-brown, stiff, very moist.

GW: silty fine to coarse sandy gravel, dark brown with variably colored clasts, dense, moist.

ML: clayey very sandy gravelly (ca. 25%) silt, yellow brown, very stiff, moist.

ML: fine sandy clayey silt, gray-brown, stiff to very stiff, moist.

ML: fine sandy silt, gray-green, soft, moist.

TD = 23.5'

Refusal at 23.5'; broke outer (drive) casing, recovered, unable to further penetrate formation.

Note: The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.

No water 1 hour following completion of drilling, and thus no grab ground water samples were obtained.

Boring grouted to surface.

JOB NO: E-10-1A-163A

HOEXTER CONSULTING, INC.

FIGURE: EB-7, 1/1

DRILL RIG	Hollow Stem Auger	SURFACE ELEVATION	–	LOGGED BY	LAG
DEPTH TO GROUNDWATER	24.0 -feet	BORING DIAMETER	8-inch	DATE DRILLED	8/3/90

DESCRIPTION AND CLASSIFICATION		DEPTH (FEET)	SAMPLER PENETRATION RESISTANCE (BLOWS/FT)	PID READING	REMARKS	WELL CONSTRUCTION
DESCRIPTION AND REMARKS	SOIL TYPE					
ASPHALT (2")						
SANDY GRAVEL (GP), light brown, dry, angular gravel upto 1/2" diameter, fine to medium grained sand, NOSC large sandstone cobbles						
CL ?						
SANDY CLAY (SC), lighr brown, dry, very stiff, patches of red, yellow, black, some fine to coarse angular gravel upto 1/4" diameter, medium to coarse grained sand, some asphalt and chert fragments, NOSC		5	31*			
grading to damp		10	52*			
grading more gravel		15	30*			
SILTY CLAY (CL), reddish brown, gray mottled, damp, very stiff, some coarse grained sand, NOSC						
CH ?						
CLAYEY SILTY SAND (ML), light brown, black mottled, moist, stiff, fine grained sand, some fine angular gravel, NOSC		20	16*			
SANDY GRAVEL (GP), grayish-green, some brown, saturated, dense, fine to						

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A California Corporation

EXPLORATORY BORING LOG

1970 SEMINARY AVENUE
Oakland, California

PROJECT NO.	DATE	BORING NO
KE1220-1-133	SEPTEMBER, 1990	MW-1

DRILL RIG	Hollow Stem Auger	SURFACE ELEVATION	--	LOGGED BY	LAG
DEPTH TO GROUNDWATER	24.0 -feet	BORING DIAMETER	8-inch	DATE DRILLED	8/3/90

DESCRIPTION AND CLASSIFICATION		DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	PID READING	REMARKS	WELL CONSTRUCTION
DESCRIPTION AND REMARKS	SOIL TYPE						
coarse angular gravel upto 1/4" diameter, fine to coarse grained sand, some clay binder, strong petroleum hydrocarbon odor				56*		product sheen on sampler	
CLAYEY SILTY SAND (ML), brown, saturated to moist, hard, fine grained sand, water travels along fratures, NOSC		30		46			
SANDY SILTY CLAY (ML), brown, damp, stiff, some fine grained sand, NOSC		35		18			

Total Depth = 36.5 Feet

Notes:

1) The stratigraphy is approximate.
2) Well Construction Details
   - 2-inch PVC, Schedule 40 solid and slotted (0.020-inch) casing
   - 2/12 washed sand filter pack
   - bentonite pellets plug
   - cement grout surface seal with steel stovepipe locking cover
3) Ground water was encountered at 24 feet at the time of drilling.
4) NOSC= No odor on sample cuttings.

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EXPLORATORY BORING LOG

1970 SEMINARY AVENUE
Oakland, California

PROJECT NO.	DATE	BORING NO
KE1220-1-133	SEPTEMBER, 1990	[illegible]

PROJECT: 1970 Seminary Avenue, Oakland, California

BORING NO: Explanation

DATE DRILLED/LOGGED BY

TYPE OF BORING/DIAMETER

SURFACE ELEVATION

HAMMER WEIGHT

DESCRIPTION OF MATERIALS:

PID = Photoionizaton Detector

Driven sample interval (5.5-7.0'), indicating number of blows per last 12" of drive and interval retained for possible chemical analysis.

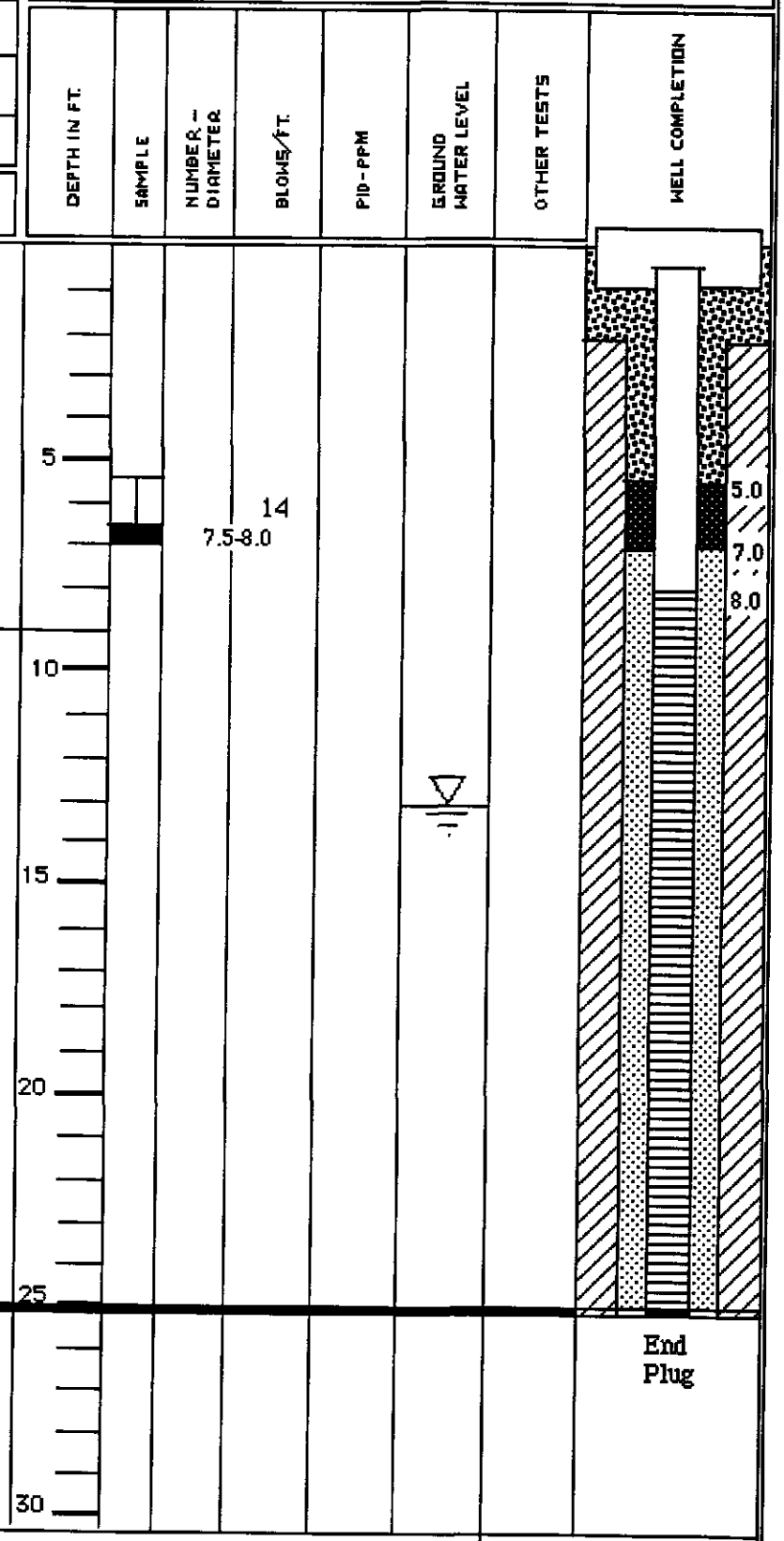
Approximate depth of contact between soil/rock types

Ground water level

Explanation of well completion symbols:

- Slotted well casing
- Cement grout
- Sand
- Bentonite
- Native materials

Total depth of boring = 25.0'



JOB NO: E-10-1A-163A

HOEXTER CONSULTING, INC.

FIGURE: Expl.

PROJECT: 1970 Seminary Avenue, Oakland, California

BORING NO: MW-1 *

DATE DRILLED/ LOGGED BY 8/3/90/ Kaldveer Assoc. *

TYPE OF BORING/DIAMETER 8"HSA

SURFACE ELEVATION 37.00

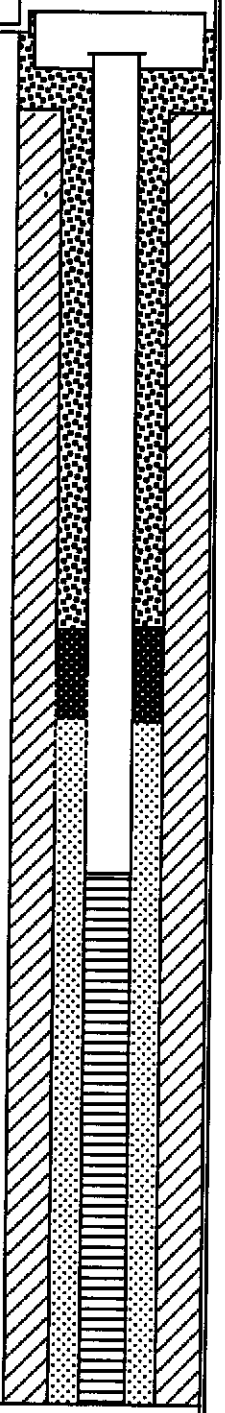
HAMMER WEIGHT 140 lb.

DESCRIPTION OF MATERIALS:

SAMPLES Page 1 of 2

DESCRIPTION OF MATERIALS	DEPTH IN FT.	SAMPLE	NUMBER - DIAMETER	BLOWS/FT.	PID - PPM	GROUND WATER LEVEL	OTHER TESTS
Asphalt (2")							
GP: Sandy gravel, light brown, dry angular gravel to 1/2" diameter; fine to med. grained sand, large sandstone "cobbles"					No odor		
SC: Sandy clay, light brown, dry, very stiff, "patches" of red, yellow, black, some fine to coarse angular gravel to 1/4" diam, med. to coarse grained sand, some asphalt (?) and chert fragments	5			31	No odor		
grades to damp	10			52			
increasing gravel	15			30	No odor	sta-bilized 2/28/94	
CL: silty clay, reddish brown, gray mottled, damp, very stiff, some coarse grained sand							
SM: clayey silty sand, light brown, black mottled, moist, stiff, fine-grained sand, some fine angular gravel	20			16	No odor		
GP: sandy gravel, grayish-green with brown, saturated, dense, fine to coarse angular gravel to 1/4" diameter, fine to coarse sand, some clay binder	25			56	Strong odor petrol. hydrocarb	initial	
SM: clayed silty sand, brown, moist to saturated, dense, fine-grained,	30				No odor		

WELL COMPLETION



JOB NO: E-10-1-019

HOEXTER CONSULTING, INC.

FIGURE: MW-1, 1/2

PROJECT: 1970 Seminary Avenue, Oakland, California | BORING NO: MW-1cont.

DATE DRILLED/LOGGED BY

TYPE OF BORING/DIAMETER

SURFACE ELEVATION

HAMMER WEIGHT

DESCRIPTION OF MATERIALS:

SAMPLES Page 2 of 2

DEPTH IN FT.	SAMPLE	NUMBER – DIAMETER	BLOWS/FT.	PID – PPM	GROUND WATER LEVEL	OTHER TESTS	WELL COMPLETION
			46				
				No odor			
35			18				

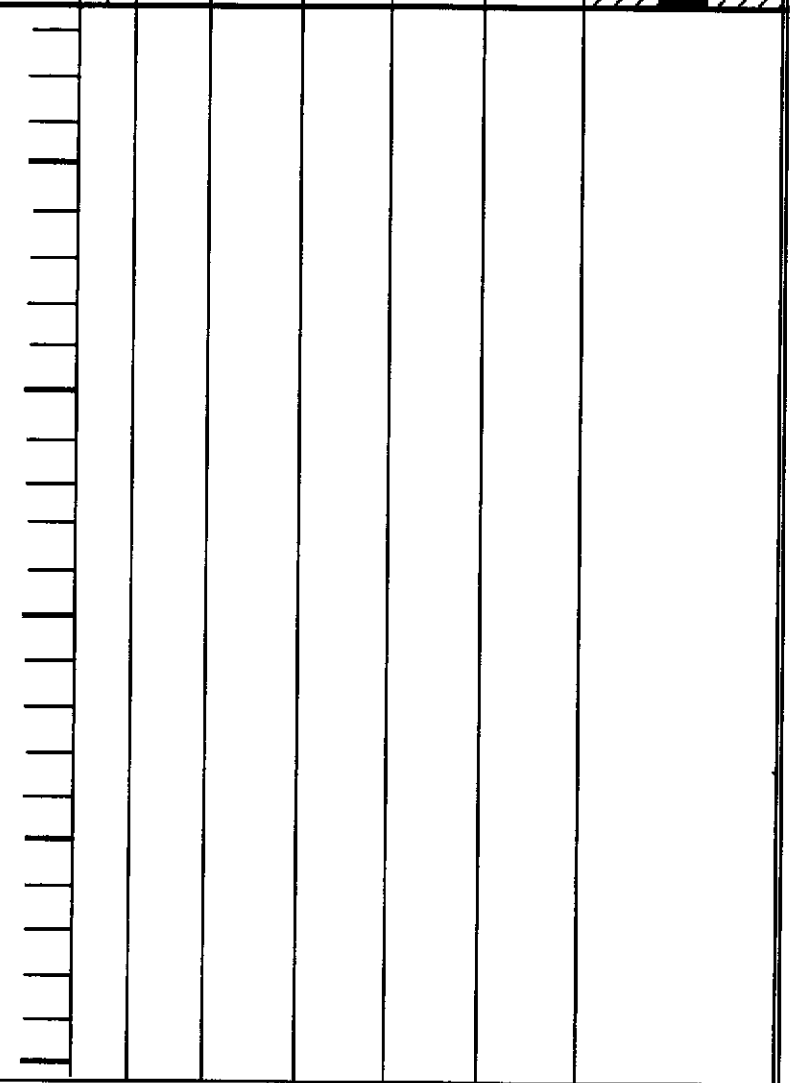
water transmission along fractures

ML: sandy clayey silt, brown, damp, stiff, sand fine-grained

TD=35.0 drilled, 36.5 sampled

Well completed with 2" diameter 0.020 slot casing, schedule 40, 1/12 washed sand filter pack, bentonite pellet seal, and cement grout surface seal

*** Well installed by Kaldveer Associates**



JOB NO: E-10-1-019

HOEXTER CONSULTING, INC.

FIGURE: MW-1, 2/2

PROJECT: 1970 Seminary Avenue, Oakland, California

BORING NO: MW-2

DATE DRILLED/LOGGED BY 1/28/94/DFH

TYPE OF BORING/DIAMETER 8"HSA

SURFACE ELEVATION 36.40

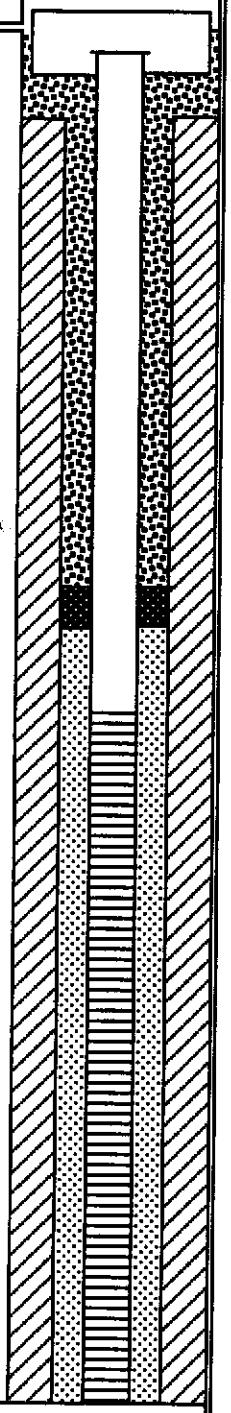
HAMMER WEIGHT 140 lb.

DESCRIPTION OF MATERIALS:

SAMPLES Page 1 of 2

DEPTH IN FT.	SAMPLE	NUMBER - DIAMETER	BLOWS/FT.	PID - PPM	GROUND WATER LEVEL	OTHER TESTS
Asphalt (2")						
SM: gravelly silty fine sand, brown, med. dense, moist						
SM: silty fine sand, light brown, moist						
GC: clayey gravel, yellow-brown, med. dense, slightly moist	5		26	ND		No odor
SW: clayey gravelly sand, olive-green-brown, moist, med. dense	10		28	85/60		Odor
driller reports small amount water	15		19	3/5	initial and stabilized 2/28/94	No odor
SM: silty fine sand, light green-brown, loose to med. dense, very moist, Mn. stains	20		11	9/7		No odor
gravel interbeds 23-30' (based on drilling)	25		25	ND/8		No odor
	30					

WELL COMPLETION



JOB NO: E-10-1-019

HOEXTER CONSULTING, INC.

FIGURE: MW-2, 1 of 2

PROJECT: 1970 Seminary Avenue, Oakland, California | BORING NO: MW-2 cont.

DATE DRILLED/LOGGED BY

TYPE OF BORING/DIAMETER

SURFACE ELEVATION

HAMMER WEIGHT

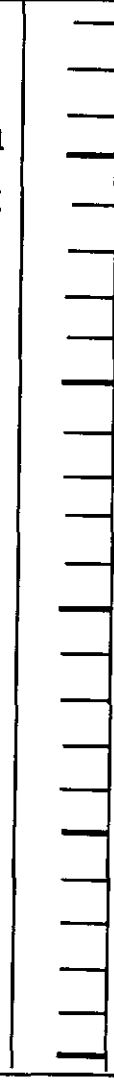
DESCRIPTION OF MATERIALS:

SAMPLES

DEPTH IN FT.	SAMPLE	NUMBER – DIAMETER	BLOWS/FT.	PID - PPM	GROUND WATER LEVEL	OTHER TESTS	WELL COMPLETION
			56	90/10		slight odor	
No water at completion							
35			28	60/5		no odor	

TD=35.0 drilled, 36.5 sampled

Completed well with 2" diameter 0.020 slot casing; RMC Lonestar 2/12 washed Monterey lapis lustre sand; bentonite pellet seal; and RMC Lonestar Type I-II Portland Cement



JOB NO: E-10-1-019

HOEXTER CONSULTING, INC.

FIGURE: MW-2, 2/2

PROJECT: 1970 Seminary Avenue, Oakland, California | **BORING NO:** MW-3

DATE DRILLED/LOGGED BY 1/28/94/DFH

TYPE OF BORING/DIAMETER 8"HSA

SURFACE ELEVATION 36.94

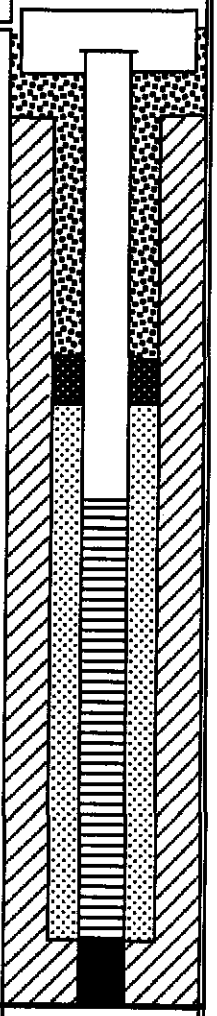
HAMMER WEIGHT 140 lb.

DESCRIPTION OF MATERIALS:

SAMPLES Page 1 of 1

DEPTH IN FT.	SAMPLE	NUMBER – DIAMETER	BLOWS/FT.	PID - PPM	GROUND WATER LEVEL	OTHER TESTS
Asphalt (2")						
SM: gravelly silty fine sand, dark brown, moist						
grades light brown						
GW: silty sandy gravel, light brown, slightly moist						
5			25	ND		odor
				40/30		sl. odor
CL: Gravelly sandy clay, brown, blue-gray on fractures and "pin-holes", very stiff, moist					stabilized 2/28/94	
10			24	28/8		
CL: gravelly silty clay, brown, moist, very stiff						
15			19	3/4	initial	No odor
Pulled back augers: water in boring; hydrocarbon odor; decided to complete well to 20'						
20			10	30/20		Sl. odor
TD=20.0' drilled, 21.5' sampled						
Completed well with 2" diameter 0.020 slot casing; RMC Lonestar 2/12 washed Monterey lapis lustre sand; bentonite pellet seal; and RMC Lonestar Type I-II Portland Cement						
25						
30						

WELL COMPLETION



JOB NO: E-10-1-019

HOEXTER CONSULTING, INC.

FIGURE: MW-3, 1/1

PROJECT: 1970 Seminary Avenue, Oakland, California | **BORING NO:** MW-4

DATE DRILLED/LOGGED BY 3/18/96/DFH

TYPE OF BORING/DIAMETER 8"HSA

SURFACE ELEVATION

HAMMER WEIGHT 140 lb.

DESCRIPTION OF MATERIALS:

SAMPLES Page 1 of 2

DEPTH IN FT.	SAMPLE	NUMBER – DIAMETER	BLOWS/FT.	PID – PPM	GROUND WATER LEVEL	OTHER TESTS	WELL COMPLETION
5				No odor			
10			60	Slight odor			
15			24	Slight odor	Stabil – ized 3/25/96 3/26/96		
20			21	No odor			
25			34	Slight odor			
30							

Former UST location

GW: silty sandy angular gravel, fine to coarse, brown (former UST tank backfill)

wet at 8' — Base of fill (?)

GW: clayey sandy gravel, brown, wet dense

ML: sandy clayey silt, brown, moist stiff

SM: silty fine sand (poor sample at 20', not retained)

silty gravelly sand with silt lenses, brown and gray mottled, wet, dense

13.5
14.5
15.5

JOB NO: E-10-1A-163A

HOEXTER CONSULTING, INC.

FIGURE: MW-4,1/2

PROJECT: 1970 Seminary Avenue, Oakland, California | BORING NO: MW-4

DATE DRILLED/LOGGED BY 3/18/96/DFH

TYPE OF BORING/DIAMETER 8"HSA

SURFACE ELEVATION

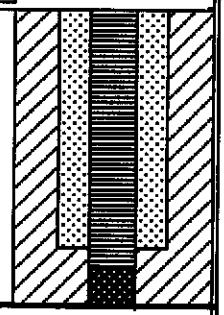
HAMMER WEIGHT 140 lb.

DESCRIPTION OF MATERIALS:

SAMPLES Page 2 of 2

DEPTH IN FT.	SAMPLE	NUMBER – DIAMETER	BLOWS/FT.	PID – PPM	GROUND WATER LEVEL	OTHER TESTS	WELL COMPLETION
35			80 30				

SM/ML: silty fine sand/sandy silt, mottled blue-gray & brown, moist, very dense to very stiff.



TD = 35.0 drilled, 36.5 sampled, well completed at 35.5

Completed well with 2" diameter 0.010 slot casing; RMC Lonestar 2/16 washed Monterey lapis lustre sand; bentonite pellet seal; and RMC Lonestar Type I-II portland cement.

End plug at bottom of casing.

PC Exploration Mobil B-34

* Two-inch Mod. CA. sampler

Note: The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.

JOB NO: E-10-1A-163A

HOEXTER CONSULTING, INC.

FIGURE: MW-4, 2/2

PROJECT: 1970 Seminary Avenue, Oakland, California | **BORING NO:** MW-5

DATE DRILLED/LOGGED BY 3/18/96/DFH

TYPE OF BORING/DIAMETER 8"HSA

SURFACE ELEVATION

HAMMER WEIGHT 140 lb.

DESCRIPTION OF MATERIALS:

SAMPLES Page 1 of 2

DEPTH IN FT.	DESCRIPTION OF MATERIALS	SAMPLE	NUMBER - DIAMETER	BLOWS/FT.	PID - PPM	GROUND WATER LEVEL	OTHER TESTS
	Asphalt 2" ML: gravelly fine sandy silt, brown, moist.						
5	ML: fine sandy silt, gray-brown, moist.		Poor sample retrieval	63	No odor		
10	GW: silty sandy gravel, light brown, slightly moist, very dense.			67	No odor		
15	ML: clayey silt with sandy silty fine sand lenses, brown, moist to very moist, firm.			21	No odor	▼	First water and 3/25-26/96 stabilized
20	SM: silty fine to medium sand, brown, very moist to wet (no free water), dense.			28	No odor		
25				72	No odor		
30							

WELL COMPLETION: 13, 14, 15

JOB NO: E-10-1A-163A

HOEXTER CONSULTING, INC.

FIGURE: MW-5, 1/2

PROJECT: 1970 Seminary Avenue, Oakland, California | BORING NO: MW- 5

DATE DRILLED/LOGGED BY 3/18/96/DFH

TYPE OF BORING/DIAMETER 8"HSA

SURFACE ELEVATION

HAMMER WEIGHT 140 lb.

DESCRIPTION OF MATERIALS:

SAMPLES — Page 2 of 2

DEPTH IN FT.	SAMPLE	NUMBER - DIAMETER	BLOWS/FT.	PID - PPM	GROUND WATER LEVEL	OTHER TESTS	WELL COMPLETION
	silty fine to medium sand, as above; poor sample; sampler wet.	60		No odor			
35	CL: clay, gray-brown, very moist, very stiff.	27		No odor			

TD = 35.0 drilled, 36.5 sampled, well completed at 35.0

Completed well with 2" diameter 0.010 slot casing; RMC Lonestar 2/16 washed Monterey lapis lustre sand; bentonite pellet seal; and RMC Lonestar Type I-II portland cement.

Boring drilled 3/18/96 and completed 3/19/96

End Plug

PC Exploration Mobil B-52

* Two-inch Mod. CA. sampler

Note: The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.

JOB NO: E-10-1A-163A

HOEXTER CONSULTING, INC.

FIGURE: MW-5, 2/2

PROJECT: 1970 Seminary Avenue, Oakland, California | BORING NO: MW-6

DATE DRILLED/LOGGED BY 3/19/96/DFH

TYPE OF BORING/DIAMETER 8"HSA

SURFACE ELEVATION

HAMMER WEIGHT 140 lb.

DESCRIPTION OF MATERIALS:

SAMPLES Page 1 of 1

DEPTH IN FT.	SAMPLE	NUMBER - DIAMETER	BLOWS/FT.	PID - PPM	GROUND WATER LEVEL	OTHER TESTS
Asphalt 2"						
GW: clayey to silty sandy gravel (not logged in detail).				No odor		
5						
GC: clayey gravel, yellow-brown, mottled blue-gray, very dense, slightly moist.				No odor	▼	Stabilized 3/26/96
10			57	Slight odor		
					▽	First water
15			35	Slight odor		
ML: fine sandy silt with silty sand, light brown, moist, very stiff.						
20			38	No odor		

WELL COMPLETION: 8, 9, 10

End Plug

TD = 20.0 drilled, 21.5 sampled, well completed at 20.0.

PC Exploration Mobil B-52

* Two-inch Mod. CA. sampler

Note: The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.

Completed well with 2" diameter 0.010 slot casing; RMC Lonestar 2/16 washed Monterey lapis lustre sand; bentonite pellet seal; and RMC Lonestar Type I-II portland cement.

JOB NO: E-10-1A-163A

HOEXTER CONSULTING, INC.

FIGURE: MW-6, 1/1

APPENDIX B

CHAINS OF CUSTODY AND ANALYTICAL TEST RESULTS MARCH 8, 1996 SOIL AND GRAB GROUND WATER SAMPLING

CHAIN-OF-CUSTODY RECORD

Project Number	Project Name
E-10-1A-163A	1970 Seminary, Oakland

Sampler's Name (printed): David Hoexter

	Boring Number	Date	Time	Soil	Water	Sample Location or Depth	Sample Number	Number/Type of Containers	TPH-G	BTEX	8015M 5520 B/F	HVOC 8010				Remarks
1	EB-4	3/10/96				7.5-8.0	1-	1"SS	X	X	X					96039964
2	↓					14.5-15.0			X	X	X					
3	EB-5					3.5-4.0			X							
4						7.5-8.0			X							
5						12.5-13.0			X							
6						18.0-18.5			X	X	X					composite
7						19.5-20.0										composite
	EB-6					2.0-2.5										Hold
	↓					5.5-6.0										Hold
8	EB-7					9.0-9.5			X	X						
9						14.0-14.5										
10						20.0-20.5			X	X	X					composite
11				↓		23.0-23.5		↓								composite
12	EB-4	↓			↓			3-40ml	X		X					Two HCl preserved; one for 8010 is not preserved
	↓							1-qt.		X						HCl pres.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
David Hoexter	3/11/96 | 2:30 pm	Stel Tan
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Stel Tan	3/11/96 | 4:30	
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)
		S Rau 3-11-96 1630

Ship To: Sequoia Analytical

Attention:

Phone No:

Requested Turnaround Time: Normal

Contact: David Hoexter

Phone 415-494-2505

Remarks: All analyses to be performed per RWQCB LUFT Guidelines

= 4

Hoexter Consulting
Engineering Geology
734 Torreya Court
Palo Alto, CA 94303

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Hoexter Consulting Eng'g Geo
734 Torreya Court
Palo Alto, CA 94303

Attention: David Hoexter

Client Proj. ID: E-10-1A-163A

Lab Proj. ID: 9603964

Sampled: 03/08/96
Received: 03/11/96
Analyzed: see below

Reported: 03/22/96

LABORATORY ANALYSIS

Analyte	Units	Date Analyzed	Detection Limit	Sample Results
Lab No: 9603964-01 Sample Desc : **SOLID,EB-4 7.5-8**				
TRPH (SM 5520 E&F Mod.)	**mg/Kg**	**03/21/96**	**50**	**820**
Lab No: 9603964-02 Sample Desc : **SOLID,EB-4 14.5-15**				
TRPH (SM 5520 E&F Mod.)	**mg/Kg**	**03/21/96**	**50**	**3600**
Lab No: 9603964-06 Sample Desc : **SOLID,EB-5 (18-18.5/19.5-20)**				
TRPH (SM 5520 E&F Mod.)	**mg/Kg**	**03/21/96**	**50**	**240**
Lab No: 9603964-08 Sample Desc : **SOLID,EB-7 9-9.5**				
TRPH (SM 5520 E&F Mod.)	mg/Kg	03/21/96	50	N.D.
Lab No: 9603964-10 Sample Desc : **SOLID,EB-7 (20-20.5/23-23.5)**				
TRPH (SM 5520 E&F Mod.)	**mg/Kg**	**03/21/96**	**50**	**620**
Lab No: 9603964-12 Sample Desc : **LIQUID,EB-4**				
TRPH (SM 5520 B&F Mod)	**mg/L**	**03/21/96**	**5.0**	**7.5**

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory for

Vytas Ankaitis
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Hoexter Consulting Eng'g Geo
734 Torreya Court
Palo Alto, CA 94303

Attention: David Hoexter

Client Proj. ID: E-10-1A-163A
Sample Descript: EB-4 7.5-8
Matrix: SOLID
Analysis Method: EPA 8010
Lab Number: 9603964-01

Sampled: 03/08/96
Received: 03/11/96
Extracted: 03/19/96
Analyzed: 03/20/96
Reported: 03/22/96

QC Batch Number: GC0315968010EXA
Instrument ID: GCHP24

Halogenated Volatile Organics (EPA 8010)

Analyte	Detection Limit ug/Kg	Sample Results ug/Kg
Bromodichloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	100	N.D.
Carbon Tetrachloride	50	N.D.
Chlorobenzene	50	N.D.
Chloroethane	100	N.D.
2-Chloroethylvinyl ether	100	N.D.
Chloroform	50	N.D.
Chloromethane	100	N.D.
Dibromochloromethane	50	N.D.
1,2-Dichlorobenzene	50	N.D.
1,3-Dichlorobenzene	50	N.D.
1,4-Dichlorobenzene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
cis-1,2-Dichloroethene	50	N.D.
trans-1,2-Dichloroethene	50	N.D.
1,2-Dichloropropane	50	N.D.
cis-1,3-Dichloropropene	50	N.D.
trans-1,3-Dichloropropene	50	N.D.
Methylene chloride	500	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
1,1,2-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
Trichlorofluoromethane	50	N.D.
Vinyl chloride	100	N.D.

Surrogates	Control Limits %		% Recovery
1-Chloro-2-fluorobenzene	60	130	102

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory for
Vytas Ankaitis
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Hoexter Consulting Eng'g Geo
734 Torreya Court
Palo Alto, CA 94303

Attention: David Hoexter

Client Proj. ID: E-10-1A-163A
Sample Descript: EB-4 7.5-8
Matrix: SOLID
Analysis Method: 8015Mod/8020
Lab Number: 9603964-01

Sampled: 03/08/96
Received: 03/11/96
Extracted: 03/19/96
Analyzed: 03/19/96
Reported: 03/22/96

QC Batch Number: GC031996BTEXEXA
Instrument ID: GCHP18

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	**50**	**300**
Benzene	0.25	N.D.
Toluene	0.25	N.D.
Ethyl Benzene	**0.25**	**3.3**
Xylenes (Total)	**0.25**	**8.3**
Chromatogram Pattern:		
Weathered Gas		**C6-C12**

Surrogates	*Control Limits %*		*% Recovery*
Trifluorotoluene	70	130	121

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Vytas Ankaitis
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Hoexter Consulting Eng'g Geo
734 Torreya Court
Palo Alto, CA 94303

Attention: David Hoexter

Client Proj. ID: E-10-1A-163A
Sample Descript: EB-4 14.5-15
Matrix: SOLID
Analysis Method: EPA 8010
Lab Number: 9603964-02

Sampled: 03/08/96
Received: 03/11/96
Extracted: 03/19/96
Analyzed: 03/20/96
Reported: 03/22/96

QC Batch Number: GC0315968010EXA
Instrument ID: GCHP24

Halogenated Volatile Organics (EPA 8010)

Analyte	Detection Limit ug/Kg	Sample Results ug/Kg
Bromodichloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	100	N.D.
Carbon Tetrachloride	50	N.D.
Chlorobenzene	50	N.D.
Chloroethane	100	N.D.
2-Chloroethylvinyl ether	100	N.D.
Chloroform	50	N.D.
Chloromethane	100	N.D.
Dibromochloromethane	50	N.D.
1,2-Dichlorobenzene	**50**	**170**
1,3-Dichlorobenzene	50	N.D.
1,4-Dichlorobenzene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
cis-1,2-Dichloroethene	50	N.D.
trans-1,2-Dichloroethene	50	N.D.
1,2-Dichloropropane	50	N.D.
cis-1,3-Dichloropropene	50	N.D.
trans-1,3-Dichloropropene	50	N.D.
Methylene chloride	500	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
Tetrachloroethene	**50**	**1800**
1,1,1-Trichloroethane	50	N.D.
1,1,2-Trichloroethane	50	N.D.
Trichloroethene	**50**	**820**
Trichlorofluoromethane	50	N.D.
Vinyl chloride	100	N.D.

Surrogates	Control Limits %		% Recovery
1-Chloro-2-fluorobenzene	60	130	104

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory for

Vytas Ankaitis
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Hoexter Consulting Eng'g Geo
734 Torreya Court
Palo Alto, CA 94303

Attention: David Hoexter

Client Proj. ID: E-10-1A-163A
Sample Descript: EB-4 14.5-15
Matrix: SOLID
Analysis Method: 8015Mod/8020
Lab Number: 9603964-02

Sampled: 03/08/96
Received: 03/11/96
Extracted: 03/19/96
Analyzed: 03/19/96
Reported: 03/22/96

QC Batch Number: GC031996BTEXEXA
Instrument ID: GCHP18

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	**20**	**63**
Benzene	0.10	N.D.
Toluene	0.10	N.D.
Ethyl Benzene	0.10	N.D.
Xylenes (Total)	**0.10**	**0.82**
Chromatogram Pattern:		
Weathered Gas		**C7-C12**

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	113

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory for

Vytas Ankaitis
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Hoexter Consulting Eng'g Geo
734 Torreya Court
Palo Alto, CA 94303

Attention: David Hoexter

Client Proj. ID: E-10-1A-163A
Sample Descript: EB-5 3.5-4
Matrix: SOLID
Analysis Method: 8015Mod/8020
Lab Number: 9603964-03

Sampled: 03/08/96
Received: 03/11/96
Extracted: 03/19/96
Analyzed: 03/19/96
Reported: 03/22/96

QC Batch Number: GC031996BTEXEXA
Instrument ID: GCHP18

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	1.0	N.D.
Benzene	0.0050	N.D.
Toluene	0.0050	N.D.
Ethyl Benzene	0.0050	N.D.
Xylenes (Total)	0.0050	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	96

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory for

Vytas Ankaitis
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Hoexter Consulting Eng'g Geo
734 Torreya Court
Palo Alto, CA 94303

Attention: David Hoexter

Client Proj. ID: E-10-1A-163A
Sample Descript: EB-5 7.5-8
Matrix: SOLID
Analysis Method: 8015Mod/8020
Lab Number: 9603964-04

Sampled: 03/08/96
Received: 03/11/96
Extracted: 03/19/96
Analyzed: 03/19/96
Reported: 03/22/96

QC Batch Number: GC031996BTEXEXA
Instrument ID: GCHP18

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	**25**	**130**
Benzene	0.12	N.D.
Toluene	0.12	N.D.
Ethyl Benzene	**0.12**	**0.55**
Xylenes (Total)	**0.12**	**1.3**
Chromatogram Pattern:		
Weathered Gas		**C7-C12**

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	94

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Vytas Ankaitis
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Hoexter Consulting Eng'g Geo
734 Torreya Court
Palo Alto, CA 94303

Attention: David Hoexter

Client Proj. ID: E-10-1A-163A
Sample Descript: EB-5 12.5-13
Matrix: SOLID
Analysis Method: 8015Mod/8020
Lab Number: 9603964-05

Sampled: 03/08/96
Received: 03/11/96
Extracted: 03/19/96
Analyzed: 03/19/96
Reported: 03/22/96

QC Batch Number: GC031996BTEXEXA
Instrument ID: GCHP18

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	**20**	**120**
Benzene	0.10	N.D.
Toluene	0.10	N.D.
Ethyl Benzene	**0.10**	**0.84**
Xylenes (Total)	**0.10**	**1.4**
Chromatogram Pattern:		**Gas**

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	127

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Vytas Ankaitis
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Hoexter Consulting Eng'g Geo
734 Torreya Court
Palo Alto, CA 94303

Attention: David Hoexter

Client Proj. ID: E-10-1A-163A
Sample Descript: EB-5 (18-18.5/19.5-20)
Matrix: SOLID
Analysis Method: EPA 8010
Lab Number: 9603964-06

Sampled: 03/08/96
Received: 03/11/96
Extracted: 03/19/96
Analyzed: 03/20/96
Reported: 03/22/96

QC Batch Number: GC03159680010EXA
Instrument ID: GCHP24

Halogenated Volatile Organics (EPA 8010)

Analyte	Detection Limit ug/Kg	Sample Results ug/Kg
Bromodichloromethane	200	N.D.
Bromoform	200	N.D.
Bromomethane	400	N.D.
Carbon Tetrachloride	200	N.D.
Chlorobenzene	200	N.D.
Chloroethane	400	N.D.
2-Chloroethylvinyl ether	400	N.D.
Chloroform	200	N.D.
Chloromethane	400	N.D.
Dibromochloromethane	200	N.D.
1,2-Dichlorobenzene	200	N.D.
1,3-Dichlorobenzene	200	N.D.
1,4-Dichlorobenzene	200	N.D.
1,1-Dichloroethane	200	N.D.
1,2-Dichloroethane	200	N.D.
1,1-Dichloroethene	200	N.D.
cis-1,2-Dichloroethene	200	N.D.
trans-1,2-Dichloroethene	200	N.D.
1,2-Dichloropropane	200	N.D.
cis-1,3-Dichloropropene	200	N.D.
trans-1,3-Dichloropropene	200	N.D.
Methylene chloride	2000	N.D.
1,1,2,2-Tetrachloroethane	200	N.D.
Tetrachloroethene	**200**	**520**
1,1,1-Trichloroethane	200	N.D.
1,1,2-Trichloroethane	200	N.D.
Trichloroethene	200	N.D.
Trichlorofluoromethane	200	N.D.
Vinyl chloride	400	N.D.

Surrogates	Control Limits %		% Recovery
1-Chloro-2-fluorobenzene	60	130	108

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

for

Vytas Ankaitis
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Hoexter Consulting Eng'g Geo
734 Torreya Court
Palo Alto, CA 94303

Attention: David Hoexter

Client Proj. ID: E-10-1A-163A
Sample Descript: EB-5 (18-18.5/19.5-20)
Matrix: SOLID
Analysis Method: 8015Mod/8020
Lab Number: 9603964-06

Sampled: 03/08/96
Received: 03/11/96
Extracted: 03/19/96
Analyzed: 03/19/96
Reported: 03/22/96

QC Batch Number: GC031996BTEXEXA
Instrument ID: GCHP18

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	1.0	4.5
Benzene	0.0050	0.025
Toluene	0.0050	0.015
Ethyl Benzene	0.0050	0.028
Xylenes (Total)	0.0050	0.078
Chromatogram Pattern:		Gas

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	119

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory for
Vytas Ankaitis
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Hoexter Consulting Eng'g Geo
734 Torreya Court
Palo Alto, CA 94303

Attention: David Hoexter

Client Proj. ID: E-10-1A-163A
Sample Descript: EB-7 9-9.5
Matrix: SOLID
Analysis Method: 8015Mod/8020
Lab Number: 9603964-08

Sampled: 03/08/96
Received: 03/11/96
Extracted: 03/19/96
Analyzed: 03/19/96
Reported: 03/22/96

QC Batch Number: GC031996BTEXEXA
Instrument ID: GCHP18

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	1.0	N.D.
Benzene	0.0050	N.D.
Toluene	0.0050	N.D.
Ethyl Benzene	0.0050	N.D.
Xylenes (Total)	0.0050	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	91

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Vytas Ankaitis
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Hoexter Consulting Eng'g Geo
734 Torreya Court
Palo Alto, CA 94303

Attention: David Hoexter

Client Proj. ID: E-10-1A-163A
Sample Descript: EB-7 14-14.5
Matrix: SOLID
Analysis Method: 8015Mod/8020
Lab Number: 9603964-09

Sampled: 03/08/96
Received: 03/11/96
Extracted: 03/19/96
Analyzed: 03/19/96
Reported: 03/22/96

QC Batch Number: GC031996BTEXEXA
Instrument ID: GCHP18

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	1.0	N.D.
Benzene	0.0050	N.D.
Toluene	0.0050	N.D.
Ethyl Benzene	0.0050	N.D.
Xylenes (Total)	0.0050	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	91

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory for

Vytas Ankaitis
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Hoexter Consulting Eng'g Geo
734 Torreya Court
Palo Alto, CA 94303

Attention: David Hoexter

Client Proj. ID: E-10-1A-163A
Sample Descript: EB-7 (20-20.5/23-23.5)
Matrix: SOLID
Analysis Method: EPA 8010
Lab Number: 9603964-10

Sampled: 03/08/96
Received: 03/11/96
Extracted: 03/19/96
Analyzed: 03/20/96
Reported: 03/22/96

QC Batch Number: GC0315968010EXA
Instrument ID: GCHP24

Halogenated Volatile Organics (EPA 8010)

Analyte	Detection Limit ug/Kg	Sample Results ug/Kg
Bromodichloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	100	N.D.
Carbon Tetrachloride	50	N.D.
Chlorobenzene	50	N.D.
Chloroethane	100	N.D.
2-Chloroethylvinyl ether	100	N.D.
Chloroform	50	N.D.
Chloromethane	100	N.D.
Dibromochloromethane	50	N.D.
1,2-Dichlorobenzene	50	N.D.
1,3-Dichlorobenzene	50	N.D.
1,4-Dichlorobenzene	50	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
cis-1,2-Dichloroethene	50	N.D.
trans-1,2-Dichloroethene	50	N.D.
1,2-Dichloropropane	50	N.D.
cis-1,3-Dichloropropene	50	N.D.
trans-1,3-Dichloropropene	50	N.D.
Methylene chloride	500	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
1,1,2-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
Trichlorofluoromethane	50	N.D.
Vinyl chloride	100	N.D.

Surrogates	Control Limits %		% Recovery
1-Chloro-2-fluorobenzene	60	130	102

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Vytas Ankaitis
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Hoexter Consulting Eng'g Geo
734 Torreya Court
Palo Alto, CA 94303

Attention: David Hoexter

Client Proj. ID: E-10-1A-163A
Sample Descript: EB-7 (20-20.5/23-23.5)
Matrix: SOLID
Analysis Method: 8015Mod/8020
Lab Number: 9603964-10

Sampled: 03/08/96
Received: 03/11/96
Extracted: 03/19/96
Analyzed: 03/21/96
Reported: 03/22/96

QC Batch Number: GC031996BBTEEXA
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	**20**	**130**
Benzene	0.10	N.D.
Toluene	**0.10**	**0.38**
Ethyl Benzene	**0.10**	**1.9**
Xylenes (Total)	**0.10**	**2.9**
Chromatogram Pattern:		**Gas**

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	116

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory for

Vytas Ankaitis
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Hoexter Consulting Eng'g Geo
734 Torreya Court
Palo Alto, CA 94303

Attention: David Hoexter

Client Proj. ID: E-10-1A-163A
Sample Descript: EB-4
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9603964-12

Sampled: 03/08/96
Received: 03/11/96

Analyzed: 03/19/96
Reported: 03/22/96

QC Batch Number: GC031996BTEX17A
Instrument ID: GCHP17

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	2000	15000
Benzene	20	780
Toluene	20	84
Ethyl Benzene	20	590
Xylenes (Total)	20	1300
Chromatogram Pattern:		Gas

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	85

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory for
Vytas Ankaitis
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Hoexter Consulting Eng'g Geo
734 Torreya Court
Palo Alto, CA 94303

Attention: David Hoexter

Client Proj. ID: E-10-1A-163A
Sample Descript: EB-4
Matrix: LIQUID
Analysis Method: EPA 8010
Lab Number: 9603964-12

Sampled: 03/08/96
Received: 03/11/96

Analyzed: 03/21/96
Reported: 03/22/96

QC Batch Number: GC032096801009A
Instrument ID: GCHP9

Halogenated Volatile Organics (EPA 8010)

Analyte	Detection Limit ug/L	Sample Results ug/L
Bromodichloromethane	12	N.D.
Bromoform	12	N.D.
Bromomethane	25	N.D.
Carbon Tetrachloride	12	N.D.
Chlorobenzene	12	N.D.
Chloroethane	25	N.D.
2-Chloroethylvinyl ether	25	N.D.
Chloroform	12	N.D.
Chloromethane	25	N.D.
Dibromochloromethane	12	N.D.
1,2-Dichlorobenzene	12	N.D.
1,3-Dichlorobenzene	12	N.D.
1,4-Dichlorobenzene	12	N.D.
1,1-Dichloroethane	12	N.D.
1,2-Dichloroethane	12	N.D.
1,1-Dichloroethene	12	N.D.
cis-1,2-Dichloroethene	**12**	**42**
trans-1,2-Dichloroethene	12	N.D.
1,2-Dichloropropane	12	N.D.
cis-1,3-Dichloropropene	12	N.D.
trans-1,3-Dichloropropene	12	N.D.
Methylene chloride	125	N.D.
1,1,2,2-Tetrachloroethane	12	N.D.
Tetrachloroethene	**12**	**130**
1,1,1-Trichloroethane	12	N.D.
1,1,2-Trichloroethane	12	N.D.
Trichloroethene	**12**	**340**
Trichlorofluoromethane	12	N.D.
Vinyl chloride	25	N.D.

Surrogates	Control Limits %		% Recovery
1-Chloro-2-fluorobenzene	70	130	84

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Vytas Ankaitis
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Hoexter Consulting Eng'g Geo
734 Torreya Court
Palo Alto, CA 94303
Attention: David Hoexter

Client Proj. ID: E-10-1A-163A
Lab Proj. ID: 9603964

Received: 03/11/96
Reported: 03/22/96

LABORATORY NARRATIVE

8010: Sample #1,2,6,10,12 were run at dilution due to high boilers in PID.

SEQUOIA ANALYTICAL

Mike Gregory for
Vytas Ankaitis
Project Manager

APPENDIX C

CHAINS OF CUSTODY AND ANALYTICAL TEST RESULTS MARCH 18-19, 1996 SOIL SAMPLING

6078 AMCX7

CHAIN-OF-CUSTODY RECORD

Project Number	Project Name
E-10-1A-163A	1970 Seminary, Oakland

Sampler's Name (printed): David Hoexter

Boring Number	Date	Time	Soil	Water	Sample Location or Depth	Sample Number	Number/Type of Containers	Analytical Tests: TPH-G/BTEX	Oil & Grease	Oil SM5520 B/F	Rem		
MW-4	3/19/96				11.0-11.5	1-2x6550		X			56	Held	H 62656
					16.0-16.5			X			57		62657
					26.0-26.5			X	X		58	Composite	62658
					31.0-31.5			X				Composite	H 62659
					36.0-36.5			X			59		62660
MW-5					11.0-11.5			X			60		
					16.0-16.5						61	Held	H 62661
					21.0-21.5			X	X		62	Composite 5520 only	62662
					35.5-36.0						63	Composite 5520 only	
MW-6	3/19/96				11.0-11.5			X	X		64	Composite	62663
					16.0-16.5							Composite	62664
					21.0-21.5			X			65	Held	H 62665

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Dan J. Hamilton	3/22/96 09:05	Ron Hamilton
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)
Ron Hamilton	3-22-96 12:40	Vicki Ricca

Ship To: McCampbell Anal.
110-2nd Ave S #D-7
Pacheco CA

Attention: Ed Hamilton
Phone No: 510-798-1620

Requested Turnaround Time: Normal - 1 wk.

Contact: David F. Hoexter

Phone 415-494-2505

Remarks:

VOAs | O&G | METALS | OTHER

ICE/T ✓
GOOD CONDITION ✓
HEAD SPACE ABSENT ✓

PRESERVATIVE APPROPRIATE ✓
CONTAINERS ✓

Hoexter Consulting
Engineering Geology
734 Torreya Court
Palo Alto, CA 94303

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

03/29/96

Dear David:

Enclosed are:

1). the results of 7 samples from your # **E-10-1A-163A; 1970 Seminary, Oakland** project,

2). a QC report for the above samples

3). a copy of the chain of custody, and

4). a bill for analytical services.

If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton

McCAMPBELL ANALYTICAL INC. | 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Hoexter Consulting Engineering Geology	Client Project ID: # E-10-1A-163A; 1970 Seminary, Oakland	Date Sampled: 03/18-03/19/96
		Date Received: 03/22/96
734 Torreya Court	Client Contact: David Hoexter	Date Extracted: 03/22/96
Palo Alto, CA 94303	Client P.O:	Date Analyzed: 03/22-03/23/96

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	Benzene	Toluene	Ethylbenzene	Xylenes	% Rec. Surrogate
62657	MW-4 16.0-16.5	S	13,b,j	0.038	0.015	ND	0.023	94
62658	MW-4 Comp	S	68,b,j	0.21	0.092	0.15	0.39	96
62659	MW-4 36.0-36.5	S	5.4,b,d	ND	0.008	0.015	0.11	100
62660	MW-5 11.0-11.5	S	9.7,d	ND	0.019	ND	0.038	102
62662	MW-5 21.0-21.5	S	ND	ND	ND	ND	ND	103
62664	MW-6 Comp	S	10,b	0.037	0.033	0.18	0.46	107
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment; j) no recognizable pattern.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Hoexter Consulting Engineering Geology	Client Project ID: # E-10-1A-163A; 1970 Seminary, Oakland	Date Sampled: 03/18-03/19/96
		Date Received: 03/22/96
734 Torreya Court	Client Contact: David Hoexter	Date Extracted: 03/25/96
Palo Alto, CA 94303	Client P.O:	Date Analyzed: 03/25/96

Petroleum Oil & Grease (with Silica Gel Clean-up) *

EPA methods 413.1, 9070 or 9071; Standard Methods 5520 D/E&F or 503 D&E for solids and 5520 B&F or 503 A&E for liquids

Lab ID	Client ID	Matrix	Oil & Grease*
62658	MW-4 Comp	S	190
62662-63	MW-5 Comp	S	ND
62664	MW-6 Comp	S	ND
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	5 mg/L
		S	50 mg/kg

* water samples are reported in mg/L and soils in mg/kg

h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 03/22/96 Matrix: Soil

Analyte	Concentration (mg/kg) Sample (#62377)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.000	2.123	1.853	2.03	105	91	13.6
Benzene	0.000	0.176	0.168	0.2	88	84	4.7
Toluene	0.000	0.180	0.170	0.2	90	85	5.7
Ethylbenzene	0.000	0.180	0.170	0.2	90	85	5.7
Xylenes	0.000	0.520	0.498	0.6	87	83	4.3
TPH (diesel)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TRPH (oil and grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 03/23/96-03/24/96 Matrix: Soil

Analyte	Concentration (mg/kg) Sample (#62377)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.000	2.114	2.118	2.03	104	104	0.2
Benzene	0.000	0.188	0.198	0.2	94	99	5.2
Toluene	0.000	0.200	0.210	0.2	100	105	4.9
Ethylbenzene	0.000	0.200	0.210	0.2	100	105	4.9
Xylenes	0.000	0.594	0.626	0.6	99	104	5.2
TPH (diesel)	0	297	301	300	99	100	1.4
TRPH (oil and grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 03/25/96 Matrix: Soil

Analyte	Concentration (mg/kg) Sample (#62377)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.000	1.925	2.096	2.03	95	103	8.5
Benzene	0.000	0.172	0.178	0.2	86	89	3.4
Toluene	0.000	0.180	0.184	0.2	90	92	2.2
Ethylbenzene	0.000	0.180	0.180	0.2	90	90	0.0
Xylenes	0.000	0.524	0.524	0.6	87	87	0.0
TPH (diesel)	0	319	316	300	106	105	0.9
TRPH (oil and grease)	0.0	21.6	23.1	20.8	104	111	6.7

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

APPENDIX D

GROUND WATER SAMPLING FIELD LOGS
CHAINS OF CUSTODY AND
ANALYTICAL TEST RESULTS
MARCH 25-26, 1996
MONITORING WELL WATER SAMPLING

HOEXTER CONSULTING

Groundwater Sampling Field Log

Project Name/ No.: SEMINARY / E-10-1-019
Client: D. GRIMIT
Project Manager: D. F. HOEXTER
Sampler: J. FORSYTHE
Casing Diameter: 2 inch X 3 inch ____ 4 inch ____ 6 inch ____ Other: ____

Lab I.D.: ____
Date: 3/25/96
Sample Location/I.D.: MW-1
Start Time: ____

Depth of Well (feet): 35
Depth to Water (feet): 13.54
Sample Depth (feet): ____
3.50 gal/well vol

Calculated Purged Volume: 14 gal
Actual Purged Volume 16 gal

Field Measurements

Time	Cum	Volume (gal.)	pH (units)	E.C. (umhos/cm)	Temperature Degrees F	Color (visual)	Other
16:00	INITIAL	0	6.14	1010	66.9	~CLEAR	
16:13	4	4	6.16	993	64.3	LT. BROWN	YUCK!
16:25	8	4	6.15	992	64.6		
16:36	12	4	6.14	985	64.6		
16:49	16	4	6.15	976	64.3		

Purge Method

____ 2" Bladder Pump X Bailer ____ Well Wizard X Dedicated
____ Submersible Pump ____ Cenetrifugal Pump ____ Dipper ____ Other
____ Pneumatic Displacement Pump

Sample Method

____ 2" Bladder Pump X Bailer ____ Well Wizard X Dedicated
____ Surface Sampler ____ Dipper ____ Fultz Pump ____ Other

Well Integrity: OK
Remarks: INITIAL BAILER EXTRACT: SHEEN, STRONG ODOR, MINOR "GLOBULES"
SAMPLE COLLECTED AT 18:40

Signature: J. Forsythe

Volumes Per Unit Length Selected Well Casing Diameters

Well Casing I.D. (inches)	Volume Per Unit Length Gal/ft	Cubic Ft/ft	L/M	L/Ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Mulitply
Ft. of Water	Lbs/sq.in.	0.4335
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

MW-1

HOEXTER CONSULTING

Groundwater Sampling Field Log

Project Name/ No.: SEMINARY / E-10-1-019
Client: D. GRIMIT
Project Manager: D. F. HOEXTER
Sampler: J. FORSYTHE
Casing Diameter: 2 inch X 3 inch ____ 4 inch ____ 6 inch ____ Other: ____

Lab I.D.: ____
Date: 3/25/96
Sample Location/I.D.: MW-2
Start Time: ____

Depth of Well (feet): 35
Depth to Water (feet): 10.84
Sample Depth (feet): ____
3.94 gal / well vol

Calculated Purged Volume: 15.7 gal
Actual Purged Volume 16 gal

Field Measurements

Time	Cum	Volume (gal.)	pH (units)	E.C. (umhos/cm)	Temperature Degrees F	Color (visual)	Other
14:43	INITIAL	0	6.47	927	64.2	CLEAR	NO SHEEN MODERATE ODOR
14:55	4	4	6.38	911	63.1	CLOUDY	
15:08	8	4	6.39	898	63.7		
15:20	12	4	6.36	899	63.0		
15:33	16	4	6.41	916	63.3		

Purge Method

____ 2" Bladder Pump ___X___ Bailer ____ Well Wizard ___X___ Dedicated
____ Submersible Pump ____ Cenetrifugal Pump ____ Dipper ____ Other
____ Pneumatic Displacement Pump

Sample Method

____ 2" Bladder Pump ___X___ Bailer ____ Well Wizard ___X___ Dedicated
____ Surface Sampler ____ Dipper ____ Fultz Pump ____ Other

Well Integrity: OK
Remarks: INITIAL BAILER EXTRACT: NO SHEEN, MODERATE ODOR
SAMPLE COLLECTED AT 18:10

Signature: J. Forsythe

Volumes Per Unit Length Selected Well Casing Diameters

Well Casing I.D. (inches)	Volume Per Unit Length Gal/ft	Cubic Ft/ft	L/M	L/Ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Multiply
Ft. of Water	Lbs/sq.in.	0.4335
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

MW-2

HOEXTER CONSULTING

Groundwater Sampling Field Log

Project Name/ No.: SEMINARY / E-10-1-019
Client: D. GRIMIT
Project Manager: D. F. HOEXTER
Sampler: J. FORSYTHE
Casing Diameter: 2 inch X 3 inch ____ 4 inch ____ 6 inch ____ Other: ____

Lab I.D.: ____
Date: 3/25/96
Sample Location/I.D.: MW-3
Start Time: ____

Depth of Well (feet): 20
Depth to Water (feet): 6.91
Sample Depth (feet): ____

Calculated Purged Volume: 8.5 gal
Actual Purged Volume 10 gal

2.14 gal / well vol.

Field Measurements

Time	Cum	Volume (gal.)	pH (units)	E.C. (umhos/cm)	Temperature Degrees F	Color (visual)	Other
13:53	INITIAL	0	8.00	631	64.9	CLEAR	NO SHEEN SLIGHT ODOR
14:01	2.5	2.5	7.44	648	63.9	CLOUDY	
14:07	5.0	2.5	7.22	634	63.4		
14:13	7.5	2.5	7.02	639	63.4		
14:19	10.0	2.5	6.96	647	63.3		

Purge Method

____ 2" Bladder Pump X Bailer ____ Well Wizard X Dedicated
____ Submersible Pump ____ Cenetrifugal Pump ____ Dipper ____ Other
____ Pneumatic Displacement Pump

Sample Method

____ 2" Bladder Pump X Bailer ____ Well Wizard X Dedicated
____ Surface Sampler ____ Dipper ____ Fultz Pump ____ Other

Well Integrity: GOOD
Remarks: INITIAL BAILER EXTRACT: NO SHEEN, SLIGHT PRODUCT ODOR
SAMPLE COLLECTED AT 17:45

Signature: J. Forsythe

Volumes Per Unit Length Selected Well Casing Diameters

Well Casing I.D. (inches)	Volume Per Unit Length Gal/ft	Cubic Ft/ft	L/M	L/Ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Mulitply
Ft. of Water	Lbs/sq.in.	0.4335
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

MW-3

HOEXTER CONSULTING

Groundwater Sampling Field Log

Project Name/ No.: SEMINARY / E-10-1-019
Client: D. GRIMIT
Project Manager: D.F. HOEXTER
Sampler: J. FORSYTHE
Casing Diameter: 2 inch X 3 inch ____ 4 inch ____ 6 inch ____ Other: ____

Lab I.D.: ____
Date: 3/26/96
Sample Location/I.D.: MW-4
Start Time: ____

Depth of Well (feet): 34.91
Depth to Water (feet): 14.14
Sample Depth (feet): ____

Calculated Purged Volume: 13.6 gal
Actual Purged Volume 16 gal

3.4 gal / well vol

Field Measurements

Time	Cum	Volume (gal.)	pH (units)	E.C. (umhos/cm)	Temperature Degrees F	Color (visual)	Other
13:53	INITIAL	0	6.20	1087	64.6	CLEAR	NO SHEEN OR ODOR
14:07	4	4	6.21	1229	64.5	MED. BROWN	SLIGHT SHEEN, NO ODOR
14:20	8	4	6.31	1261	64.4		
14:32	12	4	6.32	1196	64.7		
14:47	16	4	6.45	1245	64.1		

Purge Method

____ 2" Bladder Pump X Bailer ____ Well Wizard X Dedicated
____ Submersible Pump ____ Cenetrifugal Pump ____ Dipper ____ Other
____ Pneumatic Displacement Pump

Sample Method

____ 2" Bladder Pump X Bailer ____ Well Wizard X Dedicated
____ Surface Sampler ____ Dipper ____ Fultz Pump ____ Other

Well Integrity: ____
Remarks: INITIAL BAILER EXTRACT: NO SHEEN OR ODOR
SAMPLE COLLECTED AT 17:00

Signature: J. Forsythe

Volumes Per Unit Length Selected Well Casing Diameters

Well Casing I.D. (inches)	Volume Per Unit Length Gal/ft	Cubic Ft/ft	L/M	L/Ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Mulitply
Ft. of Water	Lbs/sq.in.	0.4335
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

MW-4

HOEXTER CONSULTING

Groundwater Sampling Field Log

Project Name/ No.: SEMINARY / E-10-1-019
Client: D. GRIMIT
Project Manager: D. F. HOEXTER
Sampler: J. FORSYTHE
Casing Diameter: 2 inch X 3 inch ____ 4 inch ____ 6 inch ____ Other: ____

Lab I.D.: ____
Date: 3/26/96
Sample Location/I.D.: MW-5
Start Time: ____

Depth of Well (feet): 35.24
Depth to Water (feet): 15.63
Sample Depth (feet): ____

3.2 gal/well vol.

Calculated Purged Volume: 12.8 gal
Actual Purged Volume 16 gal

Field Measurements

Time	Cum	Volume (gal.)	pH (units)	E.C. (umhos/cm)	Temperature Degrees F	Color (visual)	Other
11:49	INITIAL	0	6.74	726	62.6	CLEAR	NO SHEEN OR ODOR
12:02	4	4	6.55	869	62.0	MED. BROWN	
12:14	8	4	6.45	1046	62.2	"	
12:25	12	4	6.40	908	62.5		
12:36	16	4	6.42	932	62.1	↓	↓

Purge Method

____ 2" Bladder Pump ____X____ Bailer ____ Well Wizard ____X____ Dedicated
____ Submersible Pump ____ Cenetrifugal Pump ____ Dipper ____ Other
____ Pneumatic Displacement Pump

Sample Method

____ 2" Bladder Pump ____X____ Bailer ____ Well Wizard ____X____ Dedicated
____ Surface Sampler ____ Dipper ____ Fultz Pump ____ Other

Well Integrity: OK
Remarks: INITIAL BAILER EXTRACT: NO SHEEN OR ODOR.
SAMPLE COLLECTED AT 16:05

Signature: J. Forsythe

Volumes Per Unit Length Selected Well Casing Diameters

Well Casing I.D. (inches)	Volume Per Unit Length Gal/ft	Cubic Ft/ft	L/M	L/Ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Mulitply
Ft. of Water	Lbs/sq.in.	0.4335
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

MW-5

HOEXTER CONSULTING

Groundwater Sampling Field Log

Project Name/ No.: SEMINARY /E-10-1-019
Client: D. GRIMIT
Project Manager: D.F. HOEXTER
Sampler: J. FORSYTHE
Casing Diameter: 2 inch X 3 inch ____ 4 inch ____ 6 inch ____ Other: ____

Lab I.D.: ____
Date: 3/26/96
Sample Location/I.D.: MW-6
Start Time: ____

Depth of Well (feet): 18.53
Depth to Water (feet): 8.52
Sample Depth (feet): ____

Calculated Purged Volume: 6.5 gal
Actual Purged Volume 8 gal

1.6 gal / well vol

Field Measurements

Time	Cum	Volume (gal.)	pH (units)	E.C. (umhos/cm)	Temperature Degrees F	Color (visual)	Other
12:56	INITIAL	0	7.52	1166	64.2	CLEAR	NO SHEEN OR ODOR
12:58	2	2	6.37	1208	63.7	LT. BROWN	
13:04	4	2	6.46	1206	64.5		
13:09	6	2	6.43	1085	64.1		
13:15	8	2	6.42	1068	64.0		

Purge Method

____ 2" Bladder Pump X Bailer ____ Well Wizard X Dedicated
____ Submersible Pump ____ Cenetrifugal Pump ____ Dipper ____ Other
____ Pneumatic Displacement Pump

Sample Method

____ 2" Bladder Pump X Bailer ____ Well Wizard X Dedicated
____ Surface Sampler ____ Dipper ____ Fultz Pump ____ Other

Well Integrity: OK
Remarks: INITIAL BAILER EXTRACT: NO SHEEN OR ODOR
SAMPLE COLLECTED AT 16:30

Signature: J. Forsythe

Volumes Per Unit Length Selected Well Casing Diameters

Well Casing I.D. (inches)	Volume Per Unit Length Gal/ft	Cubic Ft/ft	L/M	L/Ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Mulitply
Ft. of Water	Lbs/sq.in.	0.4335
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

MW-6

ICE/T ✓ VOAs | O&G | METALS | OTHER

GOOD CONDITION ✓ PRESERVATIVE ✓

HEAD SPACE ABSENT ✓ APPROPRIATE CONTAINERS ✓ Preserved In House Upon Arrival

6107AHCX8

CHAIN-OF-CUSTODY RECORD

Project Number	Project Name
E-10-1A-163	1970 Seminary Ave Oakland CA

Sampler's Name (printed): J. FORSYTHE

Boring Number	Date	Time	Soil	Water	Sample Location or Depth	Sample Number	Number/Type of Containers	Analytical Tests: TPH-G/BTEX	8010	SM 5520 C/F	Remarks
MW-1	3/25/94	18:40		X			4-40ml	X	X		TPH-G/BTEX HCL preserved
MW-1				X			1-1qt.			X	
MW-2		18:10		X			4-40ml	X	X		
MW-2				X			1-1qt.			X	
MW-3		17:45		X			4-40ml	X	X		
MW-3				X			1-1qt			X	
MW-4	3/24/94	17:00		X			4-40ml	X	X		
MW-4				X			1-1qt			X	
MW-5		16:05		X			4-40ml	X	X		
MW-5											
MW-6		16:30									
MW-6											

62762
62763
62764
62765
62766
62767

Recent grab sample from open boring near MW-1 (closest to source) was 21 ppm total HVOC note - 8010 should be ND to low PPb (?)

Relinquished by: (Signature) J. Forsythe 3/

Relinquished by: (Signature) D. J. Hoexter 3/

Relinquished by: (Signature) Kent Hawkins 3/

Requested Turnaround Time: Normal

Remarks:

* 8010 not preserved

QC13 LUFT Guidelines

pball And.

CA

-494-2505

Hoexter Consulting
Engineering Geology
734 Torreya Court
Palo Alto, CA 94303

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

04/05/96

Dear David:

Enclosed are:

1). the results of **6** samples from your **# E-10-1A-163; 1970 Seminary Ave., Oakland** project,

2). a QC report for the above samples

3). a copy of the chain of custody, and

4). a bill for analytical services.

If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton

McCAMPBELL ANALYTICAL INC. | 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Hoexter Consulting Engineering Geology 734 Torreya Court Palo Alto, CA 94303	Client Project ID: # E-10-1A-163; 1970 Seminary Ave., Oakland	Date Sampled: 03/25-03/26/96
		Date Received: 03/27/96
	Client Contact: David Hoexter	Date Extracted: 03/27-03/28/96
	Client P.O:	Date Analyzed: 03/27-03/28/96

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	Benzene	Toluene	Ethylbenzene	Xylenes	% Rec. Surrogate
62762	MW-1	W	45,000,a,h	3000	4100	1600	6800	99
62763	MW-2	W	4500,a	470	57	220	280	107
62764	MW-3	W	2300,b,d	4.0	0.96	120	65	103
62765	MW-4	W	9900,a	4000	40	71	100	103
62766	MW-5	W	1200,a	43	8.2	83	95	112#
62767	MW-6	W	9900,a	1000	150	470	720	105
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment; j) no recognizable pattern.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Hoexter Consulting Engineering Geology 734 Torreya Court Palo Alto, CA 94303	Client Project ID: # E-10-1A-163; 1970 Seminary Ave., Oakland	Date Sampled: 03/25-03/26/96
		Date Received: 03/27/96
	Client Contact: David Hoexter	Date Extracted: 03/29/96
	Client P.O:	Date Analyzed: 03/29/96

Petroleum Oil & Grease (with Silica Gel Clean-up) *

EPA methods 413.1, 9070 or 9071; Standard Methods 5520 D/E&F or 503 D&E for solids and 5520 B&F or 503 A&E for liquids

Lab ID	Client ID	Matrix	Oil & Grease*
62762	MW-1	W	46,h
62763	MW-2	W	ND
62764	MW-3	W	ND
62765	MW-4	W	ND
62766	MW-5	W	ND
62767	MW-6	W	ND
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	5 mg/L
		S	50 mg/kg

* water samples are reported in mg/L and soils in mg/kg

h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

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Hoexter Consulting Engineering Geology	Client Project ID: # E-10-1A-163; 1970 Seminary Ave., Oakland	Date Sampled: 03/25-03/26/96
		Date Received: 03/27/96
734 Torreya Court	Client Contact: David Hoexter	Date Extracted: 03/27/96
Palo Alto, CA 94303	Client P.O:	Date Analyzed: 03/27/96

Volatile Halocarbons

EPA method 601 or 8010

Lab ID	62762	62763	62764	62765
Client ID	MW-1	MW-2	MW-3	MW-4
Matrix	W	W	W	W
Compound	Concentration*			
Bromodichloromethane	ND< 5	ND	ND	ND< 8
Bromoform(b)	ND< 5	ND	ND	ND< 8
Bromomethane	ND< 5	ND	ND	ND< 8
Carbon Tetrachloride(c)	ND< 5	ND	ND	ND< 8
Chlorobenzene	ND< 5	ND	ND	ND< 8
Chloroethane	ND< 5	ND	ND	ND< 8
2-Chloroethyl Vinyl Ether(d)	ND< 5	ND	ND	ND< 8
Chloroform (e)	ND< 5	ND	ND	ND< 8
Chloromethane	ND< 5	ND	ND	ND< 8
Dibromochloromethane	ND< 5	ND	ND	ND< 8
1,2-Dichlorobenzene	**7.2**	ND	ND	**22**
1,3-Dichlorobenzene	ND< 5	ND	ND	ND< 8
1,4-Dichlorobenzene	ND< 5	ND	ND	ND< 8
Dichlorodifluoromethane	ND< 5	ND	ND	ND< 8
1,1-Dichloroethane	ND< 5	ND	ND	ND< 8
1,2-Dichloroethane	**5.3**	**8.7**	**0.56**	ND< 8
1,1-Dichloroethene	ND< 5	ND	ND	ND< 8
cis 1,2-Dichloroethene	**82**	**11**	**1.2**	**300**
trans 1,2-Dichloroethene	ND< 5	ND	ND	**9.2**
1,2-Dichloropropane	ND< 5	**1.0**	ND	ND< 8
cis 1,3-Dichloropropene	ND< 5	ND	ND	ND< 8
trans 1,3-Dichloropropene	ND< 5	ND	ND	ND< 8
Methylene Chloride(f)	ND< 5	ND	ND	ND< 8
1,1,2,2-Tetrachloroethane	ND< 5	ND	ND	ND< 8
Tetrachloroethene	ND< 5	ND	ND	**38**
1,1,1-Trichloroethane	ND< 5	ND	ND	ND< 8
1,1,2-Trichloroethane	ND< 5	ND	ND	ND< 8
Trichloroethene	**7.8**	**3.2**	ND	**150**
Trichlorofluoromethane	ND< 5	ND	ND	ND< 8
Vinyl Chloride(g)	**25**	**0.92**	ND	**44**
% Recovery Surrogate	102	106	100	100
Comments	h			

* water and vapor samples are reported in ug/L, soil samples in ug/kg and all TCLP extracts in ug/L.

Reporting limit unless otherwise stated: water/TCLP extracts, ND< 0.5ug/L; soil, ND< 5ug/kg

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) tribromomethane; (c) tetrachloromethane; (d) (2-chloroethoxy) ethene; (e) trichloromethane; (f) dichloromethane; (g) chloroethene; (h) a lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~ 5 vol. % sediment.

DHS Certification No. 1644

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Hoexter Consulting Engineering Geology	Client Project ID: # E-10-1A-163; 1970 Seminary Ave., Oakland	Date Sampled: 03/25-03/26/96
		Date Received: 03/27/96
734 Torreya Court Palo Alto, CA 94303	Client Contact: David Hoexter	Date Extracted: 03/27/96
	Client P.O:	Date Analyzed: 03/27/96

Volatile Halocarbons

EPA method 601 or 8010

Lab ID	62766	62767		
Client ID	MW-5	MW-6		
Matrix	W	W		
Compound	Concentration*			
Bromodichloromethane	ND	ND		
Bromoform(b)	ND	ND		
Bromomethane	ND	ND		
Carbon Tetrachloride(c)	ND	ND		
Chlorobenzene	ND	ND		
Chloroethane	1.4	ND		
2-Chloroethyl Vinyl Ether(d)	ND	ND		
Chloroform (e)	ND	ND		
Chloromethane	ND	ND		
Dibromochloromethane	ND	ND		
1,2-Dichlorobenzene	ND	ND		
1,3-Dichlorobenzene	ND	ND		
1,4-Dichlorobenzene	ND	ND		
Dichlorodifluoromethane	ND	ND		
1,1-Dichloroethane	ND	ND		
1,2-Dichloroethane	2.1	3.9		
1,1-Dichloroethene	ND	ND		
cis 1,2-Dichloroethene	6.2	15		
trans 1,2-Dichloroethene	ND	ND		
1,2-Dichloropropane	ND	1.9		
cis 1,3-Dichloropropene	ND	ND		
trans 1,3-Dichloropropene	ND	ND		
Methylene Chloride(f)	ND	ND		
1,1,2,2-Tetrachloroethane	ND	ND		
Tetrachloroethene	ND	0.77		
1,1,1-Trichloroethane	ND	ND		
1,1,2-Trichloroethane	ND	ND		
Trichloroethene	ND	2.0		
Trichlorofluoromethane	ND	ND		
Vinyl Chloride(g)	10	0.55		
% Recovery Surrogate	106	113		
Comments				

* water and vapor samples are reported in ug/L, soil samples in ug/kg and all TCLP extracts in ug/L.

Reporting limit unless otherwise stated: water/TCLP extracts, ND< 0.5ug/L; soil, ND< 5ug/kg

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) tribromomethane; (c) tetrachloromethane; (d) (2-chloroethoxy) ethene; (e) trichloromethane; (f) dichloromethane; (g) chloroethene; (h) a lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~ 5 vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

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Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 03/27/96 Matrix: Water

Analyte	Concentration (ug/L) Sample (#62732)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.0	101.6	106.1	100.0	101.6	106.1	4.3
Benzene	0.0	10.8	11.0	10.0	108.0	110.0	1.8
Toluene	0.0	10.8	10.9	10.0	108.0	109.0	0.9
Ethyl Benzene	0.0	11.1	11.4	10.0	111.0	114.0	2.7
Xylenes	0.0	32.8	33.5	30.0	109.3	111.7	2.1
TPH (diesel)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TRPH (oil & grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
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QC REPORT FOR HYDROCARBON ANALYSES

Date: 03/28/96-03/29/96 Matrix: Water

Analyte	Concentration (ug/L) Sample (#62791)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.0	102.0	100.5	100.0	102.0	100.5	1.4
Benzene	0.0	9.9	9.8	10.0	99.0	98.0	1.0
Toluene	0.0	10.0	9.9	10.0	100.0	99.0	1.0
Ethyl Benzene	0.0	9.9	9.8	10.0	99.0	98.0	1.0
Xylenes	0.0	29.2	28.7	30.0	97.3	95.7	1.7
TPH (diesel)	0	146	147	150	97	98	0.6
TRPH (oil & grease)	0	25200	24000	23700	106	101	4.9

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR EPA 8010/8020/EDB

Date: 03/27/96 Matrix: Water

Analyte	Concentration (ug/L) Sample (#62078)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
1,1-DCE	0.0	10.3	9.9	10.0	103	99	4.0
Trichloroethene	0.0	9.3	8.8	10.0	93	88	5.5
EDB	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chlorobenzene	0.0	9.8	9.4	10.0	98	94	4.2
Benzene	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Toluene	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chlorobz (PID)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100