ENVIRONMENTAL BIO-SYSTEMS, INC.
Innovative Solutions for a Better Environment

March 14, 1991

Alameda County Department of Environmental Health
Hazardous Materials Unit
80 Swan Way, Room 200
Oakland, CA 94621

Attention: Ms. Katherine Chesick

Ron Goode Toyota

Regarding: Exploration and remediation of hydrocarbon impacted soil at the Estate of Bertha S. Keizer located at 1825 Park Street, Alameda, California.

As was discussed in our telephone conversation on March 12, 1991, the enclosed work plan describes exploratory and remedial activities to be performed at the Bertha S. Keizer Estate in Alameda. The Estate is interested in conducting required clean up actions expeditiously to avoid continued impact (if any) to the soil and groundwater of the site. The Estate (our client on this project) has knowledge of the Federal Underground Storage Tank regulations (40 CFR, section 280.66D), which states that they are not required to have the approval of the local implementing agency prior to commencement of work, as long as the work is done in accordance with LUFT guidelines. The Estate would like to commence with work immediately and have informed us as such. In response to the Estates interests, we are scheduled to begin work at 8:00 a.m. on March 21, 1991.

As stated in the work plan, all work will be conducted in accordance with LUFT guidelines. A copy of the site safety plan will be delivered to you at least 48 hours prior to commencement of exploratory activities.

To avoid any misunderstanding on our behalf, please contact me if you have any comments regarding the proposed scope of work or any other aspect of this project. We hope you will be present during the performance of this work.

Sincerely,
ENVIRONMENTAL BIO-SYSTEMS, INC.

Brenda D. McNabb

BDM/so
Attachments

3OO28 Industrial Pkwy., S.W., Suite C Hayward, CA 94544 (415) 429-9988 Fax (415) 429-9189

WORK PLAN FOR SOIL AND GROUNDWATER EXPLORATION

at

1825 PARK STREET
ALAMEDA, CALIFORNIA

Project #003-WP91016

Prepared by

ENVIRONMENTAL BIO-SYSTEMS, INC.

For

ZACCOR CORPORATION
791 HAMILTON AVENUE
MENLO PARK, CALIFORNIA

Brenda D. McNabb
Project Manager

Christopher M. French
R.G. #4465

REGISTERED GEOLOGIST
CHRISTOPHER M. FRENCH
Exp 6/30/92
No. 4465
STATE OF CALIFORNIA

March 11, 1991

WORK PLAN FOR SOIL AND GROUNDWATER EXPLORATION

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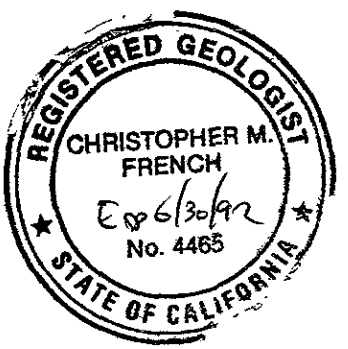

March 11, 1991

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1.0) INTRODUCTION

This work plan presents the scope of services to be performed in exploring the vertical and lateral extent of petroleum hydrocarbons in soil and groundwater surrounding two former underground storage tanks (UST's) located at 1825 Park Street in Alameda, California (the site). This plan has been prepared in response to the detection of hydrocarbons in soil surrounding the two UST's, which were removed from the site on December 27, 1990. A description of the site and a brief discussion of the results of the previous exploration performed by Environmental Bio-Systems, Inc. (EBS) has been included.

2.0) SITE DESCRIPTION

A Site Location Map and a Site Diagram have been included in this report as Figures 1 and 2. The site is located on the island of Alameda approximately one mile north of the San Francisco Bay. The site is currently occupied by a single building which is used by Ron Goode Toyota for automobile repair and sales. The remaining portions of the site are paved and are used for parking and automobile display. Two UST's were formerly located near the south end of the site.

3.0) PREVIOUS EXPLORATION

The site is part of the estate of the deceased Bertha S. Kaiser, whose executor, Mr. William E. Burr, retained Zaccor Corporation to remove one 300 gallon fuel oil UST and one 500 gallon gasoline UST from the site on December 27, 1991. Soil samples collected from beneath the fuel oil tank were found to contain both total oil and grease (TOG) and total petroleum hydrocarbons (TPH) as gasoline in concentrations which exceeded 1,000 parts per million (ppm). Two soil samples collected from the walls of the fuel oil pit showed concentrations of TOG above 300 ppm. Detectable concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX) were found in a sample collected from beneath the gasoline tank. The EBS sampling report, generated after removal of the USTs, has been included in this work plan as Appendix A.

4.0) PURPOSE AND SCOPE OF WORK

This section describes the recommended scope of services which have been formulated based upon data generated from the results of previous sampling performed on December 27, 1991. The proposed phases of work are as follows:

1) Phase I - Soil Exploration:
   Advancement of exploratory soil borings (EB's) outside the two tank pit areas for the evaluation of lateral and vertical contaminant migration in the unsaturated zone.
2) Phase II - Excavation:
   Removal of hydrocarbon impacted soil including the collection and analysis of peripheral soil samples.
3) Phase III - Shallow Groundwater Exploration:
   Installation of three groundwater monitoring wells.

4.1) Preliminary Measures

Prior to commencement of work, the appropriate state, local, and private entities will be contacted and all permission and permits necessary for the performance of work described in this plan will be obtained. A locating service will be contacted to locate existing utilities on public property near the proposed area of work at least 48 hours in advance of underground activity. The limits of the area to be excavated will be clearly marked, as will the proposed areas for stockpiling soil.

5.0) PHASE I - Soil Exploration

The proposed soil exploration will be conducted using a truck mounted drilling rig and a hand auger to explore soil both outside and inside the building. Soil samples from the borings will be collected and examined at five foot intervals. Selected soil samples will be retained for analysis based upon changes in lithology and evidence of contamination such as discoloration or obvious odor. Data generated by the soil exploration will be used to estimate the lateral and vertical extent of hydrocarbon impacted soil. All EB's will be backfilled to grade with portland cement.

6.0) PHASE II - Excavation and Confirmatory Sampling

Soil exploration data will be used to develop an excavation and confirmatory sampling plan. The limits of the area to be excavated will be clearly marked prior to the commencement of excavation. Soil would be removed in accordance with Cal-OSHA regulations and stockpiled on site in designated areas, according to the results of field observations. Soil showing possible signs of hydrocarbon impact would be placed on top of and covered with a hydrocarbon resistant sheeting to prevent rainwater infiltration and runoff. Confirmatory soil samples will be collected at regular intervals along the limits of the excavation to evaluate the success of excavation and soil removal operations. After excavation has been completed, the pit will be backfilled to grade with clean imported fill, compacted to 90% maximum density.

6.1) Soil Sample Analyses

Soil samples collected from EBs placed in areas adjacent to the former fuel oil tank pit will be analyzed for TOG using EPA methods 5520 E & F, TPH as diesel using EPA method 3550, and TPH as gasoline using EPA method 5030. Two of the samples will also be analyzed for cadmium (Cd), chromium (Cr), lead (Pb), nickel (Ni), zinc (Zn), and volatile organic compounds using EPA method 8240. Soil samples collected from EBs advanced in areas adjacent to the former gasoline tank pit will be analyzed for TPH as diesel and TPH as gasoline.

Analysis of confirmatory soil samples collected after the excavation of soil will be based upon the results of analysis performed on samples collected during the soil exploration.

6.2) Treatment and Disposal

The treatment and disposal options available for excavated soil will be reviewed when all pertinent data has been gathered.

7.0) PHASE III - Groundwater Monitoring Well Installation

The possibility of impact to the shallow water bearing zone beneath the site will be evaluated by installing and monitoring three (3) two inch diameter groundwater monitoring wells. Placement of the wells will be based upon the assumed direction of groundwater flow beneath the site as well as the need to evaluate the local gradient.

The borings will be advanced with a truck mounted mobile drilling rig equipped with eight inch diameter hollow stem augers. Soil samples will be collected from within the soil borings at five foot intervals using a California modified split spoon sampler (see Appendix B for more details on soil sampling protocol).

After advancing borings to a depth of approximately fifteen to twenty feet below that depth at which water is first encountered, two inch diameter PVC casing will be inserted through the augers and completed as per LUFT manual specifications for groundwater monitoring wells. Such completion will include a gravel pack of #3 sand, one foot bentonite clay seal, portland cement fill, traffic boxes set in concrete, and locking type well caps. For a more detailed description of the proposed well installation protocol see Appendix C.

7.1) Monitoring Well Development & Sampling

The wells will be developed after allowing at least seventy-two (72) hours to elapse after completion of groundwater monitoring well installation. Development of the wells will be performed by evacuating water from within the wells with a peristaltic or piston type pump until the effluent is free of silt or until at least ten well volumes have been evacuated and parameters indicate that the well has stabilized. Subsequent to development, the wells will be allowed to sit for seventy-two (72) hours prior to purging a minimum of four well casing volumes from the well. To confirm stabilization prior to sampling, periodic monitoring of the pH, temperature, and conductivity will be performed to check that groundwater representing the formation is being sampled. When all three parameters are found to have stabilized, a water sample will be collected.

If the wells fail to recharge sufficiently prior to the purging of at least four wells casing volumes, samples will be collected only after the wells have recovered to 80% of the initial water level. During purging and sampling, observations of the well water will be documented on a field log by the sampler. Such observations will include well parameters (pH, temperature, and conductivity), presence and thickness of free product in effluent, presence of sheen or emulsified product, and well recharge rates. Groundwater will not be sampled if free product is encountered in the well.

Sampling will be performed using a clean Teflon or stainless steel bailer. Samples collected from the wells during the initial monitoring will be analyzed for TPH as diesel, TPH as gasoline, BTEX, and TOG at a certified hazardous materials testing laboratory within fourteen (14) days of sample collection. If analysis of soil samples collected adjacent to the former fuel oil tank pit reveal detectable concentrations of EPA 8240 compounds or concentrations of Cd, Cr, Pb, Ni, or Zn at levels which exceed applicable limits, samples collected from the wells will also be analyzed for these substances. Follow up quarterly sample analysis will be based upon the findings of initial well sampling. For a more detailed description of monitoring well sampling methodologies, please refer to Appendix C.

7.2) Well Surveying

The elevations of the well heads will be surveyed and depths to water will be measured using a water level indicator. The data gathered will be used to estimate the direction and gradient of local groundwater flow.

8.0) PROJECT REPORTAGE

Upon completion of the work described within this work plan, a report describing field and laboratory procedures, geologic characteristics encountered in the borings (boring logs), well construction details, and laboratory results will be prepared and submitted to the responsible party for further distribution to the appropriate regulatory agencies. Analytical results for soil and water samples and water depths will be presented in tables.

Interpretations of the site conditions and results of analyses will be provided as well as any further recommended actions. All laboratory reports will be accompanied with the results of quality control and quality assurance data.

Estimated groundwater gradient will be presented on a map indicating depth to water, elevation levels for each well, contours of equal groundwater elevations, and the interpreted direction of groundwater flow.

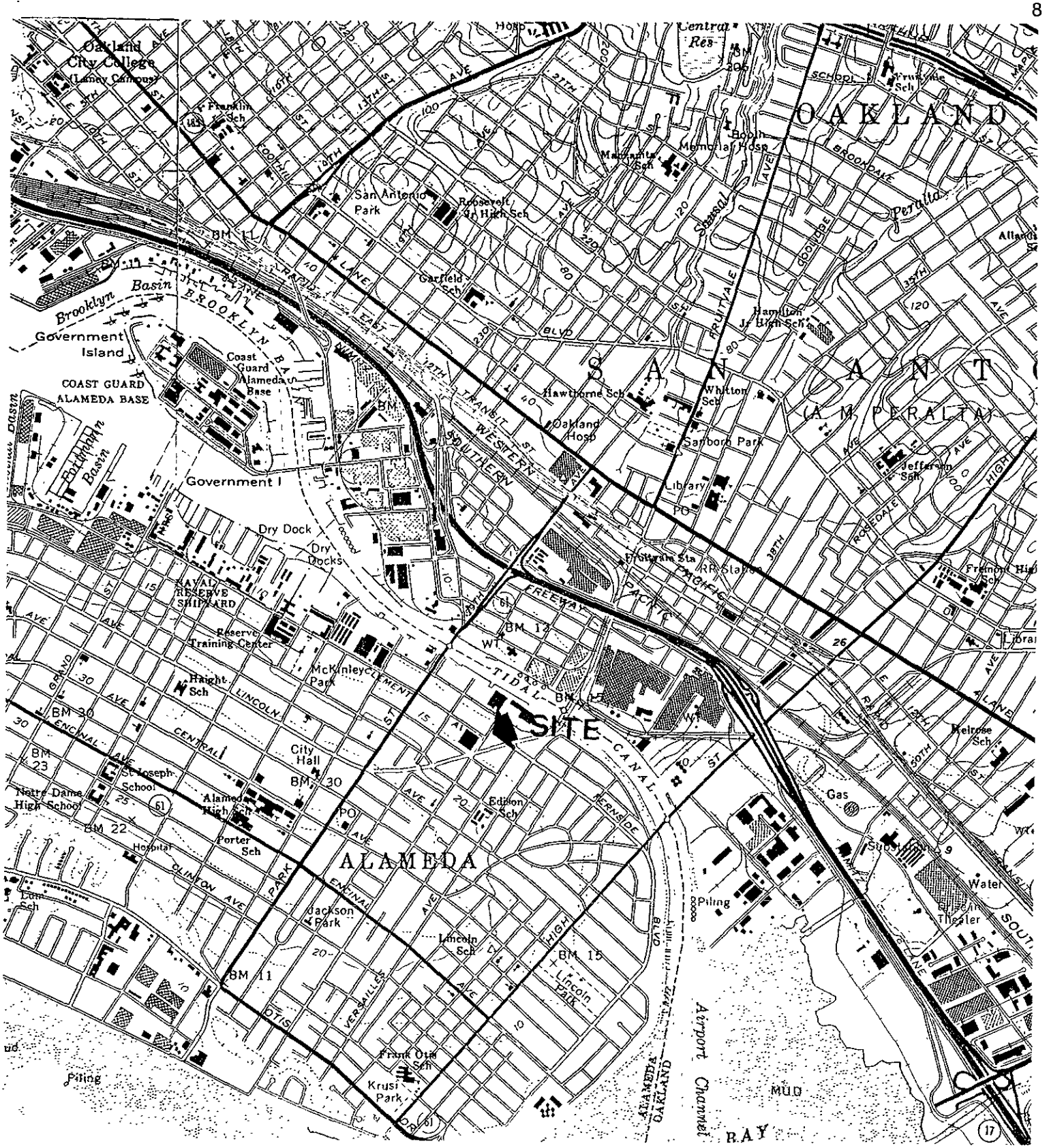
8.1) Quarterly Monitoring Reports

Quarterly reports will be submitted documenting the required monitoring of the condition of groundwater in the wells. These reports will include tabulated water level readings, well parameters, and sample analysis results. In addition, the reports will include a discussion of sampling methodology and gradient maps.

9.0) PROPOSED SCHEDULE OF ACTIVITIES

Document or Activity	Submitted or Performed By Date
Work Plan Submittal	March 13, 1991
Site Exploration	March 21, 1991
Soil Excavation	April 1, 1991
Installation of Wells	April 3, 1991
Well Development	Conducted 72 hours after well installation
First Quarterly Well Monitoring (Sampling)	Conducted 72 hours after well development
First Quarter Report	May 15, 1991
Second Quarterly Well Monitoring	Within 90 days of first quarterly well monitoring
Second Quarter Report	August 15, 1991
Third Quarterly Well Monitoring	Within 90 days of second quarterly well monitoring
Third Quarter Report	November 15, 1991
Fourth Quarterly Well Monitoring	Within 90 days of second quarterly well monitoring
Fourth Quarter Report	February 15, 1992

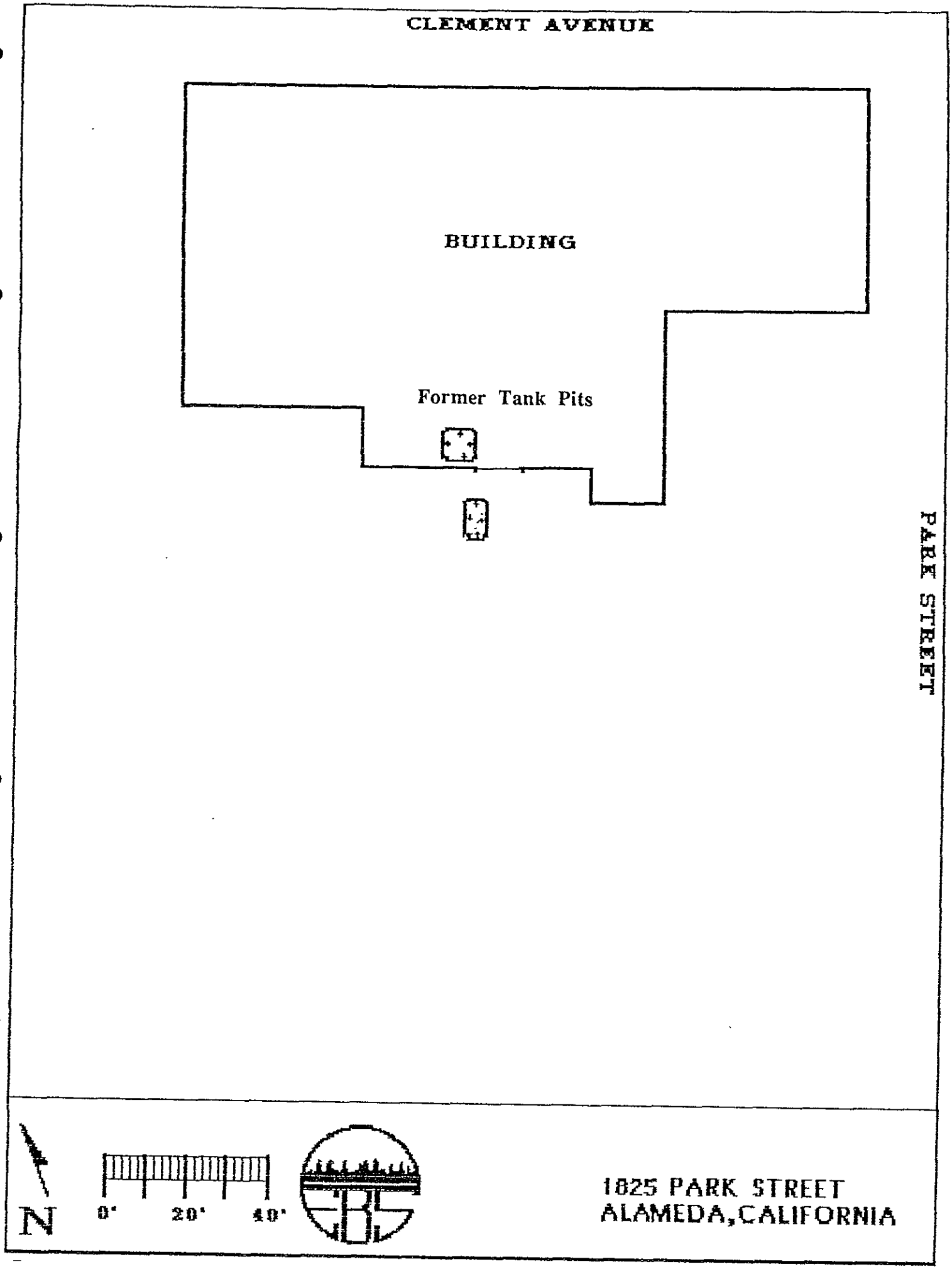
The Alameda County Health Department will be notified immediately of any changes in this schedule due to adverse weather conditions or unforeseen contingencies.



Source: USGS Topographical Map, Oakland East and Oakland West Quadrangles. Scale - 1" = 2,000 feet

SITE LOCATION MAP

FIGURE 1



SITE DIAGRAM

FIGURE 2

Kaiser Estate
1825 Park Street
Alameda, California

APPENDIX A

TANK REMOVAL SAMPLING REPORT

ENVIRONMENTAL BIO-SYSTEMS, INC.
Innovative Solutions for a Better Environment

January 15, 1991

Zaccor Corporation
791 Hamilton Avenue
Menlo Park, California 94025

Attention: Mr. Gary Zaccor

SAMPLING REPORT

The following documentation concerns the initial tank removal sampling and assessment performed by Environmental Bio-Systems, Inc. for Zaccor Corporation, on December 27, 1990 at:

BURR PROPERTY
1825 PARK AVENUE
ALAMEDA, CALIFORNIA

EBS was retained by Zaccor Corporation to perform the following services:

- collect soil samples from beneath underground storage tanks (UST's) as indicated by the local implementing agency representative.
- collect composite samples from stockpiled soil generated during tank removal.
- transport all samples to Anametrix, Inc. and arrange for the specified analyses of samples.
- provide a written summary of observations, procedures, and analytical results including a diagram of sampling locations.

On the above specified date, one 300 gallon fuel oil UST and one 500 gallon gasoline UST (labelled A & B respectively on the Site Diagram, Figure 1) were removed. Subsequent sampling of the surrounding soil within the tank pit excavations was performed in accordance with the specifications of Inspector William Faulhaber of the Alameda County Department of Environmental Health.

30028 Industrial Pkwy., S.W., Suite C Hayward, CA 94544 (415) 429-9988 Fax (415) 429-9189

FIELD OBSERVATIONS

Please refer to the attached diagram (Figure 1) illustrating the positions of the tanks and the location and depth of each sample.

Upon arriving on site, it was noted that some of the soil around both tanks had been removed. A moderate hydrocarbon odor was noted in the exposed soil surrounding both tanks. Two stockpiles of soil had been generated during excavation. Both stockpiles exhibited a slight to moderate hydrocarbon odor.

Tank A was constructed of single walled steel. A visual inspection of the tank revealed the presence of several holes near the bottom of the fill end which were 1/4 to 3/4 inches in diameter. A moderate hydrocarbon odor was noted in the backfill and native soil underlying the tank.

Tank B was constructed of single walled steel with a tar wrap which was partially (70%) intact at the time of removal. Portions of the tank were rusted but no holes were observed. Hydrocarbon staining and odor was noted in the soil surrounding the tank with staining being most noticeable at the fill end of the excavation.

Approximately three inches of water was present in the depression left by tank A. The presence of a sheen on the water was not noted.

SAMPLING

At the request of Inspector Faulhaber, the following samples were collected.

Soil sample #S1 was collected from beneath the non-fill end of tank A at a depth of approximately 5 feet.

Soil sample #S2 was collected from beneath the fill end of tank A at a depth of approximately 4-1/2 feet.

Soil sample #S5 was collected from beneath the fill end of tank B at a depth of approximately 5-3/4 feet.

Soil sample #S6 was collected from beneath the non-fill end of tank B at a depth of approximately 5 feet.

At the request of the client, two additional samples were collected from the side walls of each pit to assist in the assessment of soil quality at these locations. Soil Sample #S3 was collected from the western wall of tank pit A at a depth of approximately 4-1/2 feet. Soil sample #S4 was collected from the eastern wall of tank pit A at a depth of approximately 4-1/2 feet. Soil Sample #S7 was collected from the western wall of tank pit B at a depth of approximately 5 feet and soil sample #S8 was collected from the eastern wall of tank pit B at a depth of approximately 5 feet.

Composite soil samples were collected from the stockpiled soil generated during excavation of the tanks. Composite soil sample #SC9 A-B, consisting of two brass tubes, was collected from the soil generated during removal of tank B. Composite soil sample #SC10 A-B, consisting of two brass tubes, was collected from the soil generated during removal of tank A. Each stockpile consisted of approximately ten cubic yards of soil.

SAMPLE ANALYSES

At the direction of the client, in concurrence with the approval of Inspector Faulhaber, the samples were analyzed as follows:

Soil samples #S1 and #S2 were analyzed for total oil and grease (TOG) using Environmental Protection Agency (EPA) method 5520 E&F, total petroleum hydrocarbons (TPH) as diesel using EPA method 3550/GCFID, TPH as gasoline using EPA method 5030/GCFID, and the hydrocarbon constituents benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA method 8020.

Soil samples #S5 and #S6 were analyzed for TPH as gasoline using EPA method 5030, BTEX using EPA method 8020, and total lead by atomic absorption (AA).

Composite soil sample #SC9 A-B, collected from the stockpile containing soil from tank pit B, was analyzed for TPH as diesel using EPA method 3550 to determine if high boiling point hydrocarbons were present in concentrations which would limit treatment and/or disposal options. Composite soil sample #SC10 A-B was analyzed for TPH as diesel using EPA method 3550.

Soil samples #S3, #S4, #S7, and #S8 were placed on hold and not analyzed.

All samples were transported to Anametrix, Inc., a hazardous materials testing laboratory certified by the State of California to perform the required tests (HMTL #151). Analytical methods used by Anametrix, Inc. were consistent with San Francisco Regional Water Quality Control Board (SFRWQCB) guidelines and approved analytical methodologies specified in EPA document SW-846.

SAMPLING METHODOLOGY

Soil for samples #S1, #S2, #S5, and #S6 was removed from the excavations using a backhoe bucket. The first three to four inches of soil just above the teeth of the bucket were removed and clean brass tubes were driven into the exposed layer of soil. Soil was packed into the tubes to eliminate the possibility of headspace. The ends of the tubes were wrapped with aluminum foil and sealed with plastic caps and duct tape to reduce the evaporative loss of volatile constituents.

Soil for samples #S3,#S4, #S7, and #S8 was obtained by driving brass tubes in the side walls of the excavations. Soil was packed tightly into the tubes which were then sealed as described in the previous paragraph.

Composite samples were contained by driving brass tubes into the soil lying approximately twelve inches within the piles. Soil was packed into the tubes to eliminate the possibility of headspace. The sample containers were then covered with foil, capped, and taped in the manner described above. All samples were placed on ice in a cooler and transported under chain of custody protocol to Anametrix, Inc.

RESULTS

The certified analytical report documenting the findings of sample analyses has been attached to this report.

TABLE 1 - ANALYTICAL RESULTS FOR SOIL SAMPLES (In ppm*)

SAMPLE	TOG	TPH DIESEL	TPH GASOLINE	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL LEAD
S1	1,400	780	5,300	13	65	79	490	---
S2	2,100	300	1,900	8.6	18	16	81	---
S5	---	---	ND**	ND	ND	ND	ND	4.4
S6	---	---	ND	0.013	0.006	ND	0.006	2.6
SC9 A-B	---	180	---	---	---	---	---	---
SC10 A-B	---	880	---	---	---	---	---	---

* ppm = Parts per million.
** ND = Analyte not detected above laboratory detection limits.
Note: Detection limits: TOG - 30 ppm. TPH as diesel - 10 ppm. TPH as gasoline - 0.5 ppm. BTEX 0.005 ppm. Total Lead - 0.15 ppm.

CONCLUSIONS

Analytical results for samples #S1 and #S2, collected from beneath either end of tank A, indicate the presence of hydrocarbons in excess of State (SFRWQCB) actions limits. Analytical results for samples #S5 and #S6, collected from beneath either end of tank B, were found not to contain concentrations of hydrocarbons, or constituents of hydrocarbons, above SFRWQCB actions levels. Lead analysis of samples #S5, and #S6 indicate that total lead concentrations at these locations are below actions limits (total threshold limit concentrations) established by Title 22 of the California Administrative Code.

Soil samples #S7 and #S8 (not analyzed), collected from the sidewalls of tank pit B, exhibited an obvious hydrocarbon odor.

Composite samples #SC9 A-B and #SC10 A-B, collected from stockpiled soil excavated during the removal of tanks A and B, were found to contain concentrations of hydrocarbons in excess of 100 ppm, disallowing the on site reuse of this material without further remediation.

SFRWQCB guidelines state that the presence hydrocarbons in excess of 100 ppm in samples collected from beneath UST's mandates the performance of an exploration to determine the extent of further impact to soil and the shallow water bearing zone beneath the site.

RECOMMENDATIONS

The State Water Resources Control Board document, Leaking Underground Fuel Tank Field Manual (LUFT), supported by the SFRWQCB, and the guidelines of Alameda County, define acceptable limits and appropriate actions for addressing UST contamination within the County of Alameda.

Definition of Soil Contamination

In accordance with SFRWQCB and Alameda County guidelines, the presence of hydrocarbons in excess of 100 ppm in samples #S1 and #S2 mandates the performance of exploratory activities which will attempt to define the vertical and lateral extent of soil contamination. Exploratory activities can be conducted by utilization of a drilling rig, exploratory excavation, or other means that are deemed acceptable by the Alameda County Department of Environmental Health and the SFRWQCB.

Stockpiled Soil

There are several options for the treatment and/or disposition of the contaminated stockpiled soil. These options include treatment by bioremediation of soil contaminated with heavy hydrocarbons (TOG and TPH as diesel), uncontrolled aeration of soil contaminated with volatile hydrocarbons (TPH as gasoline and BTEX), or disposal by landfilling or reuse at an approved asphalt or cement production facility. The total anticipated volume of soil, contaminants involved, and degree of contamination are the variables that should be considered to determine the most efficient treatment and/or disposal option.

Groundwater Exploration

In accordance with LUFT guidelines, an exploration into the possible impact of contaminants on the shallow water bearing zone beneath the site must also be conducted. Groundwater exploratory actions should include the installation of at least one groundwater monitoring well within ten feet of tank pit A. Also in accordance with LUFT guidelines, the general direction of groundwater flow beneath the site must be determined. Such a determination requires a minimum of three groundwater reference points. Therefore, this requirement may be satisfied by the installation of two additional groundwater reference points, either peizometers or wells. The three reference points will allow triangulation and the subsequent estimation of groundwater gradient. Existing wells on adjacent properties, which have been properly installed and screened, may qualify as eligible reference points and consequently reduce the number of wells required. The use of existing wells to estimate gradient is subject to regulatory approval.

REPORTAGE

Copies of this sampling report should be submitted to the SFRWQCB and the Alameda County Department of Environmental Health.

The following addresses have been listed for your convenience:

Water Quality Control Board
San Francisco Bay Region
1800 Harrison Street
Room 700
Oakland, CA 94612
ATTN: Fuel Leaks Division

County of Alameda
Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, CA 94621
ATTN: William Faulhaber

If you have any questions, or if I may be of service please contact me at (415) 429-9988.

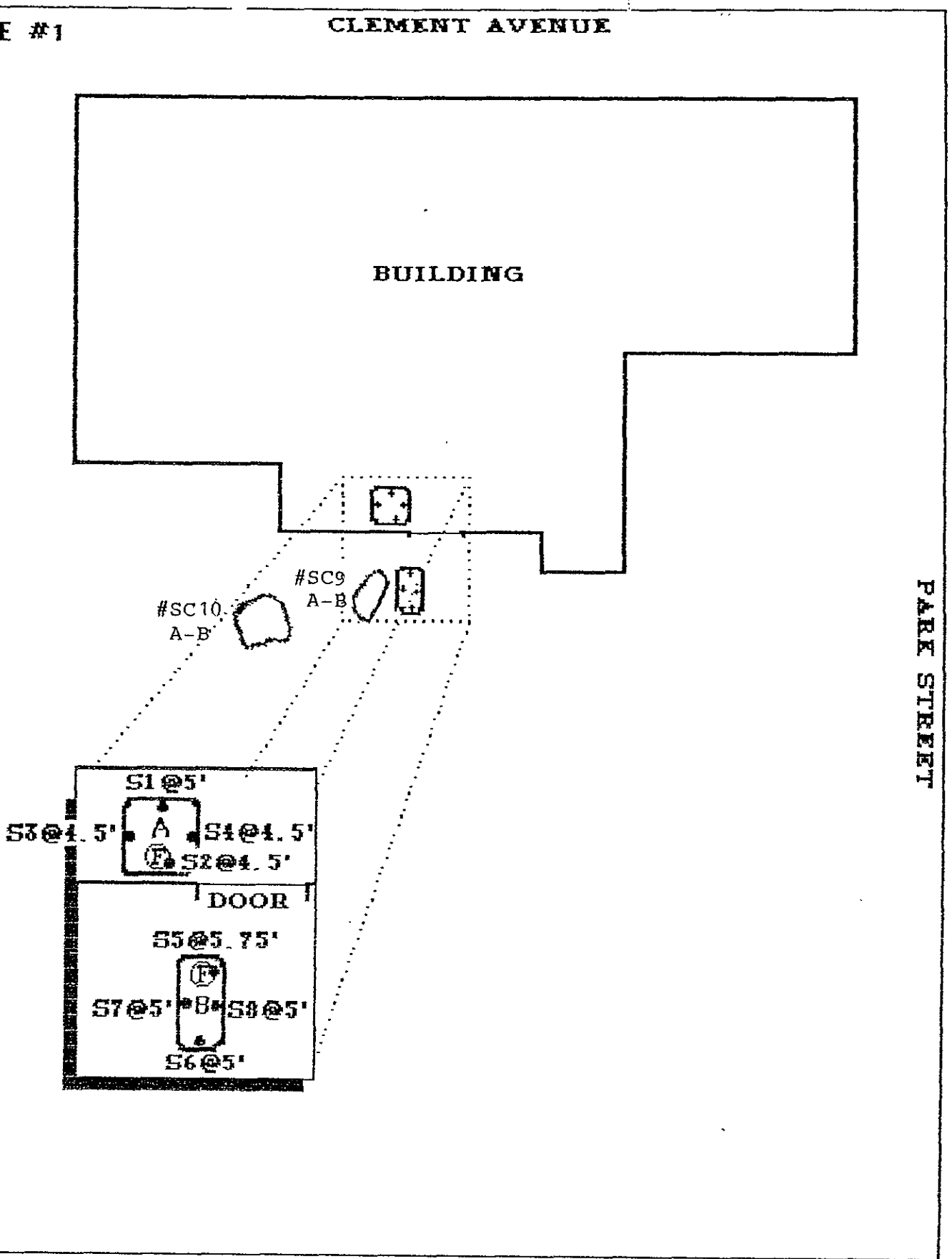
Sincerely,
ENVIRONMENTAL BIO-SYSTEMS, INC.

Brenda d. McNabb
Project Manager

Timothy M. Babcock
Project Supervisor

BDM/so

FIGURE #1



ZACCOR CORP.@
BURR PROPERTY
1825 PARK STREET
ALAMEDA, CALIFORNIA
TANK PULL 12/27/90

ENVIRONMENTAL BIO-SYSTEMS, INC.
30028 INDUSTRIAL PKWY., S.W.
HAYWARD, CA. 94544
(415) 429-9988

CHAIN OF CUSTODY

SITE ADDRESS: Burr Property
1825 Park
Alameda CA

CLIENT: Zaccor Corp.
EBS #:#003-163
DATE SAMPLED:12/27/90

LABORATORY:Anametrix HMTL#: 151

SAMPLE #	MATRIX	ANALYSIS			TOG (5520)	TPHD (3550)	TURNAROUND	
S1	Soil	TPH G (5030)	BTEX (8020)				Two Week	
S2	"	"	"	"	"	"	"	"
S3	"	HOLD						
S4	"	"						
S5	"	TPH G (5030)	BTEX (8020)	Total Lead (AA)			Two Week	
S6	"	"	"	"	"	"	"	"
S7	"	HOLD						

Sampling Performed By Brenda D. McHabb

Sampling Completed At 10:40 (AM)/PM

Released By:	Accepted By:	Time/Date	
Brenda D. McHabb	Michael Schley	4:57	12/27/90
			__/__/__
			__/__/__
			__/__/__

ENVIRONMENTAL BIO-SYSTEMS, INC.
30028 INDUSTRIAL PKWY., S.W.
HAYWARD, CA. 94544
(415) 429-9988

CHAIN OF CUSTODY

SITE ADDRESS: Burr Property
1825 Park
Alameda CA

CLIENT: Zaccor Corp.
EBS #:#003-163
DATE SAMPLED: 12/27/90

LABORATORY: Anametrix HMTL#: 151

SAMPLE #	MATRIX	ANALYSIS	TURNAROUND
S8	Soil	Hold	
composite SC9A&B	"	TPH G (No BTEX)	Two Week
" SC10A&B	"	"	"

Sampling Performed By Brent D. McNabb

Sampling Completed At 10:40 (AM)/PM

Released By:	Accepted By:	Time/Date
Brent D. McNabb	Michael Scott	4:57pm 12/27/90
		__/__/__
		__/__/__
		__/__/__

ENVIRONMENTAL BIO-SYSTEMS, INC.
Innovative Solutions for a Better Environment

January 23, 1991

Zaccor Corporation
791 Hamilton Avenue
Menlo Park, California 94025

Attention: Mr. Gary Zaccor

Regarding: Analysis of Samples Collected From Sidewalls of Tank Pit A.

The following documentation concerns the analysis of samples collected at the Burr Property located at 1825 Park Street, Alameda, California. The samples were collected on December 27, 1990 during the removal of one 300 gallon fuel oil underground storage tank (tank A) and one 500 gallon gasoline underground storage tank (tank B).

Seven soil samples were collected from the soil surrounding the tanks. The results of analyses conducted on samples collected from the interface zone beneath the two tanks (samples #S1,#S2, #S5, and #S6) are documented in the Environemntal Bio-Systems, Inc. report #003-163-01, dated January 16, 1991. This document discusses the results of analysis conducted on samples #S3 and #S4, which were collected from the sidewalls of tank pit A.

Please refer to the attached diagram (Figure 1) illustrating the positions of the tanks and the location and depth of each sample.

Sampling

At the request of the client, two additional samples were collected from the western and eastern sidewalls of tank pit A during tank removal to assist in the assessment of soil quality at these locations. Soil Sample #S3 was collected from the western wall at a depth of approximately 4-1/2 feet and soil sample #S4 was collected from the eastern wall at a depth of approximately 4-1/2 feet.

Sampling Methodology

Soil for samples #S3 and #S4 was collected by driving clean brass tubes into the side walls of tank pit A. Soil was packed tightly into the tubes to eliminate the possibility of headspace. The ends of the tubes were wrapped with aluminum foil and sealed with plastic caps and duct tape to reduce the evaporative loss of volatile constituents.

Sample Analysis

At the direction of Gary Zaccor of Zaccor Corporation on January 11, 1991, samples #S3 and #S4 were analyzed for total oil and grease (TOG) using Environmental Protection Agency method 5520 E&F.

Results

The certified analytical report documenting the findings of TOG analyses on samples #S3 and #S4 has been attached to this report.

Sample #S3 contained TOG at a concentration of 400 ppm.

Sample #S4 contained TOG at a concentration of 330 ppm.

Conclusions and Recommendations

Analytical results for samples #S3 and #S4, collected from the western and eastern walls of tank pit A, indicate the presence of hydrocarbons in excess of State actions limits. The confirmation of contamination at these locations indicates the migration of contaminants into soils to the west and east of the former tank pit.

This information should be used to formulate a remedial plan to address the exploration and removal of soil contaminated above acceptable limits which remains in place around the former tank pit.

Reportage

Copies of this document should be submitted to the SFRWQCB and the Alameda County Department of Environmental Health.

The following addresses have been listed for your convenience:

Water Quality Control Board
San Francisco Bay Region
1800 Harrison Street
Room 700
Oakland, CA 94612
ATTN: Fuel Leaks Division

County of Alameda
Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, CA 94621
ATTN: William Faulhaber

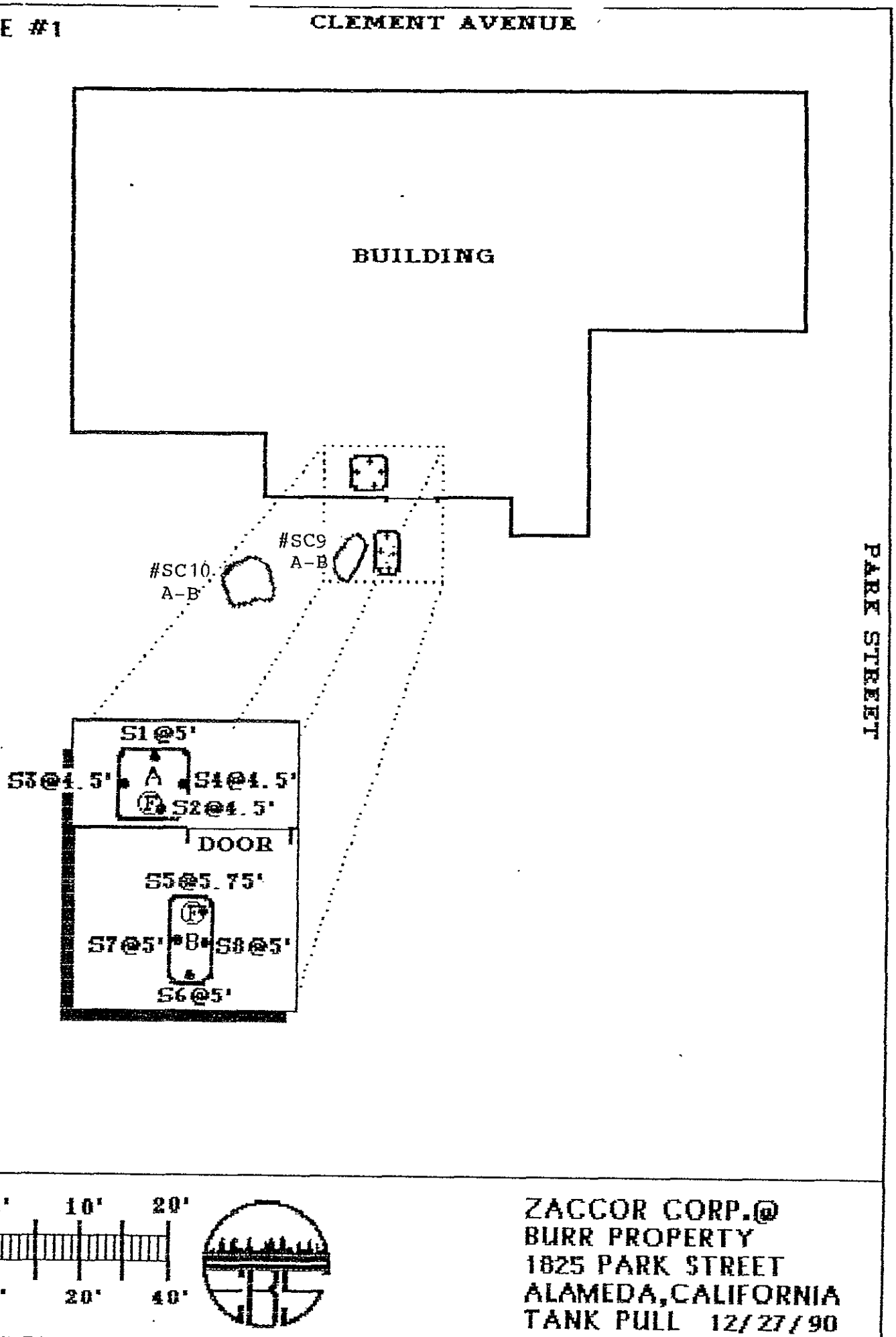
If you have any questions, or if I may be of service please contact me at (415) 429-9988.

Sincerely,
ENVIRONMENTAL BIO-SYSTEMS, INC.

Brenda d. McNabb
Project Manager

BDM/so

FIGURE #1


CLEMENT AVENUE
BUILDING
#SC9
A-B
#SC10
A-B
S1@5'
S3@4.5'
A
S4@4.5'
F
S2@4.5'
DOOR
S5@5.75'
F
S7@5'
B
S8@5'
S6@5'
PARK STREET
N
0'
10'
20'
0'
20'
40'
ZACCOR CORP.@
BURR PROPERTY
1825 PARK STREET
ALAMEDA, CALIFORNIA
TANK PULL 12/27/90

ENVIRONMENTAL BIO-SYSTEMS, INC.
30028 INDUSTRIAL PKWY., S.W.
HAYWARD, CA. 94544
(415) 429-9988

CHAIN OF CUSTODY

SITE ADDRESS: Burr Property
1825 Park
Alameda CA

CLIENT: Zaccor Corp.
EBS #: #003-163
DATE SAMPLED: 12/27/90

LABORATORY: Anametrix HMTL#: 151

SAMPLE #	MATRIX	ANALYSIS	TURNAROUND
S1	Soil	TPH G (5030) BTEX (8020) TOG (5520) TPHD (3550)	Two Week
S2	"	" " " " " "	" "
S3	"	HOLD	
S4	"	"	
S5	"	TPH G (5030) BTEX (8020) Total Lead (AA)	Two Week
S6	"	" " " " " " "	" "
S7	"	HOLD	

Sampling Performed By Brenda D. McHabb

Sampling Completed At 10:40 (AM)/PM

Released By:	Accepted By:	Time/Date	
Brenda D. McHabb	Michael Gubbins	4:57	12/27/90
			__/__/__
			__/__/__
			__/__/__

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CLIENT: Zaccor Corp.
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DATE SAMPLED: 12/27/90

LABORATORY: Anametrix HMTL#: 151

	SAMPLE #	MATRIX	ANALYSIS	TURNAROUND
	S8	Soil	Hold	
Composite	SC9A&B	"	TPH G (No BTEX)	Two Week
"	SC10A&B	"	"	"

Sampling Performed By Brent D. McNabb

Sampling Completed At 10:40 (AM)/PM

Released By:	Accepted By:	Time/Date	
Brent D. McNabb	William Scott	4:57 pm	12/27/90
			__/__/__
			__/__/__
			__/__/__

APPENDIX B

SOIL SAMPLING PROTOCOL

SOIL SAMPLING METHODOLOGY

Soil samples will be collected during drilling with a California modified split-spoon sampler driven by the drill rig. The sample tubes, normally two inches in diameter and six inches long, will be removed quickly after opening the sampler. The tubes will be sealed with aluminum foil placed underneath snugly fitting plastic caps. Excess foil will be removed and tape will be applied to the seams between cap and tube in an effort to reduce the evaporative loss of volatile constituents. The sampler will be washed thoroughly with trisodium phosphate cleanser and rinsed with distilled water between samples.

Soil samples will be place on ice in a cooler and transported under chain of custody protocol to a certified hazardous materials testing laboratory for subsequent analysis.

APPENDIX C

WELL INSTALLATION, DEVELOPMENT & SAMPLING PROTOCOL

MONITORING WELL INSTALLATION SPECIFICATIONS

The proposed work will include the following tasks:

1) Acquiring the appropriate permits for advancing soil borings and installing groundwater monitoring wells.
2) Drilling three soil borings adjacent to the former storage tank pit to depths approximately 15 to 20 feet below the groundwater table.
3) Collecting and classifying samples of native soil from 5 foot deep intervals from the ground surface to the total depths of the borings. Samples will also be collected at changes in lithology and at points where odor or discoloration is noted.
4) Logging subsurface conditions as encountered in the borings.
5) Returning five samples from each boring to a State of California certified hazardous materials testing laboratory (HMTL) for subsequent analysis.
6) Constructing and developing a two inch diameter groundwater monitoring well in each of the three borings.
7) Purging the wells and collecting one groundwater sample from each well for analysis for TPH as gasoline, BTEX, and TOG.
8) Evaluating the local groundwater gradient using relative groundwater elevations in the wells.
9) Interpreting field and laboratory data and preparing a report summarizing the information and providing conclusions and recommendations.

Methods for performing the listed tasks are described as follows:

I. Advancement of Boreholes, Sampling and Classification of Soil

The soil borings will be advanced using a truck mounted hollow stemmed auger drill rig. To reduce the chances of cross contamination among samples, augers will be steam cleaned prior to advancing each borehole. The boreholes will be advanced 15 to 20 feet into the aquifer or until a competent clay layer or aquitard greater than five feet in depth is encountered. Drill cuttings will be evaluated in the field and segregated by the observed presence of odor or discoloration. The cuttings will be segregated and stockpiled on the site on a hydrocarbon resistant liner pending analytical results. The cuttings will also be covered with the liner.

Soil samples will be collected from five foot intervals within the borings. To collect the samples, a California-modified split spoon barrel sampler will be driven into the soil by a 140 pound weight falling 30 inches. The sampler will be driven a total of 18 inches. After the first six inches, the number of blows required to drive it the remaining 12 inches will be counted as an indicator of the relative density of granular soil and the consistency of cohesive soil. The relative vapor content of the soil will be observed. The samples retained for laboratory analysis will be sealed in brass liners from the sampler. They will be labelled, stored on ice, delivered to the HMTL, maintained and transferred in keeping with chain of custody procedures.

As the soil borings are advanced and samples are collected, the soil will be classified and noted on logs of the borings by an engineer or geologist. Field classification will be based on observed characteristics of the soil. Logs will indicate the depths, classifications, blow counts, water level information, and methods of advancing and maintaining the borings.

Construction and Development of Monitoring Wells

Each well will be constructed of polyvinyl chloride (PVC) casing with threaded joints, a threaded bottom end-plug, and a slip cap. The screened portion of the well will extend from approximately five feet above the upper saturation zone to the full depth of the boring to allow for monitoring during seasonal fluctuations of the ground water level. The screened portion of the well will be perforated by the factory with 0.020 inch wide slots. Unperforated pipe will be used to complete the upper portion of the well. Filter sand will extend approximately two feet above the perforated portion of the pipe, and a two foot thick seal of bentonite will be placed above the sand. The upper annulus will be sealed with cement or cement/bentonite grout to within one foot below ground surface. A locking well cover will be placed over each well head and secured in place with concrete. The well cover will have a watertight seal and protective lock to guard against infiltration of surface water and other disturbances.

Each well will be developed after construction with a surge pump until the water produced is relatively free of sediment or until measurements of pH, conductance, and temperature are shown to have stabilized. If the wells are pumped dry during development, recharge rates will be recorded. No water or chemicals will be introduced during development.

Groundwater Sampling

The wells will be allowed to sit undisturbed for 72 hours after development. Prior to sampling, a clean bailer will be lowered into the well and the effluent will be examined for the presence of floating product. If floating hydrocarbon product is present in the sample, the well will not be purged, but the thickness of the product will be measured with a fluid level sounder.

If no floating hydrocarbon product is observed, the well will be purged of approximately four well casing volumes of water which will be stored on site in DOT approved drums for waste liquids. The drums will remain the responsibility of the property owner and will be held on site pending the results of analysis of the groundwater samples.

Prior to sampling, pH, conductivity, and temperature readings will be taken to evaluate stabilization of the well. After readings indicate that the wells have stabilized, a clean Teflon or stainless steel bailer will be used to collect the sample material and transfer it to clean sample collection bottles, appropriate to the analysis to be run. The recovered sample material from each well will be examined for odor and sheen. Field blanks and duplicate samples will be collected from each well. Sample containers will be given a job and sample identification number, labeled, and stored on ice while transferred to the designated certified laboratory. The bailer will be cleaned with distilled water and trisodium phosphate cleanser after each sample is collected to prevent cross contamination.

Decontamination

All equipment used during well installation, well development, and soil and water sampling will be decontaminated on site. Rinsate from decontamination will be stored on site pending the results of soil and water analysis. Contaminated material will be disposed of in accordance with pertinent guidelines for regulated substances.

Evaluation of Groundwater Gradient

Surveying equipment will be used to measure the difference in elevation of the top of each well casing relative to the others. The depth of the groundwater below the top of each well casing will also be measured with a water level indicator. These measurements will be used to evaluate the elevation differences of the water levels among the wells. Mean Sea Level will be used as the vertical benchmark. The difference in hydraulic head and the direction of groundwater flow across the site will be estimated from the map.

Laboratory Analyses

Samples selected for analysis will be transferred to a laboratory certified by the State of California to perform the specified analysis.

Soil and water samples will be analyzed for TPH as diesel, TPH as gasoline, BTEX, and TOG. Depending on the results of EPA 8240 and metals (Cd, Cr, Pb, Ni, Zn) analysis conducted on two of the samples collected from soil adjacent to the former fuel oil tank pit during soil exploration activities, soil and water samples may also be analyzed for volatile organic compounds and metals. Detection limits appropriate to the matrix and the requested test will be stated on the laboratory reports.