ZACCOR
LIC. #478789 CORPORATION

92 MAR 11 AM 8:20

March 9, 1992

Alameda County Office
Environmental Health Services
80 Swan Way
Room 200
Oakland, CA 94612

Attn: Ms. Pam Evans

RE: Alameda Golf Course
Alameda, CA

Ms. Evans:

Enclosed please find the work plan for the installation of two (2) 2" monitoring wells at:

ALAMEDA GOLF COURSE
1 MEMORIAL CLUB HOUSE DRIVE
ALAMEDA, CA

One copy of this work plan has been mailed to Mr. Eddy So of the Regional Water Quality Control Board and the Owner of the site, the City of Alameda c/o Fred Framsted.

Should you have any questions, please do not hesitate to contact my office at 415-363-2181. Your immediate response will be greatly appreciated.

Sincerely,

Gary Zaccor

Gary Zaccor
Project Manager

GZ/ls

Enclosure

791 HAMILTON AVENUE MENLO PARK, CA. 94025 (415) 363-2181

A WORK PLAN FOR THE INSTALLATION OF TWO MONITORING WELLS

AT

ALAMEDA GOLF COURSE
1 MEMORIAL CLUB HOUSE DRIVE
ALAMEDA, CALIFORNIA

February 26, 1992

February 24, 1992

Parks and Recreation
Oak Street at Santa Clara Street
Alameda, CA 94501

ATTENTION: Mr. Fred Framsted
SUBJECT: Work Plan for the Installation of Two 2-Inch Monitoring Wells at Alameda Golf Course
1 Memorial Club House Drive
Alameda, California

Dear Mr. Framsted:

Zaccor Corporation is pleased to submit the following Work Plan for the placement of two 2-inch monitoring wells to determine the impact, if any, of petroleum hydrocarbons upon the first encounter of groundwater beneath the subject site. Should you have any questions, or require supplemental information, please do not hesitate to contact us.

ZACCOR CORPORATION
Gary Zaccor
Project Manager

ENVIRONMENTAL TECHNICAL SERVICES
Helen Mawhinney
Senior Environmental Specialist

Roger Greensfelder, PhD
Registered Geologist
License #3011

TABLE OF CONTENTS

APPENDICES

1.0 BACKGROUND

1.1 Tank Removal

On July 10, 1991, one 500-gallon gasoline tank and one 125-gallon tank were removed from the subject site. Groundwater was encountered at 5 feet within the tank pit excavation. Therefore, soil samples were collected from the tank pit wall vadose/saturated capillary zone and were analyzed for Total Petroleum Hydrocarbons as Gasoline with benzene, toluene, ethylbenzene, and total xylenes TPH-G, BTEX, EPA Method 5030/8020).

The excavation and stockpiling of contaminated soils was performed the same day. Confirmatory soil samples collected subsequent to excavation were "non-detect," with the exception of Sample #6.

Results of these analyses are located below, in Table 1. Sampling locations are shown in Figures 2 and 3.

TABLE 1
SOIL ANALYTICAL RESULTS
in parts per million (ppm)

Sample #	TPH-G	Benzene	Toluene	Ethyl-benzene	Xylenes
1A-1C	2,000	1.2	2.8	2.6	26
2	960	3.5	0.10	3.0	13
3A-3C	250	0.52	0.45	0.65	5.4
4	ND	0.011	ND	ND	0.005
5	ND	ND	ND	ND	ND
6	3.0	0.030	0.006	0.023	0.059
7	ND	ND	ND	ND	ND
8	ND	ND	ND	ND	ND
9A-9D	ND	ND	ND	ND	ND
10A-10D	11	0.13	0.48	0.29	1.9

Groundwater Analytical Results in parts per billion {ppb}					
Sample #	TPH-G	Benzene	Toluene	Ethyl-Benzene	Xylenes
TPW-1	8,200	210	ND	270	1,200

An exiting 2-inch groundwater monitoring well is located within 2 feet of the tank pit cavity in the assumed downgradient direction. The well was constructed by Aqua Science Engineering on June 2, 1986. The well was constructed in compliance with Assembly Bill 1362 and the Groundwater Monitoring Guidelines for Hazardous Materials Storage drafted by the Alameda County Water District in May 1984. Refer to Appendix C for the Aqua Science Engineering report.

This monitoring well will be used as the third well for triangulation. Upon well completion, groundwater will be allowed to stabilize over a 48-hour period to assess static groundwater depths. Following stabilization, groundwater depths will be measured. Groundwater elevations will be determined after top of casing elevations have been obtained by surveying.

Should the existing well be found to not be a downgradient well, at a later date, a fourth well would be installed within 10 feet downgradient.

2.0 Work Plan

2.1 Soil Boring

The drilling of the soil borings, in which two 2-inch monitoring wells are to be constructed will be accomplished using a hydraulic driven truck/trailer-mounted drill rig, equipped with 8¼-inch outside diameter hollow-stem augers. Soil samples within these borings will be collected at 4.5, and at 5' intervals thereafter, at changing lithologies, or where indications of contamination are present.

To collect samples, a California Modified Split Spoon Sampler will be driven 18-inches into soil using a 140-pound hammer dropped a standard 30-inch fall into relatively undisturbed soils. Three clean brass sleeves (2-inch diameter, 6-inch length) will be placed in the sampler. Immediately upon retrieval, the sampler will be opened, and the bottom brass sleeve will be removed, each end covered with aluminum foil, fitted with plastic caps, sealed with duct tape, labeled with project number, name of the sampler, and time of sampling, and placed on dry ice, for transport to a certified hazardous waste laboratory, under chain of custody, for analysis. The remaining brass sleeves will be used in classifying soil.

2.2 Soil Classification

During the placement of these soil borings, information from the collected samples will be obtained regarding subsurface soil lithologies and characteristics such as color, moisture, density, and hydrocarbon content, and depth to groundwater. Collected samples will be classified under the supervision of a Registered Geologist using the Unified Soil Classification System (USCS). Boring logs will include soil lithology according the USCS, data on soil color, moisture, density, hydrocarbon content, and miscellaneous characteristics such as organic content and blow counts at 6-inch increments for 18-inch sampler drive. The monitoring wells will be constructed according to local and state criteria via the LUFT Manual guidelines.

2.3 Progress Monitored

Progress will be monitored using a hydrocarbon vapor survey instrument. Soil representing each interval will be placed in a brass sleeve in a measured amount. Each end of the brass sleeve will covered with a plastic cap, sealed with duct tape and warmed. Vapors will be extracted from within the brass sleeve using the GasTech model 1314 Hydrocarbon Survey Instrument to measure hydrocarbon vapor content. The maximum relative vapor concentration detected within 30 seconds will be recorded. This field screening will be the criteria for determining samples to be analyzed. ← Only criteria? Add petroleum document recognizes that high ... written done ceased

2.4 Groundwater Gradient

Local groundwater is present at a depth of 3' to 6' below grade. Groundwater gradient will be established.

2.5 Well Development and Sampling

To establish groundwater quality, the monitoring well will be developed by removing 4 to 5 well volumes of water by surging and pumping. Measurements of pH, temperature, and conductivity, will be recorded at consistent intervals, and a sample of groundwater will be obtained only after these parameters have stabilized. Water samples will then be collected using a clean bailer. Water will be decanted to a positive meniscus into two 40-ml VOA vials with teflon septum. The bottles will be labeled and placed on blue ice, under chain of custody, for transport to a certified hazardous waste analytical laboratory.

All groundwater developed during well purgings will be stored in 55-gallon capacity Department of Transportation Drums (DOT 17), sealed and labeled, pending laboratory analysis.

2.6 Analysis

Soil samples will be analyzed for Total Purgeable Petroleum Hydrocarbons as Gasoline (using EPA Method 5030/8015) and for Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX, using EPA method 5030/8020).

Groundwater samples will be analyzed for Total Purgeable Petroleum Hydrocarbons as Gasoline (TPH-G, using EPA Method 5030/8015), Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX, using EPA method 602).

2.7 Decontamination

Prior to arriving at site, the drill rig and augers will be decontaminated using a hot high-pressure wash at a temperature of 248 degrees Fahrenheit. Augers will be cleaned in the same manner prior to leaving the site. Sampling equipment will be decontaminated between samples using a trisodium phosphate wash, tap water rinse, followed by a deionized water rinse. All lubricated drill rig parts that may approach the borings will be lubricated using PAM.

2.8 Drilling Cuttings

Drill cuttings will be placed in 55-gallon capacity Department of Transportation Drums (DOT 17), sealed and labeled, pending laboratory analysis.

2.9 Report

Upon completion of the above work plan a report will be developed documenting a description of task, performed including, but not limited to, a description of methodologies used in insertion of soil borings, collection of samples, quality assurance and quality control, monitoring well construction, soil boring logs and sample analytical results.

3.0 Site Safety Plan

The following Site Safety Plan will be implemented prior to the commencement of work activities. All personnel involved in the investigation will be informed of the following safety requirements. It is the responsibility of the Zaccor Corporation project manager to implement these procedures.

It is the responsibility of each individual to be aware of his own safety and to be alert to any safety hazard that may pose a threat, and to make a reasonable effort to remove the hazard. The project manager shall be made aware of possible hazard.

The investigation may be stopped at any time should it be determined that safe working practices are not being observed, and work will not commerce until the problem has been resolved.

3.1 Site Safety

The contractor is responsible for providing site security and safe conditions on site. Employees, customers, and pedestrians will be kept a safe distance from the working area during operations that may pose a health hazard.

3.2 Decontamination Procedures

All equipment in contact with hydrocarbon contaminated materials will be decontaminated prior to leaving the site. Water used for the decontamination process will be collected, then stored in Department of Transportation drums (DOT 17).

3.3 Safety Equipment

1. A minimum of one fire extinguisher

2. A minimum of one first aid kit

3. A list of the nearest available:

   urgent care clinic,

   hospital emergency room,

   fire department

   poison control center

The list of emergency services will be located within the first aid kit. All personnel involved with site investigation will be informed of its location.

3.4 Safety Gear

The following gear will be used by each person working in the hazard area.

1. Hard Hats

2. Respirators or portable blowers should vapors within the working area exceed the TTV.

3. Steel toe boots

3.5 Vapor Monitoring

Air Quality will be monitored for hydrocarbon vapors using a GasTech Model 1314. Should vapors present within the work area exceed 250 ppm respirator will be required.

3.6 Heavy Equipment

Hard hats will be worn within the drill rig working area. Prior to moving the drill rig personnel will be informed of its movement path.

3.7 Alcohol or Drugs

Alcohol will not be consumed prior to commencing work or throughout the work day.

The project manager will be made aware of any medications being used by personnel and informed of the possible side effects.

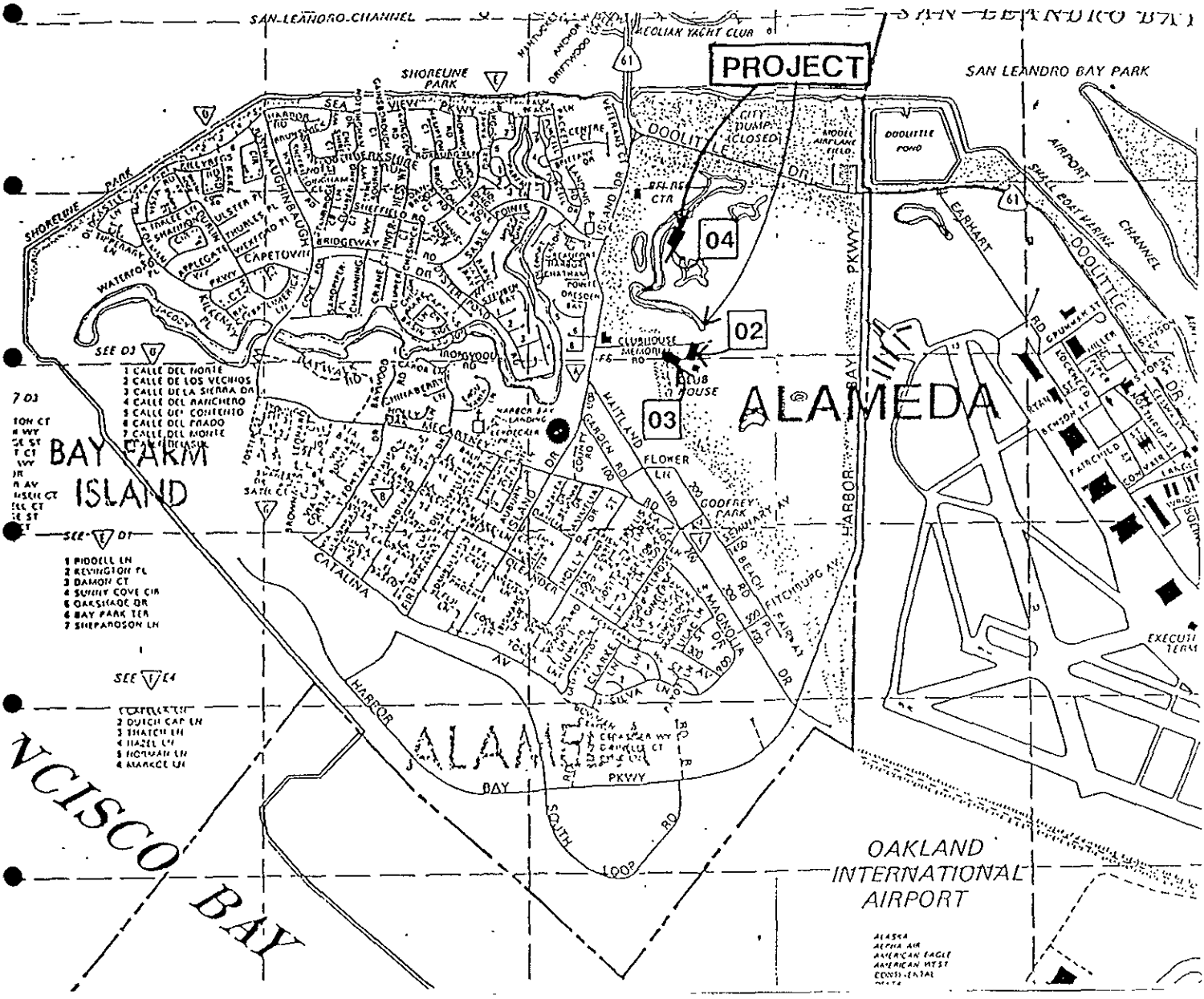
3.8 Smoking

Smoking will be prohibited within 50' of the drilling rig. A person who has spilled or otherwise acquired a flammable concentration of gasoline upon his clothing will not light a cigarette until all affected clothing has been removed.

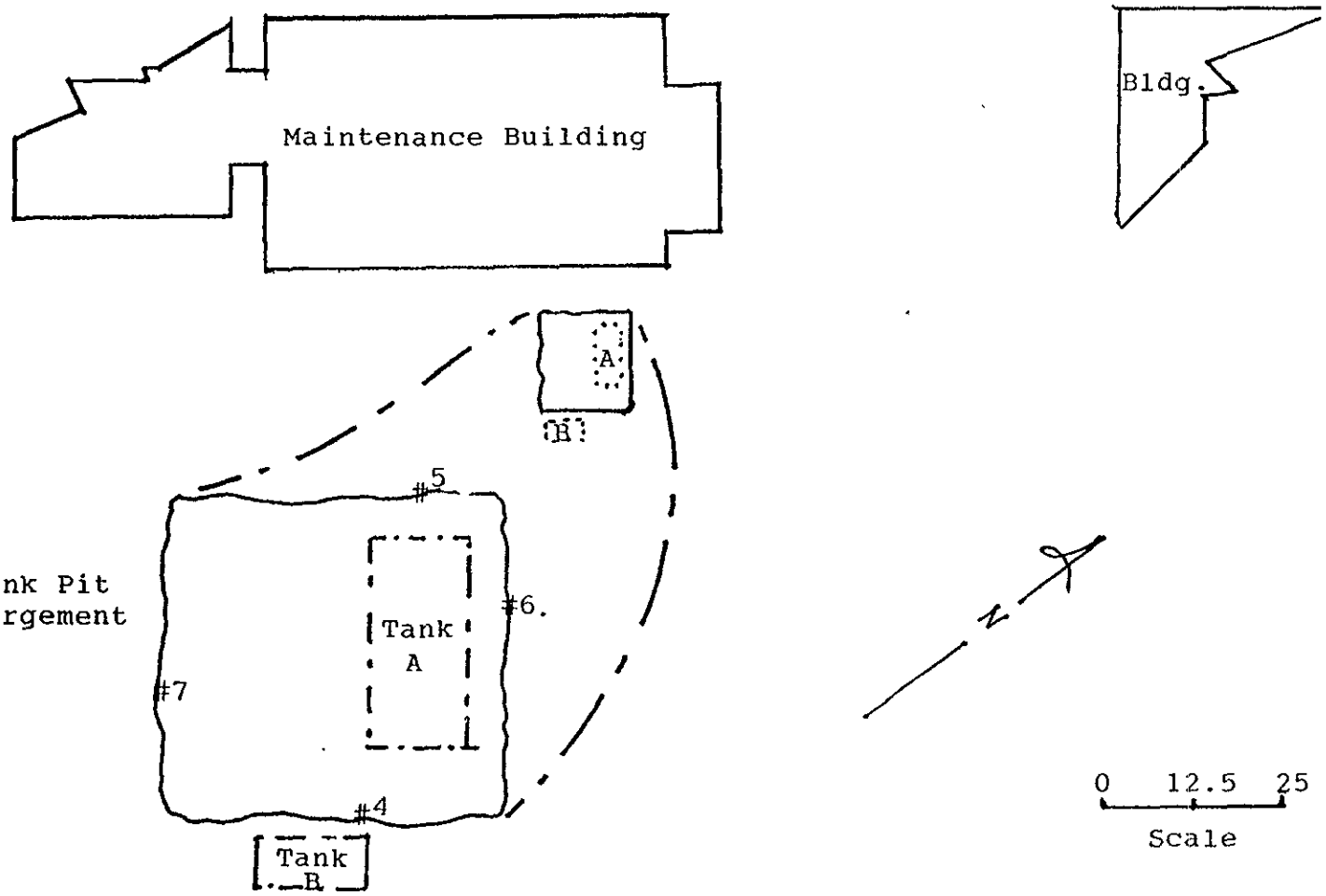
3.9 Traffic

Vehicles, trailers, and drill rig, will be parked in a courteous manner to not block fire hydrants, emergency vehicle pathways, walkways, building exits, or working areas unless prior arrangements have been made and no other working areas are available. Work is to be conducted in a manner to cause the least amount of disturbance to business.

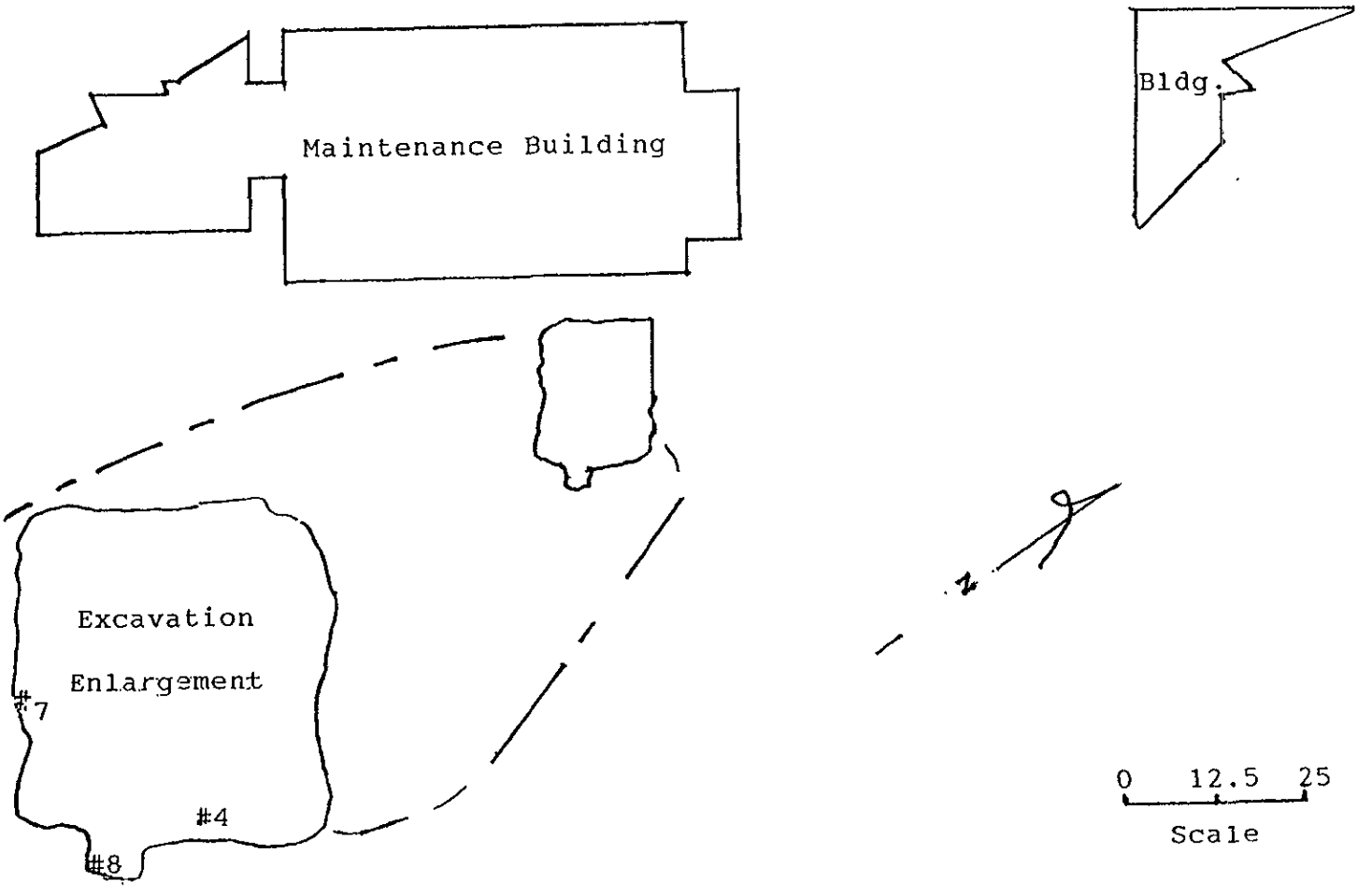
APPENDIX A
MAPS



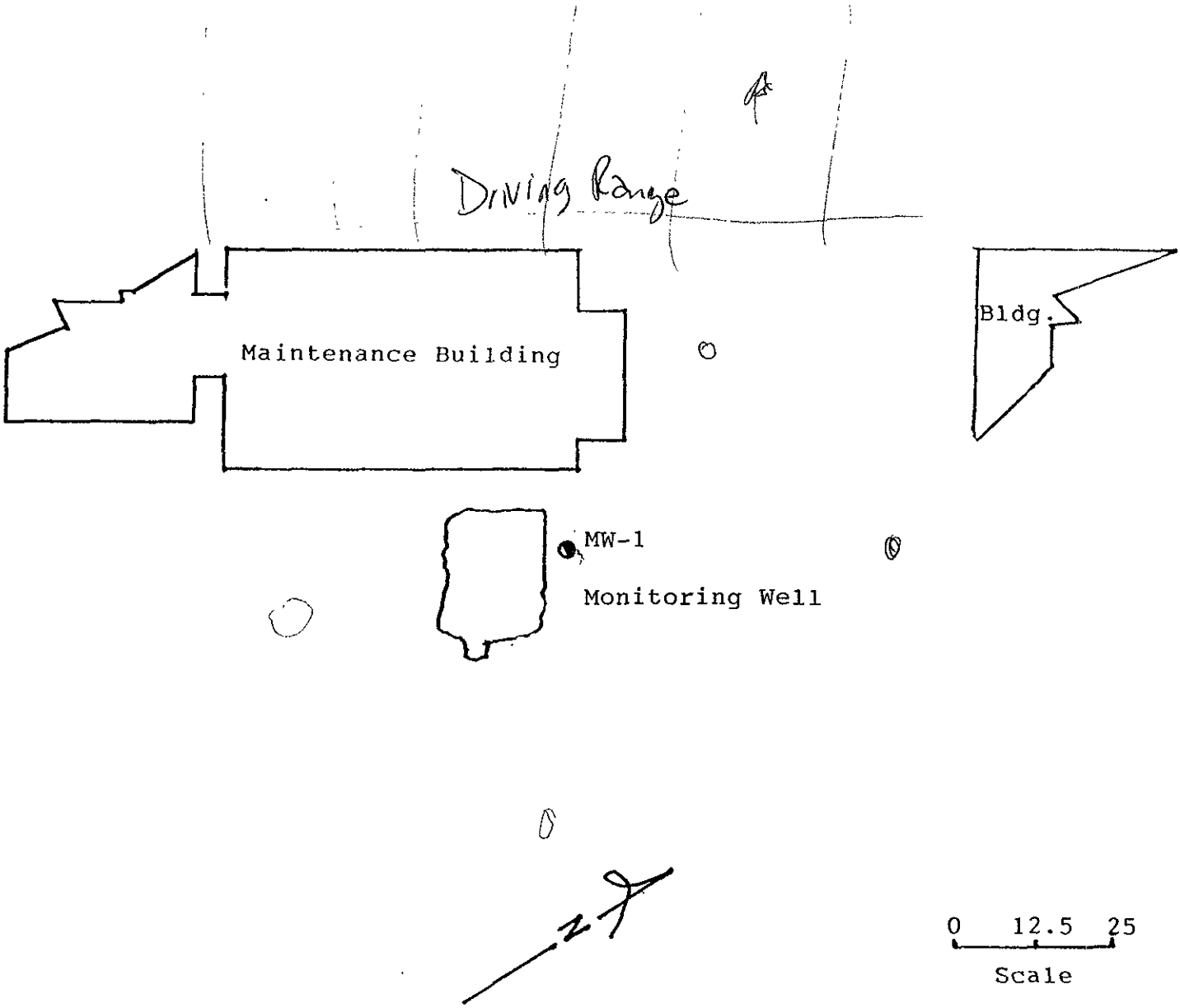
Zaccor Corporation *791 Hamilton Avenue* *Menlo Park, California*	Site Location Map Alameda Golf Course 1 Memorial Club House Drive Alameda, California	Figure 1 Feb. 1992



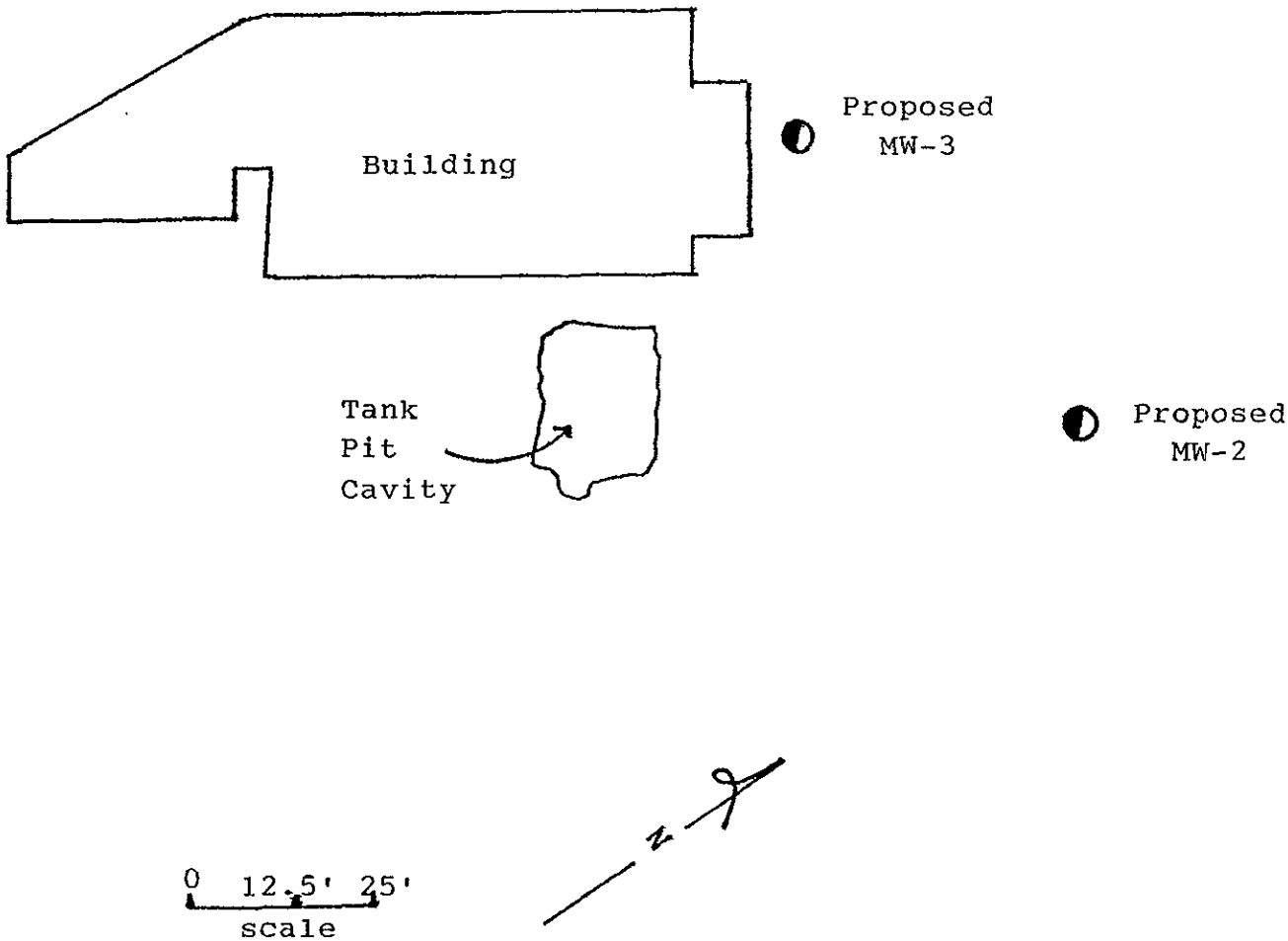
Zaccor Corporation *791 Hamilton Avenue* *Menlo Park, California*	Tank Location and Removal Map	Figure 2
	Alameda Golf Course 1 Memorial Club House Drive Alameda, California	Feb. 1992



Zaccor Corporation 791 Hamilton Avenue Menlo Park, California	Excavation of Tank Pit Map Alameda Golf Course 1 Memorial Club House Drive Alameda, California	Figure 3 Feb. 1992



Zaccor Corporation *791 Hamilton Avenue* *Menlo Park, California*	Existing Monitoring Well Location Map	Figure 4
	Alameda Golf Course 1 Memorial Club House Drive Alameda, California	Feb. 1992



Zaccor Corporation *791 Hamilton Avenue* *Menlo Park, California*	Proposed Monitoring Well Location Map	Figure 5
	Alameda Golf Course 1 Memorial Club House Drive Alameda, California	Feb. 1992

APPENDIX B
EXISTING MONITORING WELL CONSTRUCTION

WESCO LABORATORIES

RECEIVED
JUN 18 1986
AQUA SCIENCE ENG.

Date: June 17, 1986
Client: Aqua Science
Submitted by: B. Bratlien
Report to: Aqua Science
WESCO Job #: AQS 8648

Client Job/P.O. #: Alameda City
Date collected: 6-9-86
Date submitted: 6-10-86
& type of sample(s): 8 Water

Lab No.	Client ID	Motor Fuel (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Xylene (mg/l)	Fuel Type
4629	Fire House #2 635 Pacific Street	< 0.2	———	———	———	Diesel
4630	Fire House #3 1703 Grand Street	5.4	———	———	———	Diesel
4631	Police Dept. 1555 Oak Street	1.6	———	———	———	Diesel
4632	Fire House #1 1300 Park Street	< 0.2	———	———	———	Diesel
4633	City Hall #1 2263 Santa Clara	< 0.05	< 0.001	< 0.001	< 0.001	Gasoline
4634	City Hall #2 2263 Santa Clara	< 0.05	< 0.001	< 0.001	< 0.001	Gasoline
4635	Fire House #3 1703 Grand Street	< 0.05	< 0.001	< 0.001	< 0.001	Gasoline
4636	Alameda Municipal Golf Course	< 0.05	< 0.001	< 0.001	< 0.001	Gasoline
	METHOD: Note 1					

NOTES:
Note 1 - EPA method 5020/8015/8020.

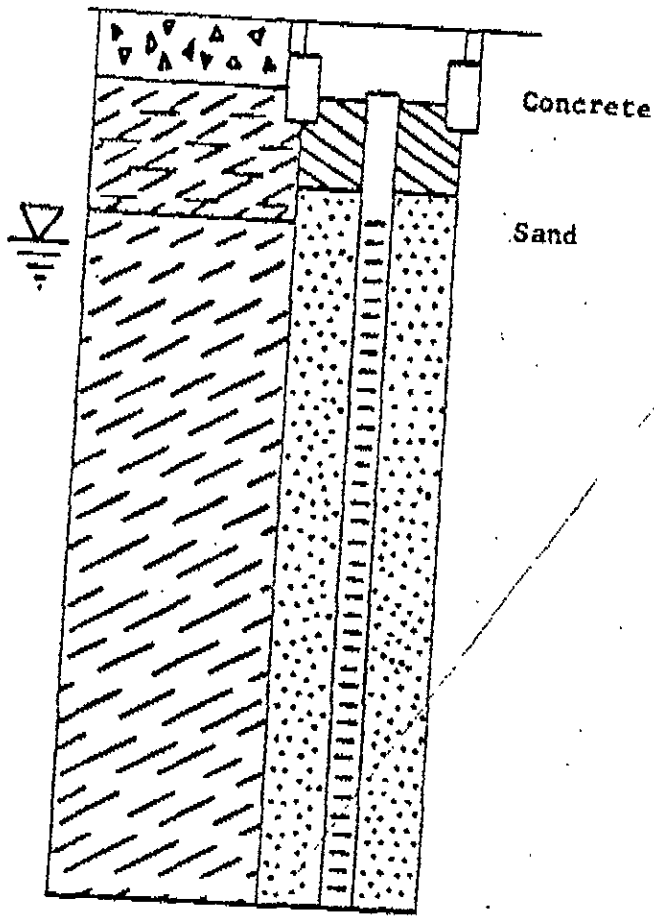
Analytical Supervisor

AQUA SCIENCE ENGINEERS WELL LOG

Casing: 2" PVC
Well Depth: 13.5 ft.
Logged By: D. Schultz, P.E.
Water Depth: 3.5 ft.
Driller: ASE

Alameda Mun. Golf Course
Clubhouse Road
Alameda, CA.
Boring # 1
Date: 6-2-86

DEPTH (ft.)	SOIL DESCRIPTION	WELL CONSTRUCTION DETAILS
0-	Gravel Cover	
1-		
2-	Brown Silty Clay	
3-		
4-	Soft Gray Clay	
5-		
	(bay mud)	
6-		
7-		
8-		
9-		
10-		
11-		
12-		
13-		
14-		



Bottom of Boring 13.5 ft.

APPENDIX C
TANK REMOVAL AND EXCAVATION REPORT

August 4, 1991

Parks and Recreation
Oak Street at Santa Clara Street
Alameda, California 94501

Attention: Mr. Fred Framsted

The following documentation concerns the initial tank removal, excavation of contaminated soil, and stockpile sampling performed by Zaccor Corporation at:

ALAMEDA GOLF COURSE
1 MEMORIAL CLUB HOUSE DRIVE
ALAMEDA, CALIFORNIA

Field Sampling was performed in accordance with state and local agency approved methodology, in the presence of Pamela Evans, Hazardous Materials Specialist for the Alameda County Environmental Health Department.

See accompanying site diagram for the location of tanks, field sampling designations, and sampling depths.

TANK REMOVAL

On July 10, 1991, two underground storage tanks (UST's) were removed from the above mentioned address. These were one 500 gallon gasoline tank and one 125 gallon tank.

Upon tank removal the following observations were noted;

Tank A was a 500 gallon single wall steel gasoline UST. The tank was covered with an intact tar wrap. An anode was attached properly to the tank.

Tank B was a 125 gallon single wall steel UST. The tank was uncovered unexpectedly during the excavation of contaminated soil. The tanks existence was unknown. The tank had corroded to a thin shell with multiple holes and had been partially crushed by the pressure of native backfill. A GasTech model 1314 Hydrocarbon Survey Instrument was used to monitor vapors in soil present within the tank interior. Vapor concentrations within the tank exceeded the instruments maximum vapor detection capacity of 10,000 ppm. Three bungs were noted on the tank. It is assumed these were the fill pipe, vent pipe and product line bung.

SAMPLING

Soil samples were collected from the tank pit wall vadose/saturated capillary zone as groundwater was encountered at 5' within the excavation. This was accomplished by the clearing of fill material and slough from the designated sample area. A backhoe bucket then obtained a sample from 12" to 18" into the native soil. The surface three inches of soil was removed from the backhoe bucket and a clean brass sleeve driven into the remaining soil. Soil was packed into the sleeve, then covered with aluminum foil, fitted with plastic caps, sealed with duct tape, labeled, and placed under chain of custody, in a refrigerator within the mobile lab analytical facility, for immediate analysis.

EXCAVATION OF CONTAMINATION

The excavation of contaminated soil was implemented using heavy earth moving equipment.

As the excavation proceeded soil samples were obtained and monitored for odor and hydrocarbon vapors using a GasTech model 1314 hydrocarbon survey instrument.

Upon collection, soil samples were analyzed immediately using an on-site Certified Hazardous Waste Analytical Laboratory.

Where hydrocarbon contamination was detected the excavation of soil was implemented using heavy earth moving equipment. A soil sample was collected and analyzed for TPH-G & BTEX. This process was repeated until soil samples representing each wall contained no detectable concentrations for TPH-G & BTEX.

STOCKPILE SAMPLING

Composite soil samples were collected in accordance with the Bay Area Air Quality Management District (BAAQMD) guidelines.

Approximately 80 cubic yards of contaminated soil was generated throughout the original tank pull and excavation.

Soil samples were obtained from four points within each 50 cubic yards of soil to be composited at a certified laboratory for one analysis.

STOCKPILE SAMPLING-continued

The composite soil samples were designated as sample AGC #1A-D, AGC #3A-D, AGC #7A-D, AGC #9A-D and sample AGC #10A-D.

Each sample was analyzed for total petroleum hydrocarbons as gasoline, benzene, toluene, ethylbenzene and total xylenes.

GROUNDWATER SAMPLING

Groundwater was present within the tank pit at a depth of five feet.

Twice the water was evacuated from the tank pit and allowed to recharge. Following the second recharge, on July 16, 1991, a sample of the groundwater was collected by lowering a closed one liter amber bottle beneath the groundwater surface, the bottle was then opened, allowed to fill, closed, and removed from the tank pit excavation. This process was repeated until three one-liter amber bottles and three 40-ml VOA vials were filled to a positive meniscus and capped. The bottles were placed on blue ice under chain of custody and transported to a Certified Hazardous Waste Analytical Laboratory. The groundwater sample was analyzed for Total Petroleum Hydrocarbons as Gasoline, benzene, toluene, ethylbenzene, and xylene.

The tank pit was then backfilled with clean imported fill material.

SAMPLE DATA

Matrix	AGC Sample #	Location	Depth
Soil	1A-C	Stockpile	2′
Soil	2	South Wall Capillary Beneath 125 gal. tank	4.5′
Soil	3A-C	Stockpile	2′
Soil	4	South Wall Capillary	4.5′

SAMPLE DATA-continued

Soil	5	North Wall Capillary	4.5′
Soil	6	East Wall Capillary	4.5′
Soil	7	West Wall Capillary	4.5′
Soil	8	South Wall Capillary	4.5′
Soil	9A-D	Stockpile	2′
Soil	10A-D	Stockpile	2′
Water	TPW-1	Tank Pit Water	8′

SAMPLE ANALYSIS

Sample AGC #1A-C to #10A-D and #TPW-1 were analyzed for Total Petroleum Hydrocarbons as Gasoline with benzene, toluene, ethylbenzene, and total xylenes (TPH-G, BTEX, EPA Method 5030/8020)

SOIL ANALYTICAL RESULTS

Sample#	TPH-G	B	T	E	X
all AGC soil results are reported in ppm					
#1A-C	2,000	1.2	2.8	2.6	26
#2	960	3.5	0.10	3.0	13
#3A-C	250	0.52	0.45	0.65	5.4
#4	ND	0.011	ND	ND	0.005
#5	ND	ND	ND	ND	ND

SOIL ANALYTICAL RESULTS-continued

Sample#	TPH-G	B	T	E	X
all AGC soil results are reported in ppm					
#6	3.0	0.030	0.006	0.023	0.059
#7	ND	ND	ND	ND	ND
#8	ND	ND	ND	ND	ND
#9A-D	ND	ND	ND	ND	ND
#10A-D	11	0.13	0.48	0.29	1.9

GROUNDWATER ANALYTICAL RESULT
result reported in ppb

Sample#	TPH-G	B	T	E	X
#TPW-1	8,200	210	ND	270	1,200

ND = Not detectable amount at the lower detection limit

RECOMMENDATIONS

The State Water Resources Control Board Document, Leaking Underground Fuel Tank Field Manual (LUFT), supported by the San Francisco Regional Water Quality Control Board (SFRWQCB), defines acceptable limits and appropriate actions for addressing UST contamination.

The results of soil samples collected within the vadose/ saturated wall capillary zone representing each wall, indicate soil contamination has been removed and further excavation is not warranted at this time.

A monitoring well is present within two feet of the tank pit excavation. It is our recommendation that this well be used for future monitoring should an investigation of the well installation reports and local groundwater gradient prove the wells integrity and placement is sufficient.

REPORTAGE

Copies of the sampling report, chain of custody, and certified analytical report should be submitted to both 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
2101 Webster St. Rm. 500
Oakland Ca. 94612
ATTN: Fuel Leaks Division

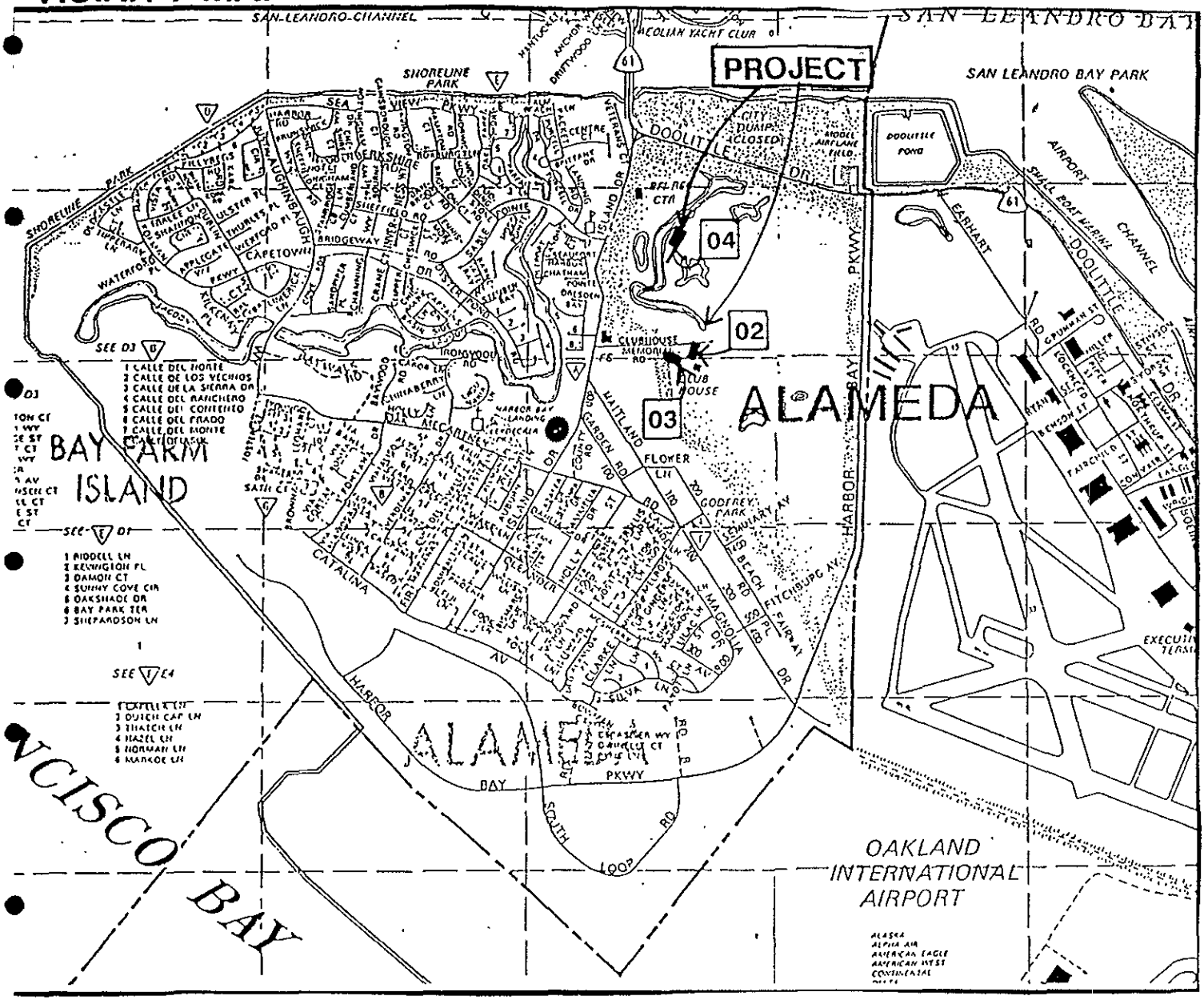
Alameda County Department of Environmental Health
Hazardous Materials Unit
80 Swan Way Rm.200
Oakland Ca. 94612
ATTN: Pamela Evans

It has been a pleasure working with you. If I may be of further assistance please contact me at (415) 363-2181.

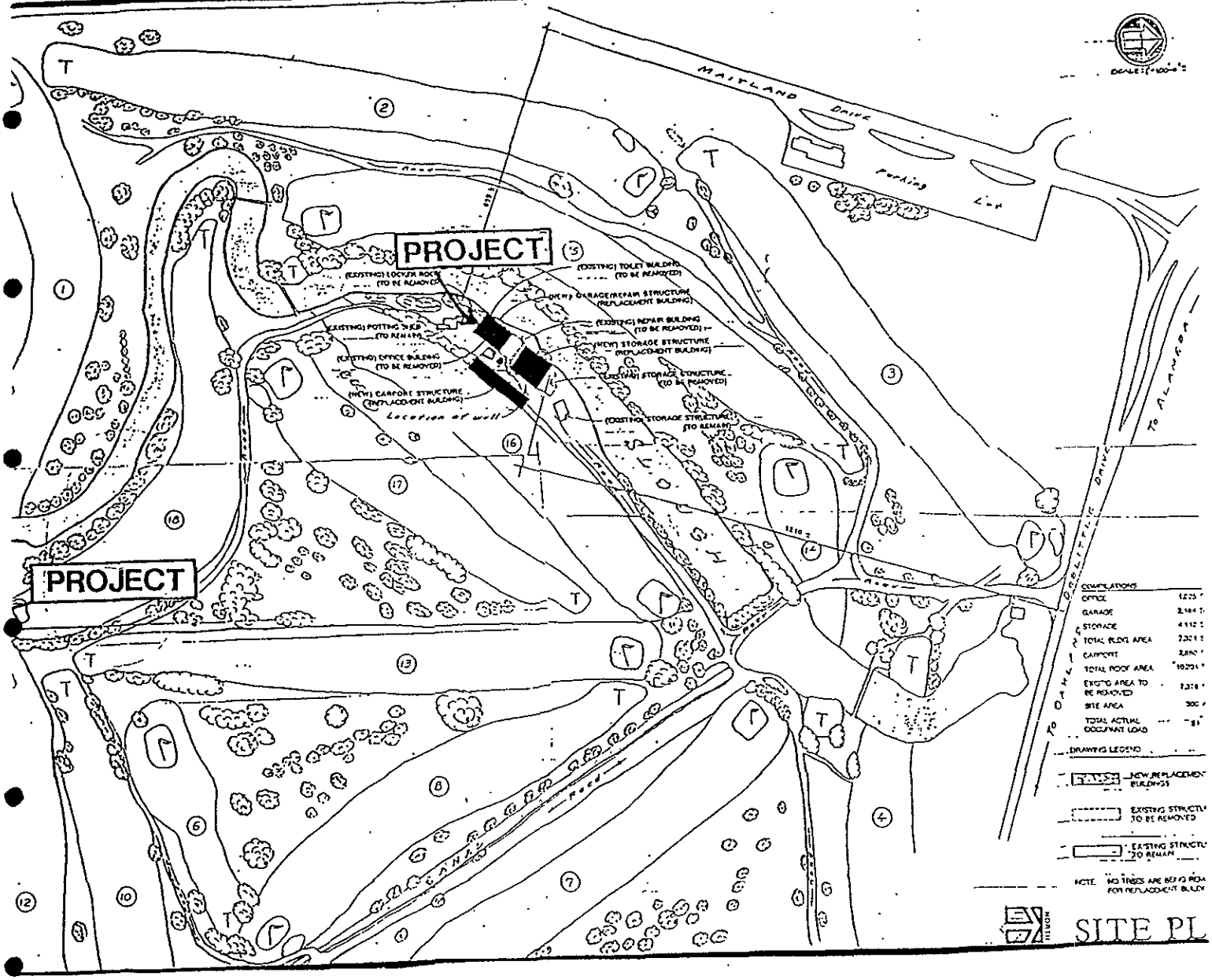
Sincerely,
ZACCOR CORPORATION

Gary Zaccor
Project Manager

VICINITY MAP



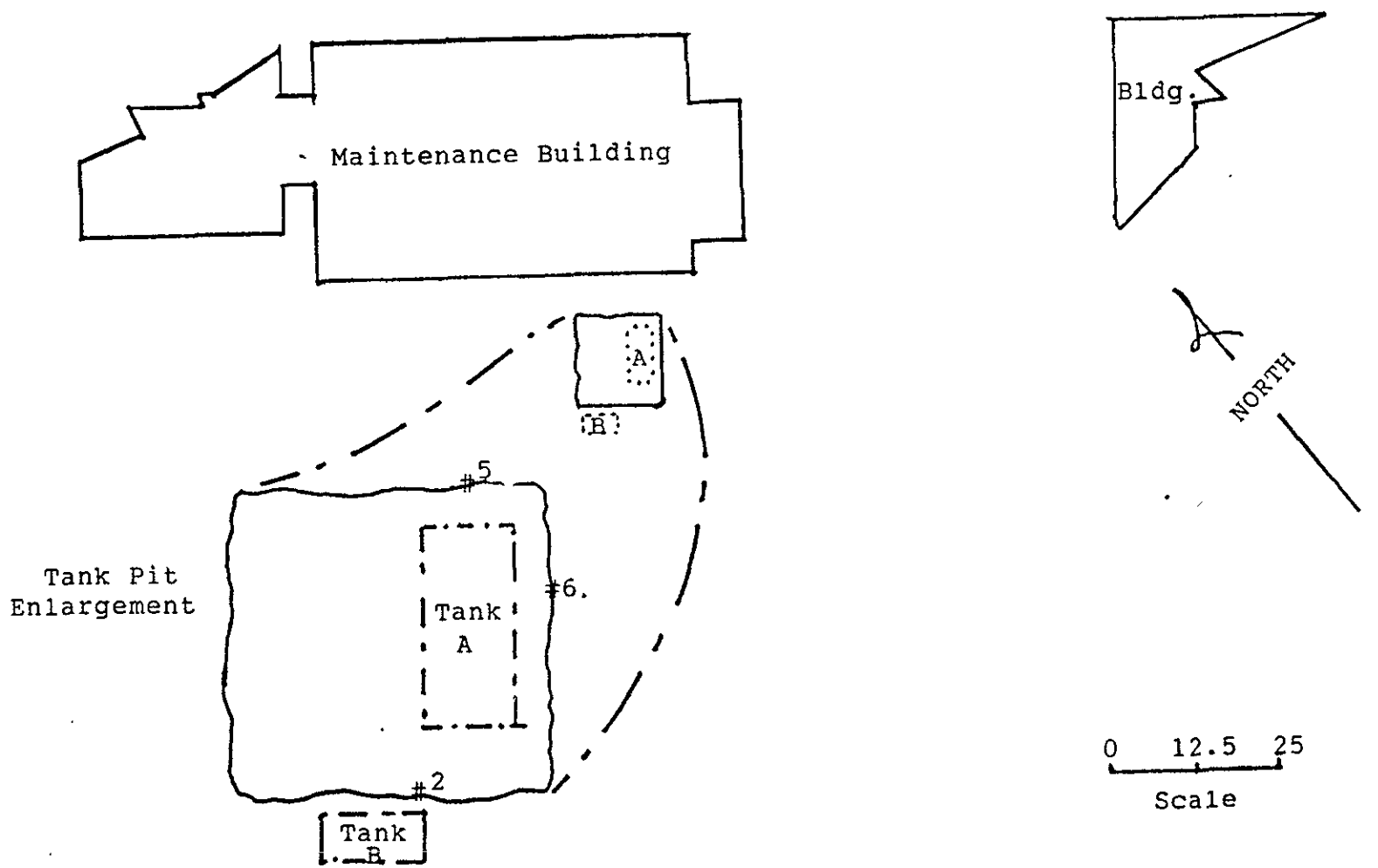
DING LOCATOR MAP SEE SHEET T1 & T4 FOR OTHER LOCATIONS



ENVIRONMENTAL
TECHNICAL
SERVICES

at: Alameda Golf Course, 1 Memorial Club House Drive, Alameda CA.

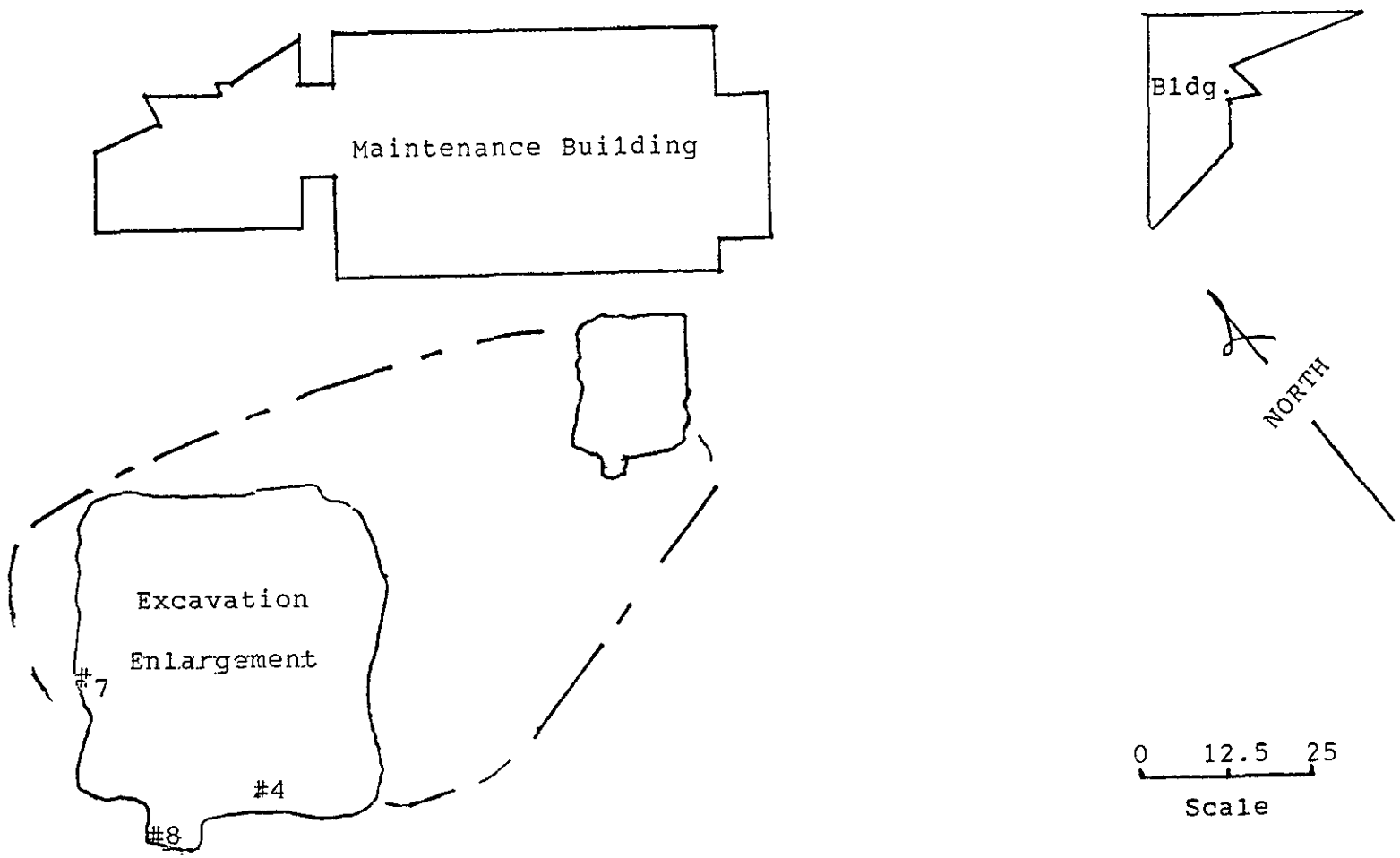
7/10/91



ENVIRONMENTAL
TECHNICAL
SERVICES

at: Alameda Golf Course, 1 Memorial Club House Drive, Alameda CA.

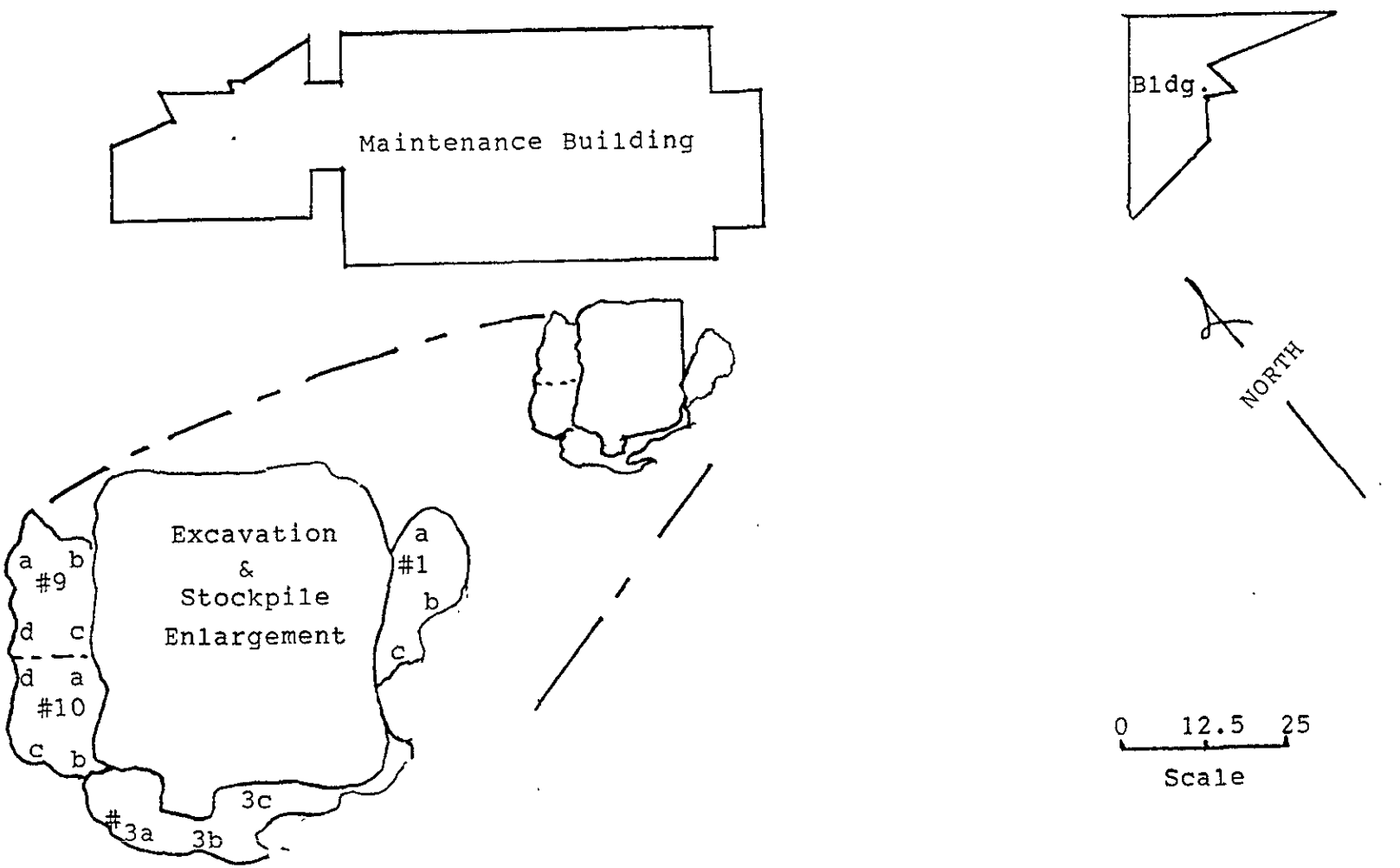
7/10/91



ENVIRONMENTAL
TECHNICAL
SERVICES

at: Alameda Golf Course, 1 Memorial Club House Drive, Alameda CA.

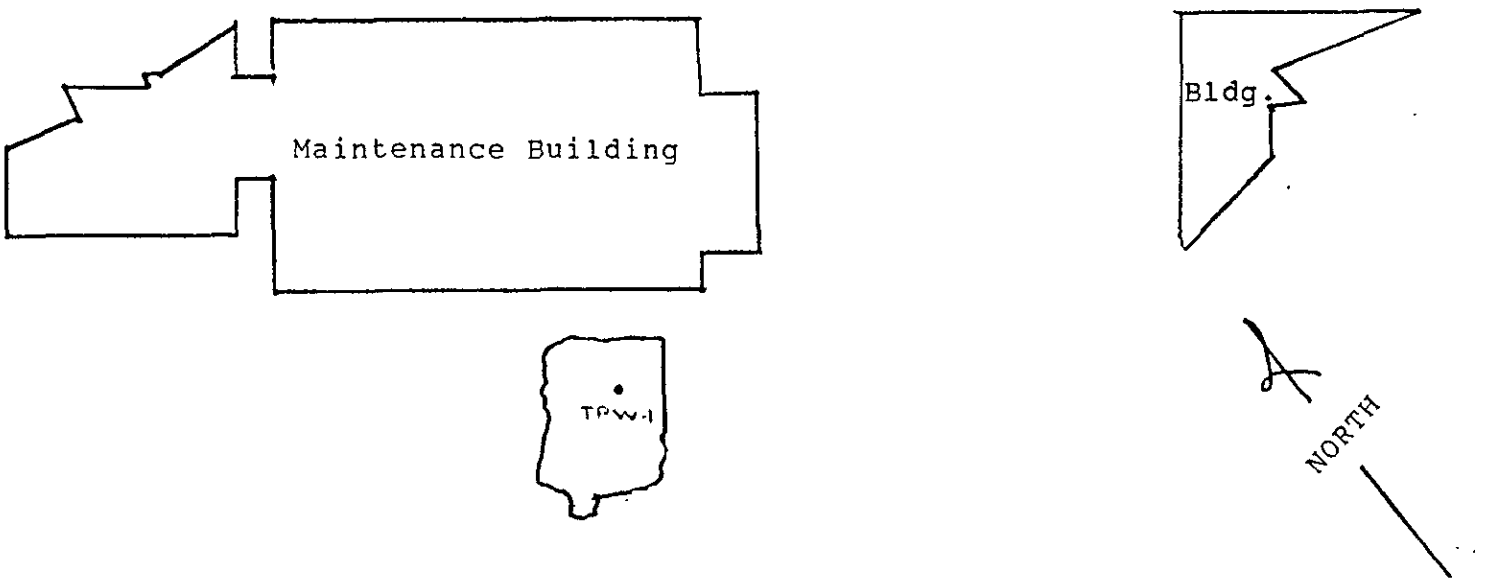
7/10/91



ENVIRONMENTAL
TECHNICAL
SERVICES

at: Alameda Golf Course, 1 Memorial Club House Drive, Alameda CA.

7/16/91



MOBILE CHEM LABS INC.

5021 Blum Road, Suite 3 • Martinez, CA 94553
Phone (415) 372-3700 • Fax (415) 372-6955

#1 Clubhouse Dr.\011780

Zaccor Corporation
791 Hamilton Avenue
Menlo Park, CA 94025
Attn: Gary Zaccor
Project Manager

Date Sampled: 07-10-91
Date Received: 07-10-91
Date Reported: 07-10-91

Sample Number	Sample Description
V071001	Alameda Golf Course #1 Clubhouse Drive Alameda, CA #1A-#1C SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	2,000
Benzene	0.005	1.2
Toluene	0.005	2.8
Xylenes	0.005	26
Ethylbenzene	0.005	2.6

QA/QC: Sample blank is none detected
Duplicate Deviation is 6.7%

Note: Analysis was performed using EPA methods 5030 and TPH LUFT with method 8020 used for BTX distinction.
(ppm) = (mg/kg)

MOBILE CHEM LABS

Ronald G. Evans
Lab Director

MOBILE CHEM LABS INC.

5021 Blum Road, Suite 3 • Martinez, CA 94553
Phone (415) 372-3700 • Fax (415) 372-6955

#1 Clubhouse Dr.\011780

Zaccor Corporation
791 Hamilton Avenue
Menlo Park, CA 94025
Attn: Gary Zaccor
Project Manager

Date Sampled: 07-10-91
Date Received: 07-10-91
Date Reported: 07-10-91

Sample Number	Sample Description
V071002	Alameda Golf Course #1 Clubhouse Drive Alameda, CA #2 SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	960
Benzene	0.005	3.5
Toluene	0.005	0.10
Xylenes	0.005	13
Ethylbenzene	0.005	3.0

QA/QC: Sample blank is none detected

Note: Analysis was performed using EPA methods 5030 and TPH LUFT with method 8020 used for BTX distinction.
(ppm) = (mg/kg)

MOBILE CHEM LABS

Ronald G. Evans
Lab Director

MOBILE CHEM LABS INC.

5021 Blum Road, Suite 3 • Martinez, CA 94553
Phone (415) 372-3700 • Fax (415) 372-6955

#1 Clubhouse Dr.\011780

Zaccor Corporation
791 Hamilton Avenue
Menlo Park, CA 94025
Attn: Gary Zaccor
Project Manager

Date Sampled: 07-10-91
Date Received: 07-10-91
Date Reported: 07-10-91

Sample Number	Sample Description
V071003	Alameda Golf Course #1 Clubhouse Drive Alameda, CA #3A,3B,3C SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	250
Benzene	0.005	0.52
Toluene	0.005	0.45
Xylenes	0.005	5.4
Ethylbenzene	0.005	0.65

QA/QC: Sample blank is none detected

Note: Analysis was performed using EPA methods 5030 and TPH LUFT with method 8020 used for BTX distinction.
(ppm) = (mg/kg)

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Lab Director

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Attn: Gary Zaccor
Project Manager

Date Sampled: 07-10-91
Date Received: 07-10-91
Date Reported: 07-10-91

Sample Number	Sample Description
V071004	Alameda Golf Course #1 Clubhouse Drive Alameda, CA #4 SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	0.011
Toluene	0.005	<0.005
Xylenes	0.005	0.005
Ethylbenzene	0.005	<0.005

QA/QC: Sample blank is none detected

Note: Analysis was performed using EPA methods 5030 and TPH LUFT with method 8020 used for BTX distinction.
(ppm) = (mg/kg)

MOBILE CHEM LABS

Ronald G. Evans
Lab Director

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791 Hamilton Avenue
Menlo Park, CA 94025
Attn: Gary Zaccor
Project Manager

Date Sampled: 07-10-91
Date Received: 07-10-91
Date Reported: 07-10-91

Sample Number	Sample Description
V071005	Alameda Golf Course #1 Clubhouse Drive Alameda, CA #5 SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethylbenzene	0.005	<0.005

QA/QC: Sample blank is none detected

Note: Analysis was performed using EPA methods 5030 and TPH LUFT with method 8020 used for BTX distinction.
(ppm) = (mg/kg)

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Lab Director

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Menlo Park, CA 94025
Attn: Gary Zaccor
Project Manager

Date Sampled: 07-10-91
Date Received: 07-10-91
Date Reported: 07-10-91

Sample Number	Sample Description
V071006	Alameda Golf Course #1 Clubhouse Drive Alameda, CA #6 SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	3.0
Benzene	0.005	0.030
Toluene	0.005	0.006
Xylenes	0.005	0.059
Ethylbenzene	0.005	0.023

QA/QC: Sample blank is none detected

Note: Analysis was performed using EPA methods 5030 and TPH LUFT with method 8020 used for BTX distinction.
(ppm) = (mg/kg)

MOBILE CHEM LABS

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Lab Director

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#1 Clubhouse Dr.\011780

Zaccor Corporation
791 Hamilton Avenue
Menlo Park, CA 94025
Attn: Gary Zaccor
Project Manager

Date Sampled: 07-10-91
Date Received: 07-10-91
Date Reported: 07-10-91

Sample Number	Sample Description
V071007	Alameda Golf Course #1 Clubhouse Drive Alameda, CA #7 SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethylbenzene	0.005	<0.005

QA/QC: Sample blank is none detected
Spike Recovery is 90%

Note: Analysis was performed using EPA methods 5030 and TPH LUFT with method 8020 used for BTX distinction.
(ppm) = (mg/kg)

MOBILE CHEM LABS

Ronald G. Evans
Lab Director

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#1 Clubhouse Dr.\011780

Zaccor Corporation
791 Hamilton Avenue
Menlo Park, CA 94025
Attn: Gary Zaccor
Project Manager

Date Sampled: 07-10-91
Date Received: 07-10-91
Date Reported: 07-10-91

Sample Number	Sample Description
V071008	Alameda Golf Course #1 Clubhouse Drive Alameda, CA #8 SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethylbenzene	0.005	<0.005

QA/QC: Sample blank is none detected

Note: Analysis was performed using EPA methods 5030 and TPH LUFT with method 8020 used for BTX distinction.
(ppm) = (mg/kg)

MOBILE CHEM LABS

Ronald G. Evans
Lab Director

MOBILE CHEM LABS INC.

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Phone (415) 372-3700 • Fax (415) 372-6955

#1 Clubhouse Dr.\011780

Zaccor Corporation
791 Hamilton Avenue
Menlo Park, CA 94025
Attn: Gary Zaccor
Project Manager

Date Sampled: 07-10-91
Date Received: 07-10-91
Date Reported: 07-10-91

Sample Number	Sample Description
V071009	Alameda Golf Course #1 Clubhouse Drive Alameda, CA #9A-9D SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethylbenzene	0.005	<0.005

QA/QC: Sample blank is none detected

Note: Analysis was performed using EPA methods 5030 and TPH LUFT with method 8020 used for BTX distinction.
(ppm) = (mg/kg)

MOBILE CHEM LABS

Ronald G. Evans
Lab Director

MOBILE CHEM LABS INC.

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Phone (415) 372-3700 • Fax (415) 372-6955

#1 Clubhouse Dr.\011780

Zaccor Corporation
791 Hamilton Avenue
Menlo Park, CA 94025
Attn: Gary Zaccor
Project Manager

Date Sampled: 07-10-91
Date Received: 07-10-91
Date Reported: 07-11-91

Sample Number	Sample Description
V071011	Alameda Golf Course #1 Clubhouse Drive Alameda, CA #10A-10D SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	11
Benzene	0.005	0.13
Toluene	0.005	0.48
Xylenes	0.005	1.9
Ethylbenzene	0.005	0.29

QA/QC: Sample blank is none detected
Duplicate Deviation is 0.7%

Note: Analysis was performed using EPA methods 5030 and TPH LUFT with method 8020 used for BTX distinction.
(ppm) = (mg/kg)

MOBILE CHEM LABS

Ronald G. Evans
Lab Director

NAMETRIX INC
ronmental & Analytical Chemistry
: Concourse Drive, Suite E, San Jose, CA 95131
)) 432-8192 • Fax (408) 432-8198

REPORT

MR. GARY ZACCOR
ZACCOR CORP.
791 HAMILTON AVE.
MENLO PARK, CA 94025

Workorder # : 9107150
Date Received : 07/16/91
Project ID : AG COURSE
Purchase Order: N/A

The following samples were received at Anametrix, Inc. for analysis :

ANAMETRIX ID	CLIENT SAMPLE ID
9107150- 1	TPW-1

This report consists of 3 pages not including the cover letter, and is organized in sections according to the specific Anametrix laboratory group or section which performed the analysis(es) and generated the data. The Report Summary that precedes each section will help you determine which Anametrix group is responsible for those test results, and will bear the signatures of the department supervisor and the chemist who have reviewed the analytical data. Please refer all questions to the department supervisor who signed the form.

Anametrix is certified by the California Department of Health Services (DHS) to perform environmental testing under Certificate Number 1234. A detailed list of the approved fields of testing can be obtained by calling our office, or the DHS Environmental Laboratory Accreditation Program at (415)540-2800.

If you have any further questions or comments on this report, please give us a call as soon as possible. Thank you for using Anametrix.

Sarah Schoen, Ph.D.
Laboratory Manager

7-30-91
Date

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

R. GARY ZACCOR
ACCOR CORP.
91 HAMILTON AVE.
ENLO PARK, CA 94025

Workorder # : 9107150
Date Received : 07/16/91
Project ID : AG COURSE
Purchase Order: N/A
Department : GC
Sub-Department: TPH

MPLE INFORMATION:

NAMETRIX AMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
107150- 1	TPW-1	WATER	07/16/91	TPHg/BTEX

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. GARY ZACCOR
ZACCOR CORP.
91 HAMILTON AVE.
MENLO PARK, CA 94025

Workorder # : 9107150
Date Received : 07/16/91
Project ID : AG COURSE
Purchase Order: N/A
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- No QA/QC problems encountered for this sample.

Department Supervisor 7/29/91 Date

Chemist 7/29/91 Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS
(GASOLINE WITH BTEX)
ANAMETRIX, INC. - (408) 432-8192

nametrix W.O.: 9107150
atrix : WATER
ate Sampled : 07/16/91

Project Number : AG COURSE
Date Released : 07/29/91

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# TPW-1 -01	Sample I.D.# 04B0723A BLANK
Benzene	0.5	210	ND
Toluene	0.5	ND	ND
Ethylbenzene	0.5	270	ND
Total Xylenes	0.5	1200	ND
TPH as Gasoline	50	8200	ND
% Surrogate Recovery		100%	91%
Instrument I.D.		HP4	HP4
Date Analyzed		07/23/91	07/23/91
RLMF		50	1

ND - Not detected at or above the practical quantitation limit for the method.
PHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
TEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA Method 8020.
LMF - Reporting Limit Multiplication Factor.
Anametrix control limits for surrogate p-Bromofluorobenzene recovery are 53-147%.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Anna Shea 7/25/91
nalyst Date

Cheryl Bachman 7/29/91
Supervisor Date

10/5 (10/7)

CLIENT CHAIN OF-CUSTODY RECORD

9107150

PROJECT NUMBER	PROJECT NAME
ACCourse	Alameda Golf Course

Send Report Attention of:	Report Due	Verbal Due
GARY ZACCOR	7/30/91	/ /

Sample Number	Date	Time	Comp	Grab	Station Location	Number of Cntnrs	Type of Containers	Type of Analysis: TPH-D BTEX	Condition of Samples	Initial
TPW-1	7/16/91	1235		X	Water in Tank pit 2nd Recharge	2 liters 3 voas 1 sleeve	→	✓		
							→	HOLD (A)	3 voas no's b:bb/20	
									(a) 9mm (b) 6mm	
									= 9mm	
								(B)	Storm sample warm sample	

Relinquished by:(Signature)	Date/Time	Received by: (Signature)	Date/Time
Kelly Mawhinney	13:25 7/16/91	Rita Santos	7/16/91 12:25
Relinquished by:(Signature)	Date/Time	Received by: (Signature)	Date/Time
Relinquished by:(Signature)	Date/Time	Received by: (Signature)	Date/Time

Remarks: Routine
May call for additional analysis

SAMPLE DISPOSAL:
Return to Client [____]
Soil Disposal by Anametrix ($5.00 per container) [____]

COMPANY: ZACCOR CORPORATION
ADDRESS: 791 [illegible] Menlo Park, Ca
PHONE : 415 363-2181 FAX :

5025

Please Preserve Soil Volume in this sample for possible analysis

APPENDIX D
USCS

Key to Boring Logs

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS — MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	Well graded gravels, gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	SANDS — MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (LESS THAN 5% FINES)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines.
			SC	Clayey sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS — LIQUID LIMIT IS LESS THAN 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS — LIQUID LIMIT IS GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

DEFINITION OF TERMS

U.S. STANDARD SERIES SIEVE				CLEAR SQUARE SIEVE OPENINGS			
200	40	10	4	3/4"	3"	12"	
SILTS AND CLAYS	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

GRAIN SIZES

SANDS AND GRAVELS	BLOWS/FOOT†
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

RELATIVE DENSITY

SILTS AND CLAYS	STRENGTH‡	BLOWS/FOOT†
VERY SOFT	0 - 1/4	0 - 2
SOFT	1/4 - 1/2	2 - 4
FIRM	1/2 - 1	4 - 8
STIFF	1 - 2	8 - 16
VERY STIFF	2 - 4	16 - 32
HARD	OVER 4	OVER 32

CONSISTENCY

†Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1-3/8 inch I.D.) split spoon (ASTM D-1586).

‡Unconfined compressive strength in tons/sq. ft. as determined by laboratory testing or approximated by the standard penetration test (ASTM D-1586), pocket penetrometer, torvane, or visual observation.

UNIFIED SOIL CLASSIFICATION SYSTEM

(ASTM D-2487)

Soil Color derived from the MUNSELL Soil Color Charts

APPENDIX E
BORING LOG EXAMPLE

MONITORING WELL BORING LOGS

ENVIRONMENTAL TECHNICAL SERVICES
for: ZACCOR CORPORATION

AT:

R.E.

Drilling Method : Augers

Sample Method : Split Spoon

Project Manager:

DEPTH	SAMPLE COLLECTED: INT. SAMPLE#	Soil Description	USCS	LOG	BLOW COUNTS	WELL CONSTRUCTION
-5'	6-6.5	FINE TO MEDIUM GRAIN SAND, SOME SILT, med. brown, no odor, 70ppm vp.	SC		9,19,22	LOCKED CAP; BLANK CASING PVC 2" I.D.; 7.5-8.5 BENTONITE
-10'	11-11.5	FINE TO MEDIUM GRAIN SAND, SOME SILT, med. brown, no odor,100ppm vp.	SC		9,18,26	10-30 2"I.D. PVC CASING 0.020" SLOT
-15'	16-16.5	FINE TO MEDIUM GRAIN SAND, SOME SILT, med.brown, moderate odor, 20ppm vp.	SC		11,27,X	8'-30' LONESTAR #3 SAND
-20'	16-16.5	FINE TO MEDIUM GRAIN SAND, SOME SILT, med. brown, slight odor,	SC		10,35,X	
-25'	26-26.5	FINE TO MEDIUM GRAIN SAND, SOME SILT, med,brown, slight odor, 10ppm vp.	SC		50,X	
-30'						30' BOTTOM CAP

CHRISTY BOX

GROUT