ALLCAL PROPERTY SERVICES, INC.

ENVIRONMENTAL INVESTIGATIONS

GROUNDWATER MONITORING WELL INSTALLATION WORK PLAN

PALACE GARAGE
14336 WASHINGTON AVENUE
SAN LEANDRO, CA 94578

December 10, 1999

Prepared By:

ALLCAL Property Services, Inc.
27973 High Country Drive
Hayward, CA 94542

John V. Mrakovich, Ph.D., R.G.

REGISTERED GEOLOGIST
JOHN V. MRAKOVICH
4665
EXP. 4/2000
STATE OF CALIFORNIA

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APPENDICES

1.0 INTRODUCTION

Allcal Property Services, Inc. (ALLCAL) has been contracted by Messrs. Morris F. Donnelly and Jeffrey W. Kerry (Client) to write this work plan for installation of three groundwater monitoring wells at the former Palace Garage, located in Alameda County at 14336 Washington Avenue, San Leandro, California (Figure 1). This work plan was requested in an October 20, 1999, letter (Appendix A) from the Alameda County Health Care Services Agency (ACHCSA) and was written by John V. Mrakovich, a California registered geologist (Number 4665) for ALLCAL (see Statement of Qualifications; Appendix B).

The Palace Garage property is owned by the Client who used the facility for automotive repair and a towing service from April 1967 through January 1990. In late 1967, a 550-gallon, gasoline, underground storage tank (UST) was installed for fueling the tow trucks. After January 1990, the Client leased the property to another towing service for about a year. The tank was removed in February 1991, at which time gasoline contamination was detected in the soil and groundwater. In 1999, ALLCAL conducted three phases of soil and groundwater assessment using the Geoprobe system.

The site is currently used for automotive body repair and painting.

2.0 HYDROGEOLOGIC SETTING

The following discussion of regional hydrogeology is taken in part from *GEOHYDROLOGY AND GROUNDWATER-QUALITY OVERVIEW, EAST BAY PLAIN AREA, ALAMEDA COUNTY, CALIFORNIA*, 205 (j) Report, Kelvin Hickenbottom and Kenneth Muir, June 1988, and *HYDROGEOLOGY OF CENTRAL SAN LEANDRO*, Woodward-Clyde Consultants, December, 1993.

2.1 Regional Hydrogeology

The site is located in the East Bay Plain of the Coast Ranges physiographic province. The East Bay Plain is an area of flat alluvial lowlands and bay and tidal marshes lying between the bedrock hills of the Diablo Range to the east and San Francisco Bay to the west. Near the site area, the eastern boundary of the plain is located along the Hayward fault which is at the base of the Diablo Range escarpment, about a mile to the northeast.

The East Bay Plain and San Francisco Bay are the result of a structural downwarp that received sediments for much of Pleistocene time, a period that extends from about 2 million years ago until about 10,000 years ago. The degree of downwarping has varied considerably across the two areas. Consequently, some local areas have a thin sedimentary fill and others have relatively thick sedimentary fills. In San Leandro, significant downwarping has occurred and sedimentary fill may exceed about 1,000 feet in thickness in some areas.

Beneath the sediments are consolidated bedrock whose upper surface is the floor of the structural downwarp. The bedrock is Jurassic, Cretaceous, and Tertiary in age and consists of sandstone, conglomerate, shale, chert, and serpentine with some volcanic rocks. This bedrock also comprises the hills (East Bay Hills) east of the Hayward fault that are part of the Diablo Range.

Sedimentary fill in the San Leandro area was mostly derived from the East Bay Hills. Toward the bay, some fill consists of estuarine and marine deposits. Based on well driller's logs, the sedimentary fill has been divided into "older alluvium" and "younger alluvium." "Younger alluvium" in this report will include the Merritt Sand, bay mud, interfluvial basin deposits, and fluvial deposits.

In general, the "older alluvium"is present beneath all of the East Bay Plain and extends under San Francisco Bay. The "older alluvium" is Pleistocene in age and consists of clay, silt, sand, and gravel that were deposited as alluvial fans extending from the East Bay Hills. This sediment is a major groundwater reservoir in the East Bay Plain and may locally reach a thickness of about 1,000 feet. Wells in the "older alluvium" produce sufficient amounts of groundwater for irrigation, industrial, and municipal use.

The "younger alluvium" overlies the "older alluvium" and, with the exception of the Merritt Sand, is still being deposited. These sediments are Pleistocene, Holocene, and Recent in age and have been deposited as beach and near-shore sediments, peat beds, bay and estuarine deposits, and fluvial and flood plain deposits. They may locally reach a thickness of about 150 feet. These sediments are a minor source of groundwater, mostly sufficient for domestic use (lawn and garden irrigation and other non-potable uses) because much of the permeable "younger alluvium" lies above the zone of saturation.

Groundwater flow in aquifers of both the "older and younger alluvium" is generally westerly toward San Francisco Bay; the gradient may vary locally.

2.2 Site Hydrogeology

The site is located at an elevation of about 37 feet above mean sea level (MSL) in Township 3 South, Range 3 West, Section 1 of the San Leandro, California 7.5- Minute Series, Topographic Quadrangle Map (Figure 1). Surface sediments are "younger alluvium" and Holocene in age. Topographic gradient in the vicinity of the site slopes southwesterly at a gradient of about .0036 feet per foot. San Leandro Creek is about 8,500 feet north-northwest of the site and San Francisco Bay, the nearest topographically down-gradient surface water, is about 13,000 feet southwest of the site. No other significant bodies of surface water are nearby.

Based on 15 shallow soil borings conducted by ALLCAL, the site is underlain by a clay to a depth of 14 to 16 feet. Beneath the clay, a one- to two-foot silt may be present followed by a gravelly sand or gravel to the total depth explored, about 20 feet. [redacted] sediment beneath the site. Groundwater is encountered [redacted]

Direction of groundwater flow has not been determined at the site.

After installation of deeper groundwater monitoring wells, a better understanding site hydrogeology should be achieved.

3.0 BACKGROUND

The following discussion of tank closure and soil remediation is summarized from information provided by the Client.

The following discussion of results of soil and groundwater assessments is summarized from the following ALLCAL reports:

- *REPORT OF SOIL AND GROUNDWATER ASSESSMENT AND PROPOSED WORK PLAN FOR FURTHER ASSESSMENT*, February 17, 1999.
- *REPORT OF PHASE II SOIL AND GROUNDWATER ASSESSMENT AND PROPOSED WORK PLAN FOR PHASE III FURTHER ASSESSMENT*, April 9, 1999.
- *REPORT OF PHASE III SOIL AND GROUNDWATER ASSESSMENT*, August 25, 1999.

3.1 Tank Closure and Soil Remediation

On February 11, 1991, a 550-gallon, gasoline, single-walled steel UST was removed by Verl's Construction, Inc. (Verl). The UST and its associated dispenser and piping were located at the northeast corner of the Palace Garage building (Figure 2). Examination of the UST, after its removal, revealed four small holes at the top of the southerly end of the tank. Two holes were pin-size and the other two were about .25 and .5 inches in diameter. The piping appeared in good condition. Soil in the tank excavation contained gasoline contamination based on visual observations, the presence of odor, and head-space analysis using a photo-ionization detector (PID). A discrete soil sample was collected for chemical analysis from native soil directly below the tank at a depth of about 10 feet below grade. Results of chemical analyses detected total petroleum hydrocarbons as gasoline (TPHG) at a concentration of 19 parts per million (ppm). Benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected at concentrations of .21 ppm, .41 ppm, .043 ppm, and .14 ppm, respectively. Organic lead was detected at a concentration of 7 ppm.

On the day of the UST removal, additional soil excavation (over-excavation) was conducted to remove contaminated soil. The Client reports that additional soil was removed to the depth that the on-site backhoe could reach, about 18 to 20 feet. A March 7, 1991, UST closure report prepared by Century West Engineering Corporation (Century West) included PID head-space measurements, from 5 to 12.5 feet deep, that were recorded during over-excavation activities. The head-space measurements showed increasing field vapors, from 170 ppm at 5 feet below grade to 880 ppm at 12.5 feet below grade. A February 25, 1991, letter from Verl indicates that soil samples from the bottom of the final excavation had vapor concentrations "substantially" lower than those shallower in the excavation; however, there is no documentation of these lower concentrations. A composite soil sample was collected for chemical analysis from the stockpiled soil (resulting from tank removal and over-excavation activities) to assess disposal options. Results of chemical analyses detected concentrations of TPHG at 1,900 ppm. BTEX were detected at concentrations of 1.2 ppm, 14 ppm, 11 ppm, and 67 ppm, respectively. Organic lead was detected at a concentration of 9.9 ppm.

After conducting remedial over-excavation, the hole was lined with plastic and backfilled with pea gravel.

No groundwater was encountered during the tank removal or over-excavation activities.

The excavated soil was spread and aerated on site. After aeration, Century West sampled and characterized the soil for offsite disposal. Verl hauled and disposed of the soil to a landfill in Richmond, California.

3.2 Soil and Groundwater Assessments

The following is a summary of the results of three phases of soil and groundwater assessment conducted by ALLCAL. The reader is referred to TABLE 1 in Appendix C, which documents the analytical results for all soil and "grab" groundwater samples analyzed, and to Figures 3 and 4, which present graphical interpretations of the TPHG and benzene groundwater plumes.

3.2.1 Phase I Soil and Groundwater Assessment - 2/1/99

On February 1, 1999, ALLCAL supervised the drilling of four soil borings (SB-1 through SB-4; Figure 2) to assess gasoline contamination in the soil and groundwater in the area of the former UST. Chemical analytical results were evaluated with respect to the American Society of Testing and Materials' (ASTM) Standard for Risked Based Corrective Action (RBCA) ASTM E-1739-95. Analytical results suggested that soil contamination by benzene may pose a cancer risk as leachate in the area of the former dispenser (SB-1), and groundwater contamination by benzene may pose a cancer risk in terms of vapor intrusion into the onsite building, near SB-1 and into the neighboring building across the driveway, near SB-2 (Figures 3 and 4).

Based on the above results, ALLCAL conducted a Phase II soil and groundwater assessment.

3.2.3 Phase II Soil and Groundwater Assessment - 3/23/99

On March 23, 1999, ALLCAL supervised the drilling of three additional soil borings (SB-5, SB-6, and SB-7; Figure 2) to further assess gasoline contamination in the soil and groundwater in the area of the former UST. Field observations indicated that no contamination was present in the soil;

however, analytical results suggested that groundwater contamination by benzene may pose a cancer risk, in terms of vapor intrusion into buildings, in the area of borings SB-5 and SB-6 (Figures 3 and 4).

Based on the above results, ALLCAL conducted a Phase III soil and groundwater assessment which included both on-site and off-site borings.

3.2.4 Phase III Soil and Groundwater Assessment - 7/29/99

On July 29, 1999, ALLCAL supervised the drilling of eight additional soil borings (SB-8 through SB-15; Figure 2) to assess the limits of the gasoline contamination. These borings appear to have adequately assessed the aerial extent of the soil and groundwater contaminant plumes. The soil plume appears to be limited in aerial and vertical extent (the areas of SB-1 and SB-6) and of low concentrations. The groundwater plume appears to mostly underlie the driveway and adjacent northerly property and is elongated in the direction of the driveway (Figures 3 and 4).

Based on the above results, the ACHCSA has requested a work plan for installation of groundwater monitoring wells which will better characterize dissolved gasoline concentrations and establish groundwater gradient.

4.0 GROUNDWATER MONITORING WELL INSTALLATIONS

For installation of groundwater monitoring wells, ALLCAL proposes the following scope of work:

- Obtain a well installation permit from the Alameda County Public Works Agency (ACPWA) and an encroachment permit from the City of San Leandro (CSL).
- Mark the location of each well on the ground and notify Underground Service Alert (USA).
- Drill 3 soil borings for installing groundwater monitoring wells.
- Collect soil samples from each boring at approximately 5-foot depth intervals, changes in lithology, and occurrence of apparent soil contamination for construction of boring logs.
- Convert each boring into a 2-inch diameter-casing, polyvinyl chloride (PVC), groundwater monitoring well.
- Survey the elevation of top-of-casing (TOC) of each well relative to MSL.
- Develop, purge, and sample groundwater from each well.

- Analyze the groundwater samples and 1 trip blank sample for TPHG, BTEX, and MTBE.

- Prepare a report.

Details of the proposed scope of work are presented below.

4.1 Pre-drilling Activities

Before commencing drilling activities, ALLCAL will: (1) obtain a well installation permit from the ACPWA and an encroachment permit from the CSL, (2) visit the site to mark the proposed groundwater monitoring well locations, (3) contact USA, and (4) notify the ACHCSA.

4.2 Rationale for Well Locations

Proposed well locations (Figures 3 and 4) are based on the interpreted horizontal extent of the TPHG and benzene plumes. Well MW-1 is proposed to be located onsite between borings SB-5 and SB-6 which appears to be the area of highest dissolved TPHG concentration. A well in this area will monitor for changes in the heart of the dissolved plume. Well MW-2 is proposed to be located onsite within the fringe of the apparent down-gradient edge of the dissolved plume. A well in this area will aid in evaluating the stability of the plume. Well MW-3 is proposed to be located offsite in the northerly sidewalk area of Washington Avenue, and northwesterly of well MW-2. A well in this area will aid in evaluating the stability of the plume and provide a triangulation point for measuring groundwater gradient.

4.3 Soil Boring and Sampling Procedures

The exploratory boring for each monitoring well will be drilled by a State of California licensed water well driller (C-57 Water Well Driller contractor's license) using 7.5-inch diameter, hollow-stem, auger drilling equipment. The augers will be steam-cleaned before drilling each boring to minimize the potential of cross-contamination between borings or introducing offsite contamination to the initial boring. Representative soil samples will be collected at approximately 5-foot depth intervals below the ground surface, at changes in lithology, and the occurrence of apparent hydrocarbon contamination by advancing a Standard Penetration sampler into the undisturbed soil beyond the tip of the auger. The sampling equipment will be cleaned before each sampling event by washing with a non-phosphate solution and rinsing in tap water.

Drill cuttings will be stored on site, contained in 55-gallon steel drums. The stored cuttings will be labeled to show contents, date stored, suspected contaminant, date of removal, company name, contact person, and telephone number. Disposal of the cuttings is the Client's responsibility. ALLCAL can provide recommendations and, upon the Client's request, assist in disposal of the cuttings in an appropriate manner as an additional work item.

Detailed boring logs will be prepared from auger return material and the Standard Penetration sampler. The soil will be logged according to the Unified Soil Classification System by a California Registered Geologist.

Attached Appendices D and E document ALLCAL's protocols relative to hollow-stem auger drilling and soil sampling procedures, and waste handling and decontamination procedures, respectively.

Due to adequate characterization of the vadose zone contaminant plume, no soil samples are proposed to be collected for chemical analyses.

4.4 Proposed Well Installation Procedure

Based on an estimated depth to groundwater of 15 feet, the exploratory borings are proposed to be drilled to a depth of about 30 feet. Each boring will be converted into a groundwater monitoring well by installing 2-inch diameter, flush-threaded, schedule 40, PVC casing and 0.010-inch machine-slotted screen. The exact depth of each boring and screen length will be determined by the geologic profile, depth of groundwater, and whether the groundwater is confined or unconfined. If groundwater is unconfined, the screen is proposed to extend about 5 feet above and about 10 feet below the water table surface. The length of screen below the water table surface may be less than 10 feet if an aquiclude/aquitard is encountered. If groundwater is confined, the screen length will extend from the upper contact of the aquifer to a maximum depth of 15 feet. If the aquifer is less than 15 feet thick, the screen length will equal the thickness of the aquifer. A sand pack of Number 2/12 filter sand will be placed in the annular space from the bottom of the boring to a maximum of 2 feet above the top of the screened interval. Approximately one foot of bentonite will be placed above the sand pack followed by a neat cement slurry seal. A traffic rated, bolt-locked, vault box will be set in concrete to protect the well. A water tight locking well cap with lock will be installed on each well casing.

A California licensed professional engineer or land surveyor will survey the elevation of each well's TOC relative to MSL.

Appendix F documents ALLCAL's protocol relative to groundwater monitoring well construction procedures.

4.5 Proposed Well Development Procedure

The monitoring wells will be developed a minimum of 48 hours after well construction is completed. Before development, depth-to-water will be measured from the TOC to the nearest foot using an electronic water level meter. Each well will be checked for floating product using a dedicated polyethylene bailer. If floating product is present, the thickness of product in the bailer will be measured and recorded to the nearest .05-inch, and ALLCAL may recommend that removal of floating product should commence as soon as possible.

Each well will be developed by using a development pump and/or by bailing with a PVC bailer until the well is free of sand, silt, and turbidity or no further improvement can be achieved.

Development water will be stored onsite in 55-gallon steel drums labeled to show contents, date filled, contaminant, company name, contact person, and telephone number. Disposal of the drummed water is the Client's responsibility. After the water is characterized by chemical analysis, ALLCAL can provide recommendations and, upon the Client's request, assist in disposal of the fluids in an appropriate manner as an additional work item.

Appendix G documents ALLCAL's protocol relative to groundwater monitoring well development procedures.

4.6 Proposed Groundwater Sampling Procedure

After a minimum of 48 hours after well development, depth to stabilized water will be measured in each well and recorded as discussed above under **4.5 Proposed Well Development Procedure** and the well will be sampled.

Prior to sampling, each well will be purged a minimum of 3 wetted well volumes with a purge pump or dedicated polyethylene bailer. If a purge pump is used, the pump will be decontaminated in a non-phosphate type solution and rinsed in tap water between purging of wells. If dedicated bailers are used for purging, no decontamination will be necessary. Temperature, pH, and electrical conductivity will be monitored and purging will continue until they are stabilized. After purging is completed, water samples will be collected in dedicated polyethylene bailers and decanted into laboratory provided, sterilized glass vials having Teflon-lined screw caps. The vials will be immediately sealed and labeled to include: date, time, sample location, project number, and sampler name. The samples will be immediately stored in an iced-cooler for transport to a Department of Health Services (DHS) certified laboratory accompanied by chain-of-custody documentation.

Appendix H documents ALLCAL's protocol relative to groundwater monitoring well sampling procedures. Appendices I and J document ALLCAL's protocols relative to sample handling procedures and quality assurance and quality control procedures, respectively.

Purge water will be stored on site in labeled 55-gallon drums. After the drummed water is characterized by chemical analysis, ALLCAL can provide recommendations and, upon request, assist the Client in disposal of the fluids in an appropriate manner as an additional work item.

4.7 Proposed Chemical Analyses for Groundwater

The water samples and a trip blank sample are proposed to be analyzed for TPHG, BTEX, and MTBE by DHS Method 8020.

4.8 Groundwater Gradient Evaluation

The groundwater gradient will be evaluated by triangulation. The stabilized depth-to-water in the wells, when subtracted from their respective TOC's, will provide the groundwater elevations on the date measured. From this information, the groundwater gradient and flow direction will be calculated.

4.9 Report

The information collected, analytical results, and ALLCAL's conclusions and recommendations will be summarized in a report. The report will describe the work performed and include: copies of all required permits, a detailed site plan showing location of the installed monitoring wells, graphic boring logs, graphic monitoring well construction details, well development records, well purging and sampling records, a groundwater gradient map, and copies of certified analytical reports and chains-of-custody.

5.0 SITE SAFETY PLAN

A Site Safety Plan for conducting work under this work plan is included in Appendix K.

6.0 TIME SCHEDULE

The projected time schedule for implementation of the activities described in this work plan is presented below. The schedule reflects a relatively problem-free program. However, delays in the work plan review, permitting, or laboratory analyses could lengthen the project schedule. Access difficulties, adverse weather, and regulator review could also delay the proposed time schedule. ALLCAL will make every effort to adhere to the project schedule.

Week 1: Work plan submitted for Regulator approval.

Week 2: Regulator approval received. ALLCAL applies for drilling permit, subcontracts driller, marks boring locations on the ground, and notifies USA.

Week 3: ALLCAL installs 3 groundwater monitoring wells.

Week 4: ALLCAL develops and samples 3 groundwater monitoring wells and submits groundwater samples for chemical analyses.

Week 5: ALLCAL receives water chemical analyses, interprets data, and writes report.

Week 6: ALLCAL submits report to Client.

Legend

U.S.G.S. 7.5 Minute Series Topographic Map, San Leandro, California, 1959, Photorevised 1980

N

0 2000

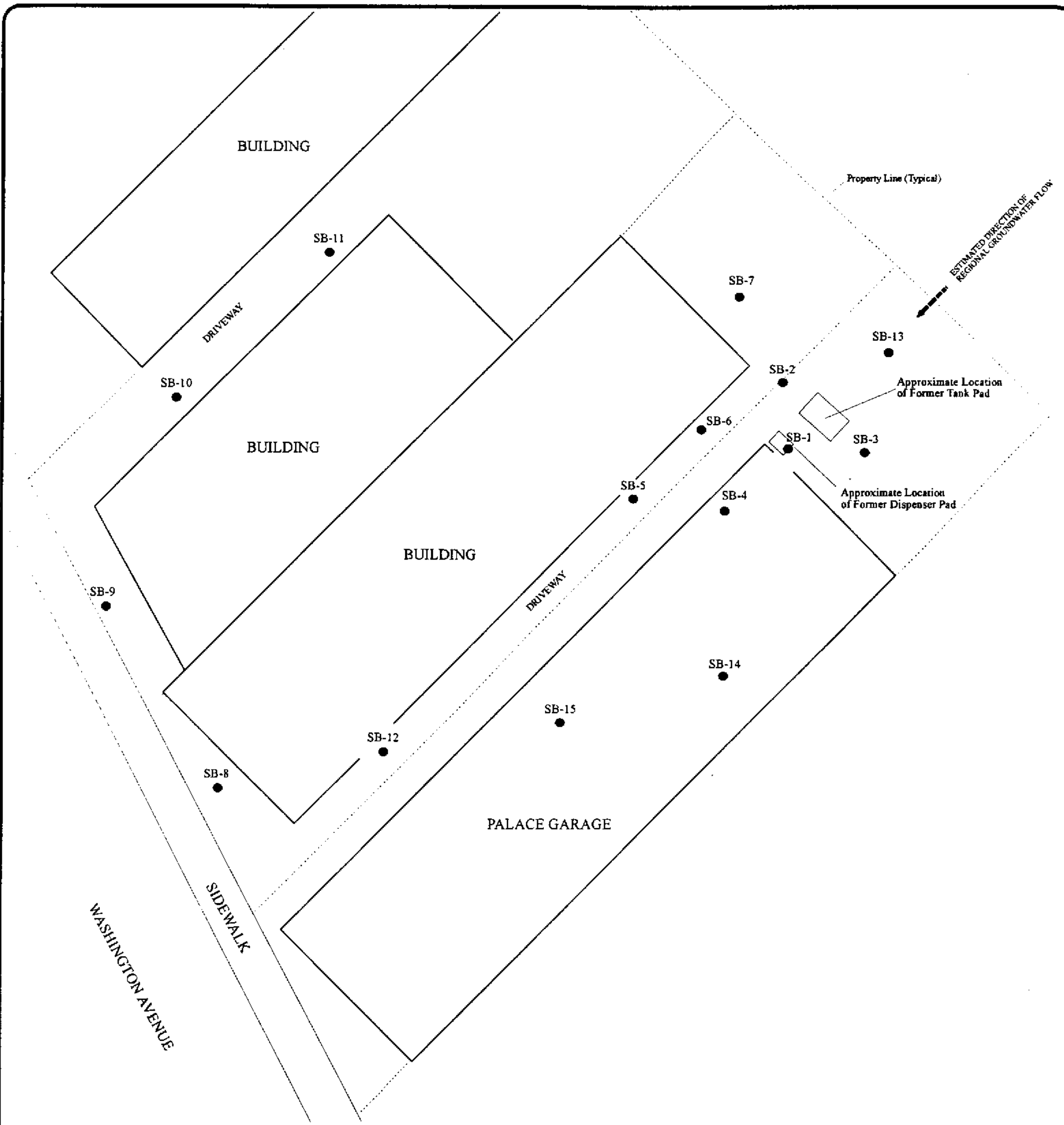
Approximate Scale (ft)

ALLCAL PROPERTY SERVICES

FIGURE 1

SITE LOCATION MAP-PALACE GARAGE TOPOGRAPHIC MAP

14336 WASHINGTON AVENUE
SAN LEANDRO, CA 94577



Legend

SB-1
● Name and Location of Soil Boring

0 30
Approximate Scale (ft)

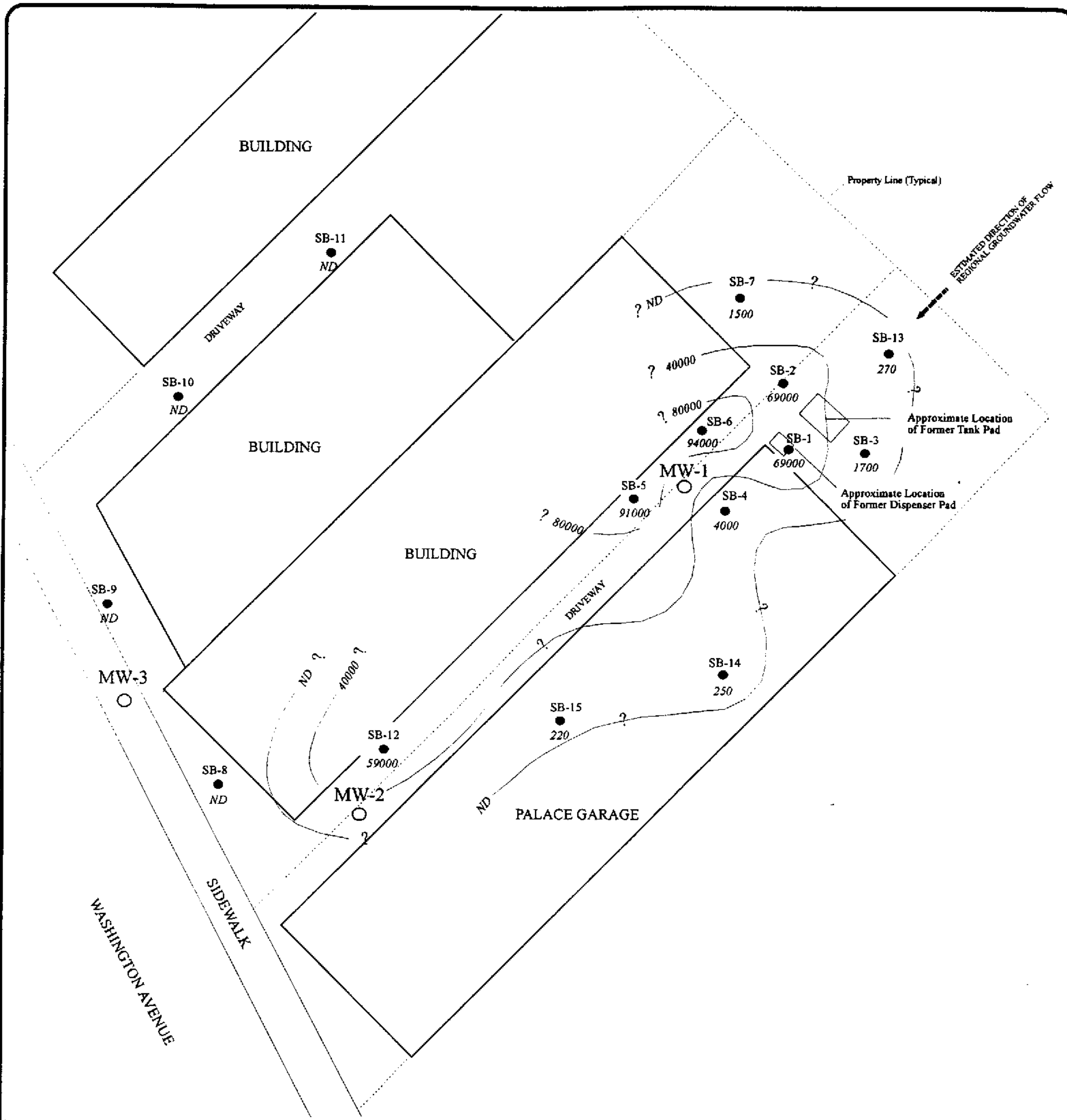
N

ALLCAL PROPERTY SERVICES

FIGURE 2

SITE PLAN - PALACE GARAGE

14336 WASHINGTON AVENUE
SAN LEANDRO, CA 94577



Legend

SB-1 ● 69000 Name and Location of Soil Boring with TPHG Concentration in ppb

MW-1 ○ Name and Location of Proposed Groundwater Monitoring Well

ND = Nondetectable

40000 TPHG Isoconcentration Contour (ppb)

Contour Interval = 40000 ppb

0 — 30 Approximate Scale (ft)

N

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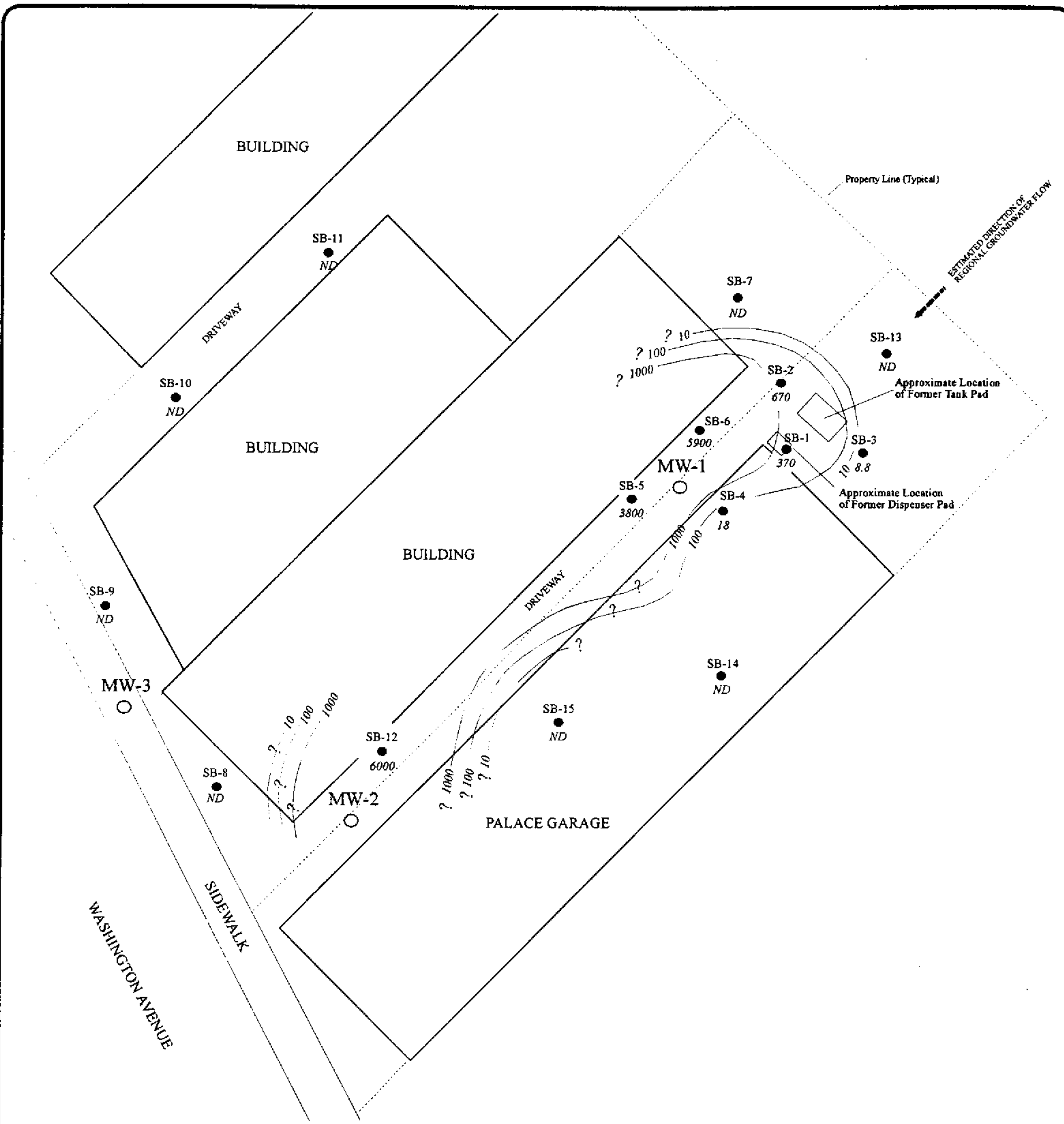
FIGURE 3
SITE PLAN - PALACE GARAGE
ESTIMATED TPHG ISOCONCENTRATION MAP
GROUNDWATER
14336 WASHINGTON AVENUE
SAN LEANDRO, CA 94577



Legend

SB-1 / 1500 — Name and Location of Soil Boring with Benzene Concentration in ppb

MW-1 — Name and Location of Proposed Groundwater Monitoring Well

ND = Nondetectable

1000 — Benzene Isoconcentration Contour (ppb)

Logarithmic Contour Interval Beginning with 10 ppb

0 — 30 Approximate Scale (ft)

N

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FIGURE 4

SITE PLAN - PALACE GARAGE

ESTIMATED BENZENE ISOCONCENTRATION MAP

GROUNDWATER

14336 WASHINGTON AVENUE

SAN LEANDRO, CA 94577

APPENDIX A

ALAMEDA COUNTY HEALTH CARE SERVICES LETTER

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
(510) 337-9335 (FAX)

October 20, 1999

STID 2355

Morris F. Donnelly
Jeffrey W. Kerry
Kerry & Associates
151 Callahan Avenue, Ste. 202
San Leandro, CA 94577

RE: Palace Garage, 14336 Washington Avenue, San Leandro

Dear Messrs. Donnelly and Kerry:

Thank you for our receipt of the August 25, 1999 All Cal Property Service, Inc. (All Cal) report for the third stage of the environmental investigation at your site. This report also presents recommendations for additional tasks associated with the investigation.

The recent investigation was performed using Geoprobe™ tools as in the two previous stages. Eight (8) such borings were advanced, with soil and groundwater samples collected from each. All Cal reports that up to 59,000 micrograms per liter (ug/l) total petroleum hydrocarbons as gasoline (TPH-G) and 6000 ug/l benzene, among other fuel constituents, were identified in groundwater sampled from boring SB-12, located a distance of ~120' from the former tank location. In addition, up to 460 parts per million (ppm) TPH-G and 6.3 ppm benzene, among other compounds sought, were identified in soil samples collected at a depth of 15 – 15.5' in boring SB-13.

Boring logs appear to demonstrate that groundwater is first encountered in coarser-grained sediments (i.e., sand, gravel) reached at depths of ~12 - 15' below grade. These coarser sediments are overlain by a thick sequence of fine-grained materials, predominantly clay.

This office concurs with All Cal's assessment that plume geometry has been defined to the extent necessary to contemplate monitoring well placement. All Cal's proposed well locations (Fig. 1, August 1999 report) appear reasonable. However, a more complete work plan is now necessary as the project moves into the next significant phase of the investigation.

Please have your consultant submit a well installation work plan to this office for review. Attached to this letter please find a copy of Appendix A, a broad outline to be followed by professional engineering or geologic consultants when preparing work plans of this sort.

This work plan is due within 60 days of the date of this letter.

Please call me at (510) 567-6783 should you have any questions.

Sincerely,

Scott O. Seery, CHMM
Hazardous Materials Specialist

Attachment

cc: Chuck Headlee, RWQCB **(w/o)**
Mike Bakaldin, San Leandro Hazardous Materials Program **(w/o)**
John Mrakovich, All Cal Property Services, Inc. **(w/attachment)**
27973 High Country Dr., Hayward, CA 94542-2530

APPENDIX B

STATEMENT OF QUALIFICATIONS

ALLCAL PROPERTY SERVICES, INC.

MISSION STATEMENT

Allcal Property Services, Inc. (ALLCAL) is dedicated to conducting environmental investigations and remediations that lead to fast, economical site closures. ALLCAL's mission is to provide professional services that comply with local and State environmental regulations and assist in satisfying the client's needs, i.e., due diligence for property transactions and regulatory closure of contaminated/remediated sites. ALLCAL strives to understand each client's needs and ensure that the client is full informed as to the scope of work, costs, and regulatory requirements that must be met to satisfy those needs. ALLCAL acts as an intermediary between client and regulatory agency.

ALLCAL's President has over twenty years of experience as a geologist and consultant managing and conducting environmental, engineering, and petroleum projects. A partial list of clients is attached as testimony to the numerous successful investigations and site closures conducted by ALLCAL's President.

EXPERIENCE OF ALLCAL'S PRINCIPAL CONSULTANT

JOHN V. MRAKOVICH, Ph.D., R. G., PRESIDENT

Environmental Geologist and Manager:

- ☐ Remediated thousands of cubic yards of contaminated soil at fuel leak sites in the San Francisco Bay Area.
- ☐ Designed and implemented soil and groundwater chemical plume definition projects at fuel leak sites and for electronic chip manufacturers.
- ☐ Interpreted and assessed the regional hydrogeology of an 8,500-acre Superfund site in Sacramento and characterized and managed the remediation of multiple groundwater chemical plumes.

- Established and staffed environmental departments and developed protocols for conducting environmental investigations and soil and groundwater remediations.

- Successfully closed many sites.

Engineering Geologist:

- Conducted geologic investigations for nuclear and conventional power plants in Michigan, Texas, and Louisiana.

Petroleum Geologist:

- Explored for oil and gas and mapped petroleum reserves in the Gulf Coast of the United States.

WORK HISTORY

1987-Present ENVIRONMENTAL:

Allcal Property Services, Inc.; Tank Protect Engineering of Northern California, Inc.; EMCON Associates; and Aerojet Gencorp. Supervised and wrote hundreds of proposals/contracts, reports, and workplans. Supervised and conducted: soil borings, groundwater monitoring well installations, soil and groundwater sampling, remediation of contaminated soil and groundwater, underground tank removals, characterization of soil and groundwater contaminant plumes, and hydrogeological modeling. Developed positive professional working relationships with local regulators.

1969-1987 PETROLEUM AND ENGINEERING:

Worked for oil and gas exploration and production companies in Texas and Louisiana and for Bechtel Incorporated in Michigan and Texas.

Explored and mapped petroleum accumulations onshore and offshore Gulf of Mexico by integrating geophysical well logs with seismic surveys. Analyzed economics of oil and gas accumulations.

Conducted geotechnical investigations and seismic studies of locations for proposed nuclear and conventional power plants.

ADDITIONAL CREDENTIALS

Registered California Geologist, Number 4665

Ph.D., Geology, Michigan State University, MI

B.S. and M.S., Geology, Kent State University, OH

Experienced in legal depositions and marketing.

Professional publications.

OSHA certified.

SELECTED PROJECTS

* Stanford Research Institute (SRI International)
* City of Oakland
* City of Berkeley
* City and County of San Francisco - S.F. International Airport
* St. Helena Cemetery Association
* Riverside Golf Course - Coyote, CA
* Canteen Corporation - San Leandro, CA
* Independent Construction Company - Oakland, CA
* Sabek Petroleum Marketing, Inc. - Various Sites in Bay Area
* Bridgehead, Inc. - Antioch, CA
* Escutia's Auto Repair - Fremont, CA
* Pacific Heat Treating Company - Sunnyvale, CA
* Fiesta Beverages - Oakland, CA
* Credit World Auto Sales - Oakland, CA
* Reliable Roofing Company - Oakland, CA
* Shahin's Peninsula Transmission - San Bruno, CA
* Begier Buick - San Leandro, CA
* Plants Unlimited, Inc. - San Leandro, CA
* Don's Tire Service, Inc. - Berkeley, CA

PARTIAL LIST OF CLIENT REFERENCES

DENNIS L. O'LAUGHLIN
O'LAUGHLIN REALTY & INVESTMENT
(510) 886-2929

ROBERT NEILSON
ECOLOGICAL MANAGEMENT
(916) 649-1664

SAN LORENZO UNIFIED SCHOOL DISTRICT
(510) 317-4837

DAVID McCOSKER
INDEPENDENT CONSTRUCTION COMPANY
(510) 686-1780

TED WALBEY
FIESTA BEVERAGE
(510) 832-6081

PHIL BEGIER
BEGIER BUICK
(510) 357-7611

MORRIS DONNELLY
PALACE GARAGE
(510) 357-9835

RAYMOND ROBIDEAUX
ROBIDEAUX EXPRESS TRUCKING
(510) 357-4650

ROBERT BATTINICH
SAINT FRANCIS ELECTRIC
(510) 670-8503

APPENDIX C

TABLE 1

SUMMARY OF SOIL AND GROUNDWATER CHEMICAL ANALYSES

Soil Boring	Matrix	Depth (ft)	TPHG	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
SB-1	soil[1]	10-10.5	440b	0.51	2.6	8.1	47	<0.5
SB-1	soil	15-15.5	4700a	12	21	88	480	<10
SB-2	soil	10-10.5	<1.0	0.016	0.012	<0.005	0.016	<0.05
SB-2	soil	15-15.5	790a	0.64	4.8	5.3	18	<0.5
SB-3	soil	10-10.5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
SB-3	soil	15-15.5	<1.0	<0.005	0.021	<0.005	0.010	<0.05
SB-4	soil	11.5-12	<1.0	<0.005	0.010	<0.005	0.007	<0.05
SB-4	soil	15-15.5	35bj	0.029	0.32	0.13	0.22	<0.05
SB-5	soil	11.5-12	2.8a	0.092	0.023	0.064	0.11	<0.05
SB-5	soil	15-15.5	1900a	4.3	14	35	170	<10
SB-6	soil	10-10.5	880a	3.5	16	18	89	<1
SB-6	soil	15-15.5	3200a	22	160	89	460	<10
SB-7	soil	10-10.5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
SB-7	soil	15-15.5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
SB-8	soil	14-14.5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
SB-9	soil	15-15.5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
SB-10	soil	14.5-15	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
SB-11	soil	15-15.5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
SB-12	soil	15-15.5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
SB-13	soil	7.5-8	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
SB-13	soil	15-15.5	460a	6.3	3.3	13	42	<0.50
SB-14	soil	15-15.5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05

SB-15	soil	15-15.5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
SB-1	water[2]	17-21	69000ah	370	6200	3500	15000	<200
SB-2	water	17-21	69000ah	670	760	2700	8600	<400
SB-3	water	17-21	1700a	8.8	28	52	160	<5.0
SB-4	water	17-21	4000a	18	170	120	480	<10.0
SB-5	water	16-20	91000ahi	3800	4300	4600	21000	<200
SB-6	water	16-20	94000ah	5900	10000	5000	25000	<900
SB-7	water	16-20	1500bji	<0.5	0.89	3.6	1.1	<10
SB-8	water	16-20	<50	<0.5	<0.5	<0.5	<0.5	<5.0
SB-9	water	16-20	<50	<0.5	<0.5	<0.5	<0.5	<5.0
SB-10	water	16-20	<50	<0.5	<0.5	<0.5	<0.5	<5.0
SB-11	water	16-20	<50	<0.5	<0.5	<0.5	<0.5	<5.0
SB-12	water	16-20	59000ah	6000	560	4500	10000	<200
SB-13	water	16-20	270bj	<0.5	0.53	5.4	15	<5.0
SB-14	water	16-20	250j	<0.5	8.0	<0.5	<0.5	<5.0
SB-15	water	16-20	220j	<0.5	6.5	<0.5	<0.5	<5.0

[1] Contaminant concentrations for soil reported in parts per million (ppm). [2] Contaminant concentrations for water reported in parts per billion (ppb). a) Unmodified or weakly modified gasoline is significant. b) Heavier gasoline range compounds are significant (aged gasoline?). h) Higher than water immiscible sheen is present. i) liquid sample contains greater than~5 vol.% sediment. j) No recognizable pattern.

APPENDIX D

HOLLOW-STEM AUGER DRILLING AND SOIL SAMPLING PROCEDURES

Undisturbed soil samples will be recovered from soil without introducing liquids into the borings. Soil samples as core or cutting will be taken continuously from ground surface to termination depth, or through the aquifer zone of interest for lithologic logging.

Borings will be drilled with a hollow-stem auger and sampled with a California or modified California-type split-spoon sampler. Soil samples will be of sufficient volume to perform the analyses which may be required, including replicate analyses.

Soil from all borings will be described in detail using the Unified Soil Classification System and will be logged by a geologist, civil engineer, or engineering geologist who is registered or certified by the State of California and is experienced in the use of the Unified Soil Classification System. All wet zones above the free water zone will be noted and logged.

Soil samples will be collected in decontaminated brass or stainless steel sampling tubes in the split-spoon. Sediment traps will be used when unconsolidated sand and gravel fall from the sampler during retrieval. The brass tubes will be cut apart using a clean knife. The ends of the tubes will be covered with a thin sheet of Teflon tape or aluminum foil beneath plastic end caps. The samples will be stored on ice at a temperature of 4 degrees Celsius. In the Alameda County Water District, the samples will be stored on dry ice.

Drill cuttings will be stored on site in 55-gallon drums or covered with plastic sheeting. Analytical results will be submitted immediately to the site owner for determination of appropriate disposal procedures. The soil borings not completed as wells will be backfilled with a cement grout.

APPENDIX E

WASTE HANDLING AND DECONTAMINATION PROCEDURES

Decontamination: Any drilling, sampling, or field equipment that comes into contact with soil or groundwater will be decontaminated prior to its use at the site and after each incident of contact with the soil or groundwater being investigated. Decontamination is essential to obtain samples that are representative of environmental conditions and to accurately characterize the extent of soil and groundwater contamination. Hollow-stem auger flights, the drill bit, and all other soil boring devices will be steam-cleaned between the drilling of each boring.

All sample equipment, including the split-spoon sampler and brass or stainless-steel tubes, will be cleaned by washing with trisodium phosphate or Alconox detergent, followed by rinsing with tap water. Where required by specific regulatory guidelines, a nonphosphate detergent will be used.

Waste Handling: Waste materials generated during site characterization activities will be handled and stored as hazardous waste and will be stored on site in appropriately labeled containers. Waste materials anticipated include: excavated soil, drill cuttings, development and purge water, water generated during aquifer testing, water generated during decontamination, and used personnel protection equipment such as gloves and Tyvek. The site owner will be responsible for providing the storage containers and will be responsible for the disposal of the waste materials. Drill cuttings from individual borings will be stored separately in drums or covered by plastic sheeting, and the appropriate disposal procedure will be determined by the site owner following receipt of the soil sample analytical results. Storage containers will be labeled to show material stored, known or suspected contaminant, date stored, expected removal date, company name, contact, and telephone number.

APPENDIX F

GROUNDWATER MONITORING WELL CONSTRUCTION PROCEDURES

Casing Diameter: The minimum diameter of well casings will be 2 inches (nominal).

Borehole Diameter: The diameter of the borehole will be a minimum of 4 inches and a maximum of 12 inches greater than the diameter of the well casing.

Shallow (Unconfined Zone) Wells: When groundwater is encountered or known to be within 45 feet of the ground surface, the borehole will be advanced through the aquifer to an underlying competent aquitard. The competency of the aquitard may be tested by sampling 5 feet into the underlying aquitard and backfilling the excess hole with either bentonite pellets or neat cement placed by tremie pipe method. An aquitard found to be less than 5 feet thick, may be assumed to represent a local lens. The screened interval will begin a minimum of 5 feet above the saturated zone and extend the full thickness of the aquifer or no more than 20 feet into the saturated zone, whichever is reached first. The well screen will not extend into the aquitard, nor will the screened interval exceed 25 feet in length.

Deep (Confined Zone) Wells: Any monitoring well to be screened below an upper aquifer will be installed as a double-cased well. A steel conductor casing will be placed through the upper water-bearing zone to prevent aquifer cross-contamination.

The conductor casing will be installed in the following manner: A large diameter borehole (typically 18 inches) will be drilled until it is determined that the first competent aquitard has been reached. A low carbon steel conductor casing will be placed in the borehole to the depth drilled. Centralizers will be used to center the casing in the borehole. The annular space between the conductor casing and the formation will be cement-grouted from bottom to top by tremie pipe method. The grout will be allowed to set for a minimum of 72 hours.

Drilling may continue inside the conductor casing, with a drill bit of smaller diameter than the conductor casing. If additional known aquifers are to be fully penetrated, the procedure can be repeated with successively smaller diameter conductor casings.

The bottom of the well screen in a confined aquifer will be determined by presence or lack of a competent (5 foot) aquitard as described above. The screened interval in a confined zone will extend across the entire saturated zone of the aquifer or up to a length of 20 feet, which ever is less. The screened zone and filter pack will not cross-connect to another aquifer.

Casing Materials: Well casing will be constructed of materials that have the least potential for affecting the quality of the water sample. The most suitable material for a particular installation will depend upon the parameters to be monitored. Acceptable materials include PVC, stainless steel, or low carbon steel.

Casing Joints: Joints will be connected by flush threaded couplers. Organic bonding compounds and solvents will not be used on joints.

Well Screen Slots: Well screen will be factory slotted. The size of the slots will be selected to allow sufficient groundwater flow to the well for sampling, minimize the passage of formation materials into the well, and ensure sufficient structural integrity to prevent the collapse of the intake structure.

Casing Bottom Plug: The bottom of the well casing will be permanently plugged, either by flush threaded screw-on or friction cap. Friction caps will be secured with stainless steel set screws. No organic solvents or cements will be applied.

Filter Pack Material: Filter envelope materials will be durable, water worn, and washed clean of silt, dirt, and foreign matter. Sand-size particles will be screened silica sand. Particles will be well rounded and graded to an appropriate size for retention of aquifer materials.

Bentonite Seal Material: Bentonite will be pure and free of additives that may effect groundwater quality. Bentonite will be hydrated with clean water.

Grout Seal Material: Cement grout will consist of a proper mixture if Type 1/11 Portland cement, hydrated with clean water. Up to 3% bentonite may be added to the mixture to control shrinkage.

Decontamination: All downhole tools, well casings, casing fittings, screens, and all other components that are installed in the well will be thoroughly cleaned immediately before starting each well installation. When available, each component will be cleaned with a high temperature, high pressure washer for a minimum of five minutes. When a washer is not available, components will be cleaned with water and detergent or tri-sodium phosphate, rinsed in clean water, than rinsed in distilled water.

Soil and water sampling equipment and material used to construct the wells will not donate to, capture, mask, nor alter the chemical composition of the soil and groundwater.

Drilling Methods: Acceptable drilling methods include solid and hollow-stem auger, percussion, direct circulation mud and air rotary, and reverse rotary. The best alternative is that which minimizes the introduction of foreign materials or fluids. If drilling fluid is employed, drilling fluid additives will be limited to inorganic and non-hazardous compounds. Compressed air introduced to the borehole will be adequately filtered to remove oil and particulates.

Casing Installation: The casing will be set under tension to ensure straightness. Centralizers will be used where necessary to prevent curvature or stress to the casing.

Sand Pack Installation: The sand pack will be installed so as to avoid bridging and the creation of void spaces. The tremie pipe method will be used where installation conditions or local regulations require. Drilling mud, when used, will be thinned prior to pack placement. The sand pack will cover the entire screened interval and rise a minimum of two feet above the highest perforation.

Bentonite Seal Placement: The bentonite seal will be placed by a method that prevents bridging. Bentonite pellets can be placed by free fall if proper sinking through annular water can be assured. Bentonite slurry will be placed by the tremie pipe method from the bottom upward. The bentonite seal should not be less than 1 foot in thickness above the sand pack.

Grout Seal Placement: The cement grout mixture will be hydrated with clean water and thoroughly mixed prior to placement. If substantial groundwater exists in the bore hole, the grout will be placed by tremie pipe method from the bottom upward. In a dry borehole, the grout may be surface poured. Grout will be placed in one continuous lift and will extend to the surface or to the well vault if the wellhead is completed below grade. A minimum of 5 feet of grout seal will be installed, unless impractical due to the willow nature of the well.

Surface Completion: The wellhead will be protected from fluid entry, accidental damage, unauthorized access, and vandalism. A watertight cap will be installed on the well casing. Access to the casing will be controlled by a keyed lock.

Wellheads completed below grade will be completed in a concrete and/or steel vault, installed to drain surface runoff away from the vault.

Well Identification: Each well will be identified by well number, owner, and type of installation. Construction data, including depth, hole and casing diameter, and screened interval will be noted.

APPENDIX G

GROUNDWATER MONITORING WELL DEVELOPMENT PROCEDURES

INTRODUCTION

Newly installed groundwater monitoring wells will be developed to restore natural hydraulic conductivity of the formation, remove sediments from well casing and filter pack, stabilize the filter pack and aquifer material, and promote turbidity-free groundwater samples.

Wells may be developed by bailing, mechanical pumping, air lift pumping, surging, swabbing, or an effective combination of methods. Wells will be developed until the water is free of sand, silt, and turbidity or no further improvement is achieved.

In some cases where low permeability materials are involved or the drilling mud used fails to respond to cleanup, initial development pumping may immediately dewater the well casing and thereby inhibit development. When this occurs, clean, potable grade water may be introduced into the well, followed by surging of the introduced waters with a surge block. This operation will be followed by pumping. The procedure may be repeated as required to establish full development.

METHODOLOGY

Seal Stabilization: Cement and bentonite annular seals will set and cure not less then 24 hours prior to well development.

Decontamination: All well development tools and equipment will be thoroughly cleaned immediately before starting each well installation. When available, each component will be cleaned with a high temperature, high pressure washer for a minimum of five minutes. When a washer is not available, components will be cleaned with clean water, then rinsed with distilled water.

Development equipment will not donate to, capture, mask, nor alter the chemical composition of the soils and groundwater.

Introduction of Water: Initial development of wells in low permeability materials may dewater the casing and filter pack. When this occurs, clean, potable water will be introduced into the well to enhance development.

Bailing: Development will begin by bailing to remove heavy sediments from the well casing. Care will be taken to not damage the well bottom cap during lowering of the bailer.

Surging: Care will be exercised when using a surge block to avoid damaging the well screen and casing. When surging wells screened in coarse (sand/gravelly) aquifers, the rate of surge block lifting will be slow and constant. When surging wells screened in fine (silty) aquifers, more vigorous lifting may be required. Between surging episodes, wells will be bailed to remove accumulated sediments.

Pumping: Development pumping rates will be less than the recharge rate of the well in order to avoid de-watering.

Discharged Water Containment and Disposal: All water and sediment generated by well development will be stored in 55-gallon steel drums. Development water will be temporarily contained on site, pending sampling and laboratory analysis. All hazardous development water will be transported off site by a licensed transporter to a hazardous waste disposal or treatment facility. No hazardous development water will be released to the environment.

APPENDIX H

GROUNDWATER SAMPLING PROCEDURES

Groundwater monitoring wells will not be sampled until at least 48 hours after well development. Groundwater samples will be obtained using either a bladder pump, a clear Teflon bailer, or a dedicated polyethylene bailer. Prior to sampling, sampling equipment will be thoroughly decontaminated to prevent introduction of contaminants into the well and to avoid cross-contamination. Monitoring wells will be sampled after three to five wetted casing volumes of groundwater have been evacuated and after the ALLCAL sampling team leader determines that water representative of the formation is being obtained. The well will be purged until conductivity has been stabilized (three consecutive conductivity reading within 15% of one another). If the well is emptied before four to ten well volumes are removed, the sample will be taken when the water level in the well recovers to 80% of its initial water level or better.

ALLCAL will also measure the thickness of any floating product in the monitoring wells using a probe or clear bailer. The floating product will be measured after well development but prior to the collection of groundwater samples. If floating product is present in the well, ALLCAL will recommend to the client that product removal be commenced immediately and reported to the appropriate regulatory agency.

Unless specifically waived or changed by the local, prevailing regulatory agency, water samples will be handled and preserved according to the latest EPA methods as described in the Federal Register (Volume 44, No.233, Page 69544, Table II) for the type of analysis to be performed.

MEASUREMENTS

Purged Water Parameter: During purging, discharged water will be measured for the following parameters.

Parameter	Units of Measurement
pH	Units
Electrical Conductivity	Umhos
Temperature	Degrees F or C
Depth to Water	Feet/Tenths
Volume of Water Discharged	Gallons

Documentation: All parameter measurements will be documented in writing on ALLCAL development logs.

APPENDIX I

SAMPLE HANDLING PROCEDURES

Soil and groundwater samples will be packaged carefully to avoid breakage or contamination and will be delivered to the laboratory in an iced-cooler. Sample bottle/sleeve lids will not be mixed. All sample lids will stay with the original containers.

Samples will be stored in iced-coolers to maintain custody, control temperature, and prevent breakage during transportation to the laboratory. Ice, blue ice, or dry ice (dry ice will be used for preserving soil samples collected for the Alameda County Water District) will be used to cool samples during transport to the laboratory. Water samples will be cooled with crushed ice. In the Alameda County Water District, water samples will be buried in the crushed ice with a thermometer, and the laboratory will be requested to record thermometer temperature at the time of receipt.

Each sample will be identified by affixing a label on the container(s). This label will contain the site identification, sample identification number, date and time of sample collection, and the collector's initials.

Soil samples collected in brass or stainless-steel tubes will be preserved by covering the ends with Teflon tape and capping with plastic end-caps. The tubes will be labeled, sealed in quart-size bags, and placed in an iced-cooler for transport to the laboratory.

All groundwater sample containers will be pre-cleaned and will be obtained from a State Department of Health Services certified analytical laboratory.

A chain-of-custody form will be completed for all samples and accompany the sample cooler to the laboratory. All sample transfers will be documented in the chain-of-custody. All field personnel are personally responsible for sample collection and the care and custody of collected samples until the samples are transferred or properly dispatched.

The custody record will be completed by the field technician or professional who has been designated as being responsible for sample shipment to the appropriate laboratory. The custody record will include the following information: site identification, name of person collecting the sample(s), date and time sample(s) were collected, type of sampling conducted (composite/grab), location of sampling station, number and type of containers used, and signature of the person relinquishing samples to another person with the date and time of transfer noted.

APPENDIX J

QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

The overall objectives of the field sampling program include generation of reliable data that will support development of a remedial action plan. Sample quality will be checked by the use of proper sampling, handling, and testing methods. Additional sample quality control methods may include the use of background samples, equipment rinsate samples, and trip and field blanks. Chain-of-custody forms, use of a qualified laboratory, acceptable detection limits, and proper sample preservation and holding times also provide assurance of accurate analytical data.

A quality assurance and quality control (QA/QC) program may be conducted in the field to ensure that all samples collected and field measurements taken are representative of actual field and environmental conditions and that data obtained are accurate and reproducible. These activities and laboratory QA/QC procedures are described below.

Field Samples: Additional samples may be taken in the field to evaluate both sampling and analytical methods. Three basic categories of QA/QC samples that may be collected are trip blanks, field blanks, and duplicate samples.

Trip blanks are a check for cross-contamination during sample collection, shipment, and laboratory analysis. They are water samples that remain with the collected samples during transportation and are analyzed along with the field samples to check for residual contamination. Analytically confirmed organic-free water will be used for organic parameters and deionized water for metal parameters. Blanks will be prepared by the laboratory supplying the sample containers. The blanks will be numbered, packaged, and sealed in the same manner as the other samples. One trip blank will be used for each sample set of less than 20 samples. At least 5% blanks will be used for sets greater than 20 samples. The trip blank is not to be opened by either the sample collectors or the handlers.

The field blank is a water sample that is taken into the field and is opened and exposed at the sampling point to detect contamination from air exposure. The water sample is poured into appropriate containers to simulate actual sampling conditions. Contamination due to air exposure can vary considerably from site to site.

The laboratory will not be informed about the presence of trip and field blanks, and false identifying numbers will be put on the labels.

Duplicate samples are identical sample pairs (collected in the same place and at the same time), placed in identical containers. For soils, adjacent sample liners will be analyzed. For the purpose of data reporting, one is arbitrarily designated the sample, and the other is designated as a duplicate sample. Both sets of results are reported to give an indication of the precision of sampling and analytical methods.

The laboratory's precision will be assessed without the laboratory's knowledge by labeling one of the duplicates with false identifying information. Data quality will be evaluated on the basis of the duplicate results.

Laboratory QA/QC: Execution of a strict QA/QC program is an essential ingredient in high-quality analytical results. By using accredited laboratory techniques and analytical procedures, estimates of the experimental values can be very close to the actual value of the environmental sample. The experimental value is monitored for its precision and accuracy by performing QC tests designed to measure the amount of random and systematic errors and to signal when correction of these errors is needed.

The QA/QC program describes methods for performing QC tests. These methods involve analyzing method blanks, calibration standards, check standards (both independent and the United States Environmental Protection Agency-certified standards), duplicates, replicates, and sample spikes. Internal QC also requires adherence to written methods, procedural documentation, and the observance of good laboratory practices.

APPENDIX K

SITE HEALTH AND SAFETY PLAN

Site: **Palace Garage**
14336 Washington Avenue
San Leandro, CA 94578

Plan Prepared by: **John Mrakovich** Date: **12/10/99**

1.0 KEY PERSONNEL AND RESPONSIBILITIES

Project Manager:	**John Mrakovich**	**(510) 582-2320**
Site Safety Manager:	**John Mrakovich**	
Alternate Site Safety Manager:	**N/A**	
Field Team Members:	**N/A**	

Agency Reps: **Alameda County Health Care Services Agency** **(510) 567-6783**

2.0 JOB HAZARD ANALYSIS

2.1 OVERALL HAZARD EVALUATION

Hazard Level: High ( ) Moderate ( ) Low (X) Unknown ( )
Hazard Type: Liquid (X) Solid (X) Sludge ( ) Vapor/Gas (X)

Known or suspected hazardous materials present on site:

Gasoline Chemicals.

Characteristics of hazardous materials included above (complete for each chemical present):

Corrosive ( ) Ignitable ( ) Toxic (X) Reactive ( )
Volatile (X) Radioactive ( ) Biological Agent ( )

Exposure Routes: Inhalation (X) Ingestion (X) Contact (X)

2.2 JOB-SPECIFIC HAZARDS

For each labor category specify the possible hazards based on information available (eg., Task-driller, Hazards-trauma from drill rig accidents, etc.). For each hazard, indicate steps to be taken to minimize the hazard.

Driller/Helper/Geologist-Trauma from drilling rig accidents- wear hard hat, gloves, steel-toed boots.

The following additional hazards are expected on site (i.e., snake infested area, extreme heat, etc.):

Temporary open boreholes.

Measures to minimize the effects of the additional hazards are:

Protect with barricades, caution tape, or traffic cones when unattended.

3.0 MONITORING PLAN

3.1 (a) Air Monitoring Plan

Action levels for implementation of air monitoring. Action levels should be based on published data available on contaminants of concern. Action levels should be set by persons experienced in industrial hygiene.

Level (i.e., .5 ppm)	Action Taken (i.e., commence perimeter monitoring)
5 ppm	**Stop work and monitor until air level drops below 5 ppm.**

(b) Air Monitoring Equipment

Outline the specific equipment to be used, calibration method, frequency of monitoring, locations to be monitored, and analysis of samples (if applicable).

If air monitoring is not to be implemented for this site, explain why:

Air monitoring will not be conducted because previous work has not detected any hazardous vapors.

3.2 Personnel Monitoring (Include hierarchy of responsibilities decision making on the site)

N/A

4.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Equipment used by employees for the site tasks and operations being conducted. Be Specific (eg., hard hat, impact resistance goggles, other protective gloves, etc.).

Hard hat, protective gloves (when necessary), steel-toed boots.

5.0 SITE CONTROL AND SECURITY MEASURES

The following general work zone security guidelines should be implemented:

- Work zone shall be delineated with traffic cones.
- Boreholes shall be delineated with traffic cones when drilling and sampling activities are not actually taking place.
- Visitors will not be allowed to enter the work zone unless they have attended a project safety briefing.

6.0 DECONTAMINATION PROCEDURE

List the procedures and specific steps to be taken to decontaminate equipment and PPE.

Wash equipment with a trisodium phosphate or Alconox solution and rinse with clean potable water.

7.0 TRAINING REQUIREMENTS

Prior to mobilization at the job site, employees will attend a safety briefing. The briefing will include the nature of the wastes and the site, donning personal protection equipment, decontamination procedures and emergency procedures.

8.0 MEDICAL SURVEILLANCE REQUIREMENTS

If any task requires a very high personnel protection level (OSHA Level A or B), personnel shall provide assurances that they have received a physical examination and they are fit to do the task. Also personnel will be instructed to look for any symptom of heat stress, heat stroke, heat exhaustion or any other unusual symptom. If there is any report of that kind it will be immediately followed through, and appropriate action will be taken.

9.0 STANDARD OPERATION PROCEDURES

Allcal Property Services, Inc. (ALLCAL) is responsible for the safety of its employees on site. Each contractor shall provide all the equipment necessary to meet safe operation practices and procedures for their personnel on site and be responsible for their safety.

A "Three Warning" system is utilized to enforce compliance with Health and Safety procedures practices which will be implemented at the site for worker safety:

- Eating, drinking, chewing gum or tobacco, and smoking will be allowed only in designated areas.
- Wash facilities will be utilized by workers in the work areas before eating, drinking, or use of the toilet facilities.
- Containers will be labeled identifying them as waste, debris, or contaminated clothing.
- All drilling work will comply with regulatory agency requirements.
- All site personnel will be required to wear hard hats and advised to take adequate measures for self protection.
- Any other action which is determined to be unsafe by the site safety officer will be taken.

10.0 CONFINED SPACE ENTRY PROCEDURES

No one is allowed to enter any confined space operation without proper safety measures. Specifically in case of an excavated tank pit no one should enter at any time.

11.0 EMERGENCY RESPONSE PLAN

Relevant phone numbers:

Person	Title/Phone No.
Morris Donnelly	Owner (510) 357-9835
John Mrakovich	Project Manager (510) 581-2320
Fire	911
Police	911
Ambulance	911

HEALTH AND SAFETY COMPLIANCE STATEMENT

I have received and read a copy of the project Health and Safety Plan.

I understand that I am required to have read the aforementioned document and have received proper training under the Occupational Safety and Health Act (29 CFR, Part 1910.120) prior to conducting site activities at the site.

______________________ Signature

______________________ Date

______________________ Signature

______________________ Date

Nearby Hospital:

San Leandro Hospital
13855 East 14th Street
San Leandro, CA 94578
Emergency (510) 667-4545