

July 9, 1993

Mr. Robert Deluca  
Alameda Unified School District  
2200 Central Avenue  
Alameda, CA 94501

RE: Field Investigation  
and Results of Groundwater Sampling at  
Encinal High School, Alameda, California

Dear Mr. Deluca:

Thank you for providing ACC with the opportunity to present this report. The enclosed report describes the materials and procedures used during a field investigation performed at Encinal High School, Alameda, California.

ACC's investigative approach was to drill three borings and convert them into groundwater monitoring wells. This work was performed to evaluate the lateral and vertical extent of soil contamination and to determine hydrocarbon concentrations in groundwater.

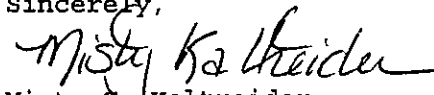
Soil samples collected during drilling were submitted to ChromaLab for petroleum hydrocarbon analyses, in accordance with the "Tri Regional Guidelines for Underground Storage Tank Sites".

The results of the chemical analysis of the soil samples indicated below detectable levels of Total Petroleum Hydrocarbons (TPH) as diesel and Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX) from all three of the borings.

Analysis of the groundwater samples from monitoring wells MW-1, MW-2 and MW-3 indicated below detectable concentrations of hydrocarbons.

If you have any comments regarding this report, please call me.

Sincerely,

  
Misty C. Kaltreider  
Geologist

cc: Mr. Richard Hiatt - Regional Water Quality Control Board  
Ms. Juliet Shin - Alameda County Health Care Services - Division of  
Hazardous Materials  
Mr. Wyman Hong - Alameda County Flood Control and Water Conservation  
District, Zone 7

SOIL AND GROUNDWATER INVESTIGATION

ENCINAL HIGH SCHOOL  
210 CENTRAL AVENUE  
ALAMEDA, CALIFORNIA

July 1993

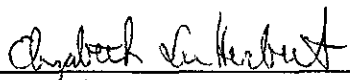
Prepared for:  
Mr. Robert Deluca  
Alameda Unified School District  
2200 Central Avenue  
Alameda, CA 94501

Prepared by:

Prepared by:

  
Misty Kaltreider,  
Project Geologist

Reviewed by:

  
Elizabeth Herbert, R.G.  
Registered Geologist

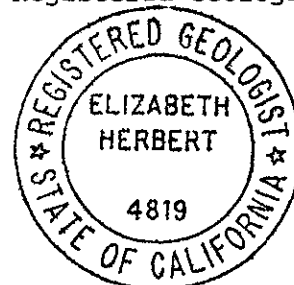


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FIGURES

Figure 1	Site Plan
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ATTACHMENTS

Appendix A	Analytical Results with Chain of Custody
Appendix B	Log of Borings MW-1, MW-2, and MW-3
	Unified Soil Classification Chart
	Well Construction Details for Wells MW-1, MW-2 and MW-3
Appendix C	Groundwater Monitoring Worksheets
Appendix D	Survey/Benchmark Description

## 1.0 INTRODUCTION

This report presents the procedures and findings of a soil and groundwater investigation conducted by ACC Environmental Consultants, Inc. ("ACC") on behalf of the Alameda Unified School District, Encinal High School, 210 Central Avenue, Alameda, California. The project objective, as described in the Work Plan prepared in January, 1993, was to drill three soil borings to evaluate the extent of soil contamination. Three of the borings were converted into 2-inch diameter groundwater monitoring wells to determine if groundwater has been impacted from the previous underground storage of heating oil.

## 2.0 BACKGROUND

Semco, tank removal contractor, removed one 1,500-gallon underground heating oil tank from Encinal High School yard in April of 1992. Two soil samples and one grab water sample were collected from the tank excavation and analyzed for Total Petroleum Hydrocarbons (TPH) as diesel and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Analysis of the soil samples indicated below detectable levels of the constituents evaluated. Analysis of the water sample identified 640 parts per billion (ppb) of TPH as diesel.

Per request of Alameda County Health Care Services - Hazardous Materials Division, this preliminary Site Assessment was conducted to further evaluate the soil contamination from the heating oil release on-site.

ACC was retained by Alameda Unified School District, to perform the work requested by the Alameda County Health Care Services.

## 3.0 FIELD PROCEDURES

Borings MW-1, MW-2 and MW-3 were drilled on June 14, 1993 using a Semco Limited Access Truck Mounted Drill Rig equipped with 8-inch outside diameter hollow-stem augers. Concurrent with drilling, subsurface soil samples were obtained with a Modified California Sampler equipped with three six-inch long brass liners. The sampler and brass liners were pre-cleaned prior to use and between sample drives by washing them with a trisodium phosphate (TSP) and potable water solution, a potable water rinse, and distilled water rinse. Soil samples were collected every five feet, at any noted changes in lithology, and at the approximate soil/groundwater interface.

Subsurface soil samples were obtained by drilling to the approximate sampling location and then driving the sampler eighteen inches into undisturbed material.

Upon removal from the sampler, each end of the brass liner was covered with Teflon tape and plastic caps, labeled, and stored in an ice-filled cooler to be transported under chain of custody to ChromaLab, a Cal-EPA certified laboratory.

Two soil samples were selected from each boring and submitted to ChromaLab for analysis according to the "Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites", dated August 10, 1990. Samples from the borings were submitted for analysis for Total Petroleum Hydrocarbons (TPH) as diesel by EPA test method 8015-Modified and benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA test method 8020. Copies of the analytical results and chain of custody forms are attached in Appendix A.

The soil cuttings and samples were logged by an ACC geologist during drilling operations. Lithologic logs of the borings are attached in Appendix B. The soil cuttings are described in accordance with the Unified Soil Classification System, also attached in Appendix B. Soil cuttings are stored on-site in DOT approved drums.

### 3.1 Monitoring Well Construction and Development

Monitoring wells MW-1, MW-2 and MW-3 were installed within borings MW-1, MW-2 and MW-3, respectively, upon completion of drilling. Well construction details are presented in Appendix B. Monitoring Wells MW-1 and MW-3 were installed with well casings consisting of 2-inch I.D. Schedule 40 PVC with 12 feet of 0.020-inch factory slotted screen below 3 feet of solid casing. Monitoring well MW-2 was installed with well casing consisting of 2-inch I.D. Schedule 40 PVC with 10 feet of 0.020-inch factory slotted screen below 3 feet of solid casing.

The wells were installed with Lonestar #2/12 sand used as annular fill to at least one-half foot above the top of the screen. One-half foot of 1/4-inch pelletized bentonite was placed between the annular sand and neat cement seal. "Christy" boxes were cemented over the tops of the PVC casings and set slightly above grade to drain surface waters away from the well head. Locking expansion plugs with locks were placed on each well.

The wells were developed on June 17, 1993, using dedicated disposable bailers, one per well. The wells were developed until pH and conductivity of development water had stabilized and was substantially free of fine material. Approximately 10 well casing volumes of water were removed from each well.

### 3.2 Groundwater Sampling

Groundwater samples were taken on June 25, 1993 from monitoring wells MW-1, MW-2, and MW-3. Prior to groundwater sampling the depth to the surface of the water table was measured from the top of the PVC casing using a Solinst Water Level Meter. Information regarding well elevations and groundwater level measurements is summarized below in Table 1.

# CHROMALAB, INC.

SUBM #: 9306000186  
 CLIENT: ACCENV  
 DUE: 06/22/93

94583

186/8535  
 8543  
 order #12097

## Chain of Custody

DOHS 1094

DATE \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_

PROJ. MGR. M. K. Kreider  
 COMPANY ACC Environmental  
 ADDRESS 1000 Atlantic sui 110  
Atlantic Ave.

SAMPLERS (SIGNATURE) Misty K. Kreider (PHONE NO.) 510-522-2188

### ANALYSIS REPORT

SAMPLE ID.	DATE	TIME	MATRIX	PRESERV.	TPH - Gasoline	TPH - Gasoline	TPH - Diesel	PURGEABLE AROMATICS	PURGEABLE HALOCARBONS	VOLATILE ORGANICS	BASE/NEUTRALS, ACIDS	TOTAL OIL & GREASE	PCB	PESTICIDES	TOTAL RECOVERABLE	METALS: Cd, Cr, Pb, Zn, Ni	CAM METALS (17)	PRIORITY POLLUTANT	TOTAL LEAD	EXTRACTION	NUMBER OF CONTAINERS	
					(EPA 5030, 8015)	(5030, 8015) w/BTEX (EPA 602, 8020)	(EPA 3510/3550, 8015)	(EPA 602, 8020)	(EPA 624, 8240, 524.2)	(EPA 625/627, 8270, 525)	(EPA 5520, B+F, E+F)	(EPA 608, 8080)	(EPA 608, 8080)	(EPA 418.1)	(EPA 608, 8080)	(EPA 608, 8080)	(EPA 418.1)	(EPA 418.1)	(EPA 418.1)	(EPA 418.1)		(EPA 418.1)
MW-1-5'	6/14/93		Soil				X	X														1
MW-1-10'							X	X														1
MW-1-15'																					X	1
MW-2-5'							X	X														1
MW-2-10'							X	X														1
MW-2-15'																					X	1
MW-3-5'							X	X														1
MW-3-10'							X	X														1
MW-3-15'																					X	1

PROJECT INFORMATION		SAMPLE RECEIPT	
PROJECT NAME: <u>Encinal HS.</u>	TOTAL NO. OF CONTAINERS <u>9</u>	HEAD SPACE	
PROJECT NUMBER:	REC'D GOOD CONDITION/COLD	CONFORMS TO RECORD	
P.O. #	24	48	72
STANDARD 5-DAY	OTHER		

RELINQUISHED BY 1. <u>Misty K. Kreider</u> (SIGNATURE) (TIME)	RELINQUISHED BY 2.	RELINQUISHED BY 3.
<u>Misty K. Kreider</u> (PRINTED NAME) (DATE)		
<u>ACC Environmental</u> (COMPANY)		

SPECIAL INSTRUCTIONS/COMMENTS:

RECEIVED BY 1.	RECEIVED BY 2.	RECEIVED BY (LABORATORY) 3.
(SIGNATURE) (TIME)	(SIGNATURE) (TIME)	<u>B. Moore</u> 6-15-93 (SIGNATURE) (TIME)
(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	<u>B. Moore</u> 6-15-93 (PRINTED NAME) (DATE)
(COMPANY)	(COMPANY)	<u>Chromalab</u> (LAB)

**TABLE 1 - Groundwater Depth Information**

<u>Date Sampled</u>	<u>Depth to Groundwater (ft.)</u>	<u>Groundwater Elevation (ft.)</u>
<u>Well No. MW-1</u> 06/25/93	Elevation of Top of Casing-10.06 MSL 5.77	4.29
<u>Well No. MW-2a</u> 06/25/93	Elevation of Top of Casing- 8.41 MSL 4.30	4.11
<u>Well No. MW-3</u> 06/25/93	Elevation of Top of Casing- 9.55 MSL 5.34	4.21

Notes: All measurements in feet  
MSL = Mean Sea Level

After water-level measurements were taken, each on-site well was purged by hand using a designated disposable Teflon bailer for each well. Groundwater pH, temperature and electrical conductivity were monitored during well purging. Each well was considered to be purged when these parameters stabilized. Four well volumes were removed to purge each well. Worksheets for measurements of groundwater conditions monitored during purging are attached in Appendix C.

After the groundwater level had recovered to a minimum of approximately 80 percent of its static level, water samples were obtained using the designated disposable Teflon bailer. For each well, one 1-liter and two 40-ml VOA vials, without headspace, were filled from the water collected.

The samples were preserved on ice and submitted to ChromaLab under chain of custody protocol. Analytical results and chain of custody for the groundwater samples are attached in Appendix A.

**4.0 FINDINGS**

**4.1 Subsurface Conditions**

During drilling and sampling activities, the site was observed to be covered with a baserock/asphalt cap. Below the cap, the subsurface soils consisted of brown fine grained sand with shell fragments to an explored depth of 15 feet. The sand is part of the Merritt Sand Formation.

A report by the Alameda County Flood Control and Water Conservation District Geohydrology and Groundwater - Quality Overview, East Bay Plain Area, Alameda County, California, 205 (J) Report, June 1988, describes the Merritt Sand as consisting of loose, well-sorted, fine to medium grained sand and silt, with lenses of sandy clay and clay. The sand was a wind and water deposited beach and near-shore deposit and is exposed only in the Alameda and Oakland areas.

Groundwater was encountered between 5 and 6 feet below ground surface (bgs) during drilling. Borings MW-1 and MW-3 were drilled to approximately 15 feet bgs. Boring MW-2 was drilled to approximately 13 feet bgs.

Monitoring wells MW-1, MW-2, and MW-3 were completed at the drilled depths within borings MW-1, MW-2, and MW-3, respectively.

During drilling and sampling field no evidence of volatile organic compounds (i.e. discoloration and odor) was detected from the borings.

#### 4.2 Analytical Results - Soil

Analysis of soil collected from the borings MW-1, MW-2 and MW-3 indicated below detectable levels of Total Petroleum Hydrocarbons (TPH) as diesel and BTEX. Laboratory results are presented in Appendix A and are summarized in Table 2 below.

TABLE 2 - Analytical Results - Soil

Boring	Sample Number	Depth (feet)	TPH-diesel (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylenes (mg/Kg)
MW-1	MW-1-5	5	<1.0	<0.005	<0.005	<0.005	<0.005
	M1-1-10	10	<1.0	<0.005	<0.005	<0.005	<0.005
MW-2	MW-2-5	5	<1.0	<0.005	<0.005	<0.005	<0.005
	MW-2-10	10	<1.0	<0.005	<0.005	<0.005	<0.005
MW-3	MW-3-5	5	<1.0	<0.005	<0.005	<0.005	<0.005
	MW-3-10	10	<1.0	<0.005	<0.005	<0.005	<0.005

Note: mg/Kg = parts per million (ppm)

#### 4.3 Analytical Results - Groundwater

After well installation and development, one groundwater sample each from Monitoring Wells MW-1, MW-2 and MW-3 was collected and submitted to ChromaLab for analysis for TPH as diesel by EPA test method 8015-Modified and BTEX by EPA test method 602. Analysis results from the groundwater samples are summarized in Table 3. Copies of the analytical results are attached in Appendix A.

TABLE 3 - Analytical Results - Groundwater

Monitoring Well Number	TPH-diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)
MW-1	<50	<0.5	<0.5	<0.5	<0.5
MW-2	<50	<0.5	<0.5	<0.5	<0.5
MW-3	<50	<0.5	<0.5	<0.5	<0.5

Note: ug/L = parts per billion (ppb)



#### 4.4 Groundwater Gradient

Prior to calculating the groundwater gradient, elevations for the on-site monitoring wells were surveyed by Ron Archer Civil Engineer, Inc. to an accuracy of one-hundredth of a foot. The well elevation was surveyed at the top of the PVC well casing. The elevations of the monitoring wells were established relative to a nearby benchmark located in the west curb line of Lincoln and Central Avenues in Alameda, California. A site map and benchmark description from the surveying engineer is provided in Exhibit D.

The groundwater gradient was calculated using the on-site monitoring wells. The location of the wells is shown on Figure 1 - Site Plan. Groundwater elevations were measured in the wells on June 25, 1993. The gradient was evaluated by triangulation using the elevation of the potentiometric surface measured with respect to Mean Sea Level datum. As shown in Figure 2, the groundwater gradient was approximately 0.003 foot per foot with the general direction of flow being west-southwest.

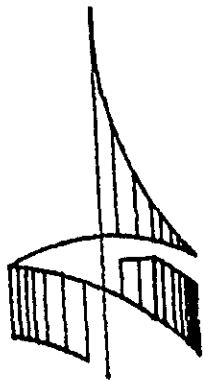
#### 5.0 CONCLUSION

The data and observations discussed herein indicate that there is no impact to groundwater due to an unauthorized hydrocarbon release. The analytical parameters used for sampling performed in June 1993 were in accordance with the "Tri-Regional Water Quality Control Boards Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites", dated August 10, 1990, for heating oil tanks.

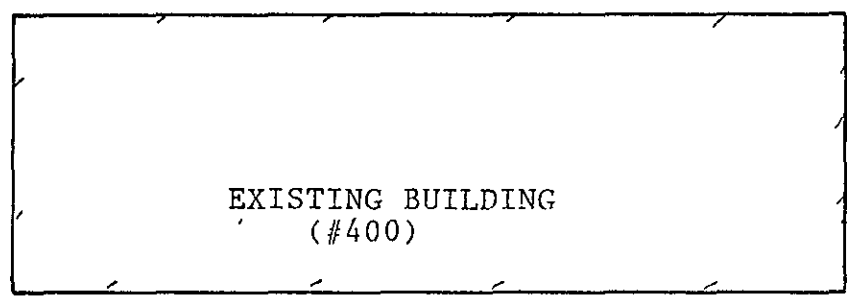
Below detectable levels of constituents were reported in the soil and groundwater samples.

#### 6.0 RECOMMENDATIONS

Pursuant to the Tri-Regional Board guidelines, groundwater sampling and monitoring of the on-site wells should continue on a quarterly basis.

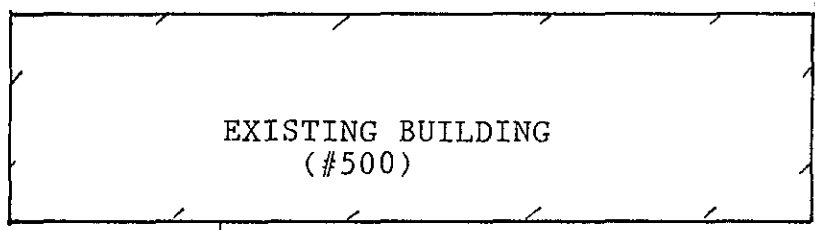


SCALE 1" = 30'

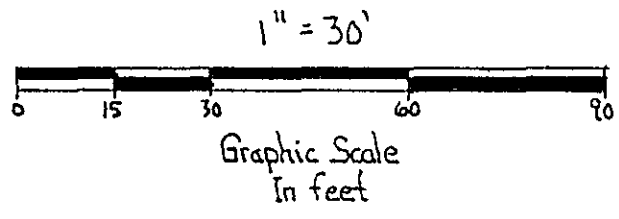
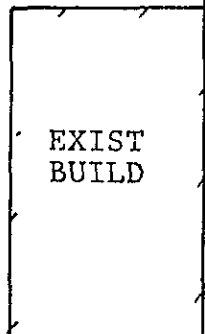


MW3

MW1



MW2



ACC Environmental Consultants, Inc.  
1000 Atlantic Avenue, Suite 110  
Alameda, California 94501

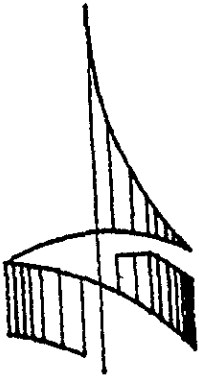
Site Map  
Encinal High School  
Alameda, California

Project No. 6029-4

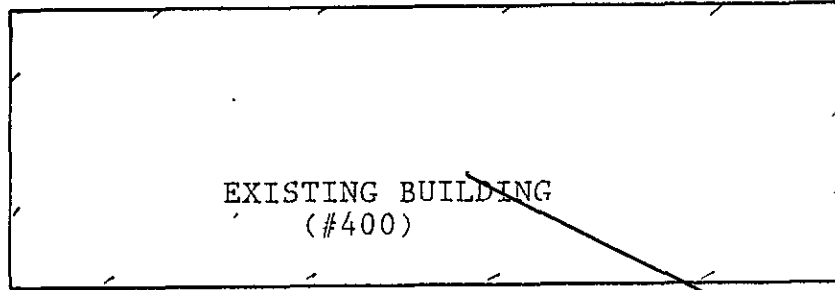
Date: 06/25/93

Dn by: MCK

Figure 1



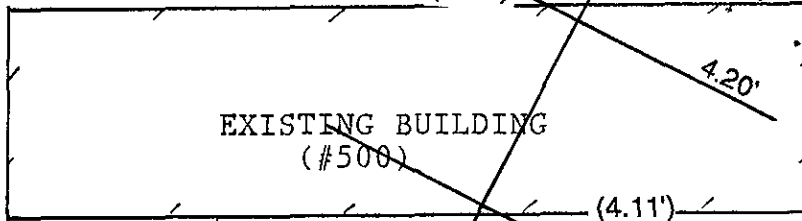
SCALE 1" = 30'



EXISTING BUILDING  
(#400)

MW3  
(4.21')

MW1  
(4.29')

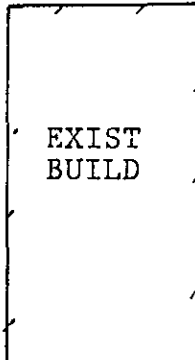


EXISTING BUILDING  
(#500)

(4.11')

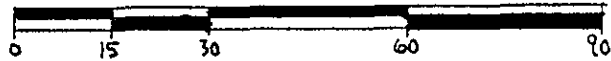
MW2

4.10'



EXIST  
BUILD

1" = 30'



Graphic Scale  
In feet

Elevations in Feet above Mean Sea Level

ACC Environmental Consultants, Inc.  
1000 Atlantic Avenue, Suite 110  
Alameda, California 94501

Groundwater Gradient  
Encinal High School  
Alameda, California

Project No. 6029-4

Date: 06/25/93

Dn by: MCK

Figure 2

APPENDIX A

# CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

June 22, 1993

ChromaLab File No.: 9306186

Submission #: 9306000186

ACC ENVIRONMENTAL CONSULTANTS

Attn: Misty Kaltreider

RE: Six soil samples for BTEX analysis

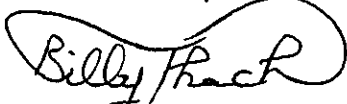
Date Sampled: June 14, 1993  
Date Analyzed: June 18, 1993

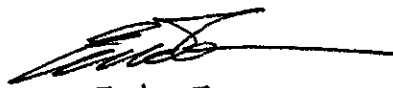
Date Submitted: June 15, 1993

## RESULTS:

Sample I.D.	Benzene ( $\mu\text{g}/\text{Kg}$ )	Toluene ( $\mu\text{g}/\text{Kg}$ )	Ethyl Benzene ( $\mu\text{g}/\text{Kg}$ )	Total Xylenes ( $\mu\text{g}/\text{Kg}$ )
MW-1-5'	N.D.	N.D.	N.D.	N.D.
MW-1-10'	N.D.	N.D.	N.D.	N.D.
MW-2-5'	N.D.	N.D.	N.D.	N.D.
MW-2-10'	N.D.	N.D.	N.D.	N.D.
MW-3-5'	N.D.	N.D.	N.D.	N.D.
MW-3-10'	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	102%	101%	100%	102%
DUP SPIKE RECOVERY	104%	106%	103%	111%
DETECTION LIMIT	5.0	5.0	5.0	5.0
METHOD OF ANALYSIS	8020	8020	8020	8020

ChromaLab, Inc.

  
Billy Thach  
Analytical Chemist

  
Eric Tam  
Laboratory Director

do

# CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

June 21, 1993

ChromaLab File No.: 9306186

ACC ENVIRONMENTAL CONSULTANTS

Attn: Misty Kaltreider

RE: Six soil samples for Diesel analysis

Date Sampled: June 14, 1993  
Date Extracted: June 18, 1993

Date Submitted: June 15, 1993  
Date Analyzed: June 18, 1993

## RESULTS:


Sample I.D. Diesel (mg/Kg)

MW-1-5'	N.D.
MW-1-10'	N.D.
MW-2-5'	N.D.
MW-2-10'	N.D.
MW-3-5'	N.D.
MW-3-10'	N.D.

BLANK	N.D.
SPIKE RECOVERY	110%
DUP SPIKE RECOVERY	96%
DETECTION LIMIT	1.0
METHOD OF ANALYSIS	3550/8015

ChromaLab, Inc.

  
Alex Tam  
Analytical Chemist

  
Eric Tam  
Laboratory Director

cc

# CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

June 30, 1993

ChromaLab File No.: 9306328

Submission #: 9306000328

ACC ENVIRONMENTAL CONSULTANTS

Attn: Misty Kaltreider

RE: Three water samples for Diesel analysis

Project Name: ENCINAL HS.

Project Number: 6029-4

Date Sampled: June 25, 1993

Date Submitted: June 25, 1993

Date Extracted: June 29, 1993

Date Analyzed: June 29, 1993

## RESULTS:


<u>Sample I.D.</u>	<u>Diesel (<math>\mu\text{g/L}</math>)</u>
--------------------	--

MW-1	N.D.
MW-2	N.D.
MW-3	N.D.

BLANK	N.D.
SPIKE RECOVERY	90%
DUP SPIKE RECOVERY	91%
DETECTION LIMIT	50
METHOD OF ANALYSIS	3510/8015

ChromaLab, Inc.

  
Alex Tam  
Analytical Chemist

  
Eric Tam  
Laboratory Director

do

# CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

July 2, 1993

ChromaLab File No.: 9306328

ACC ENVIRONMENTAL CONSULTANTS

Attn: Misty Kaltreider

RE: Three water samples for BTEX analysis

Project Name: ENCINAL HS.

Project Number: 6029-4

Date Sampled: June 25, 1993

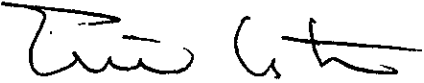
Date Submitted: June 25, 1993

Date Analyzed: June 30, 1993

## RESULTS:

Sample I.D.	Benzene ( $\mu\text{g/L}$ )	Toluene ( $\mu\text{g/L}$ )	Ethyl Benzene ( $\mu\text{g/L}$ )	Total Xylenes ( $\mu\text{g/L}$ )
MW-1	N.D.	N.D.	N.D.	N.D.
MW-2	N.D.	N.D.	N.D.	N.D.
MW-3	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	100%	97%	94%	98%
DUP SPIKE RECOVERY	99%	98%	106%	104%
DETECTION LIMIT	0.5	0.5	0.5	0.5
METHOD OF ANALYSIS	602	602	602	602

ChromaLab, Inc.,

  
Eric Costa  
Analytical Chemist

  
Eric Tam  
Laboratory Director

cc



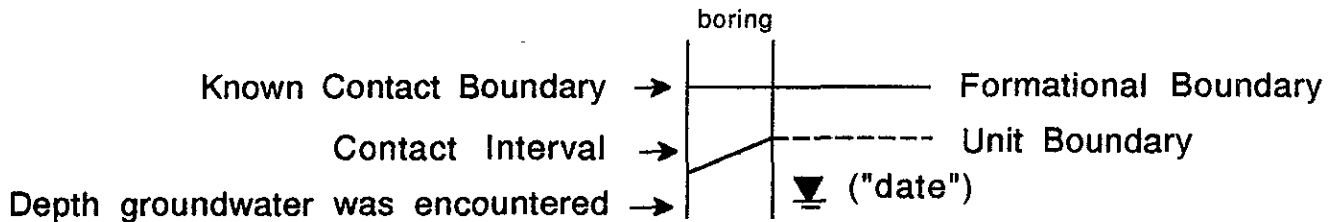


APPENDIX B

## UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		TYPICAL NAMES		
COARSE GRAINED SOILS more than half > #200 sieve	GRAVELS  more than half coarse fraction is larger than No. 4 sieve	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	well graded gravels, gravel-sand mixtures
		GRAVELS WITH OVER 12% FINES	GP	poorly graded gravels, gravel-sand mixtures
			GM	silty gravels, poorly graded gravel-sand silt mixtures
		GC	clayey gravels, poorly graded gravel-sand clay mixtures	
	SANDS  more than half coarse fraction is smaller than No. 4 sieve	CLEAN SANDS WITH LITTLE OR NO FINES	SW	well graded sands, gravelly sands
		SANDS WITH OVER 12% FINES	SP	poorly graded sands, gravelly sands
			SM	silty sands, poorly graded sand-silt mixtures
		SC	clayey sands, poorly graded sand-clay mixtures	
FINE GRAINED SOILS more than half < #200 sieve	SILTS AND CLAYS  liquid limit less than 50	ML	inorg. silts and v.fine sands, rock flour silty or clayey sands, or clayey silts w/sl. plasticity	
		CL	inorg. clays of low-med plasticity, gravelly clays, sandy clays, silty clays, lean clays	
		OL	organic clays and organic silty clays of low plasticity	
	SILTY AND CLAYS  liquid limit greater than 50	MH	inorganic silty, 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	
		Pt	peat and other highly organic soils	
HIGHLY ORGANIC SOILS				

### LEGEND FOR BORING LOGS



ACC ENVIRONMENTAL CONSULTANTS  
1000 ATLANTIC AVENUE, SUITE 110  
ALAMEDA, CA 94501

Soil Classification System

Project No. 6029-4

Date: 6/9/93


DRN: MCK

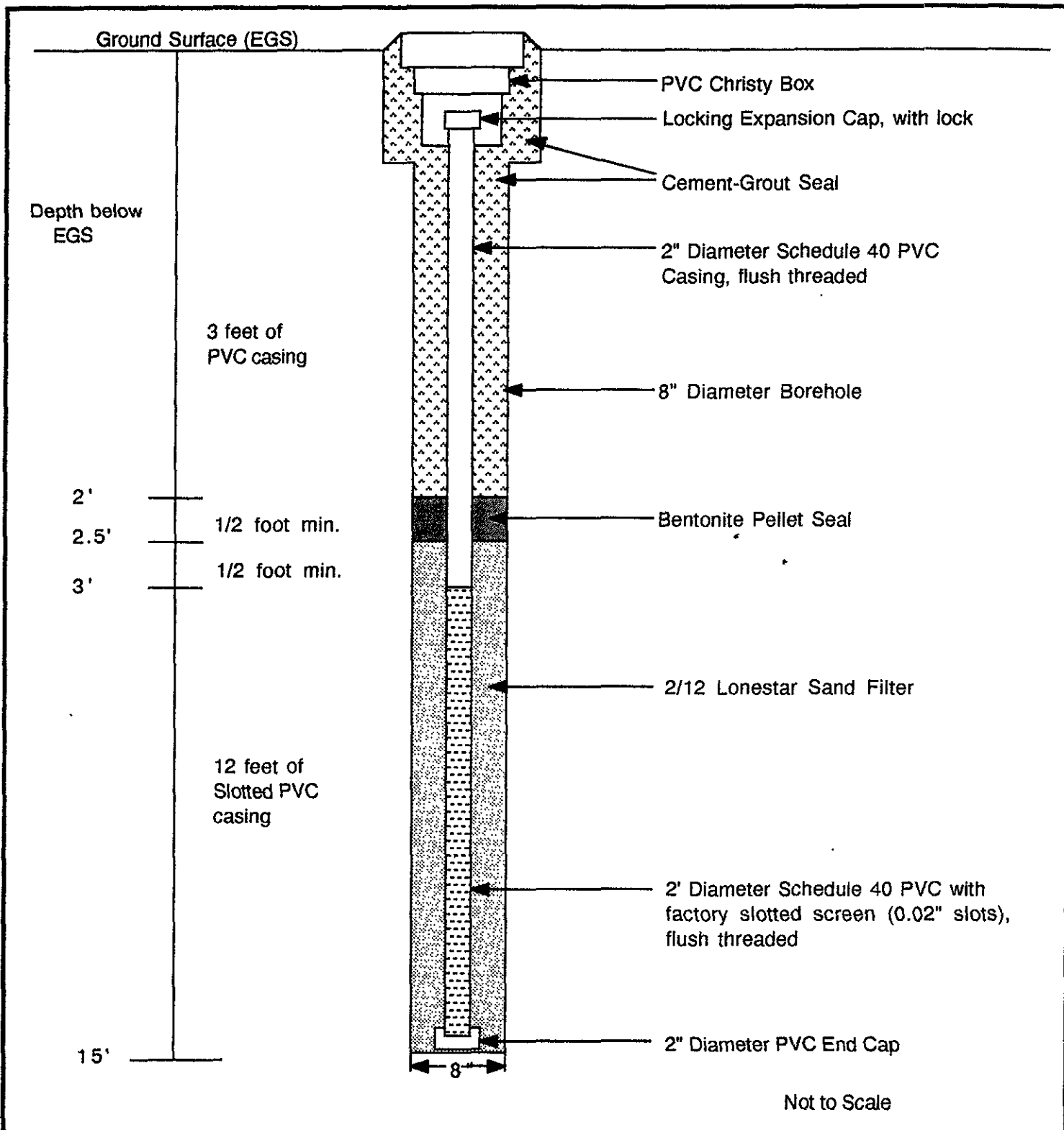
Encinal High School

Gregg Drilling Semco Limited Access Rig	HMU (ppm)	SAMPLE #	Sample Int.	Depth (feet)	Equipment: Hollow Stem Auger Logged By: M. Kaltreider PROJECT: Encinal High School Start Date: 6/14/93
Soil color described using Munsell soil color charts  <u>Color code</u>  (10YR-4/3)          (5GY-4/1-5/1)	0	MW-1-5		0	Asphalt: 4" lift. Lt. brown silty gravel (GM) & clayey gravel (GC), med grained, dense (baserock)
				2	Black sandy clay (CL), plastic, stiff moist (Fill).
		4	Merritt Sand: brown sand (SP), with some silt and shell fragments, medium dense, wet.		
		6			
		8	Dark greenish grey fine sand (SP), with trace silt, med. dense, saturated.		
MW-1-10		10			
		12			
MW-1-15		14	Same as above, saturated.		
		16	BOTTOM OF BORING @ 15 FEET		
18	(Converted into Monitoring Well MW-1)				
20					
22					
24					
26					
28					

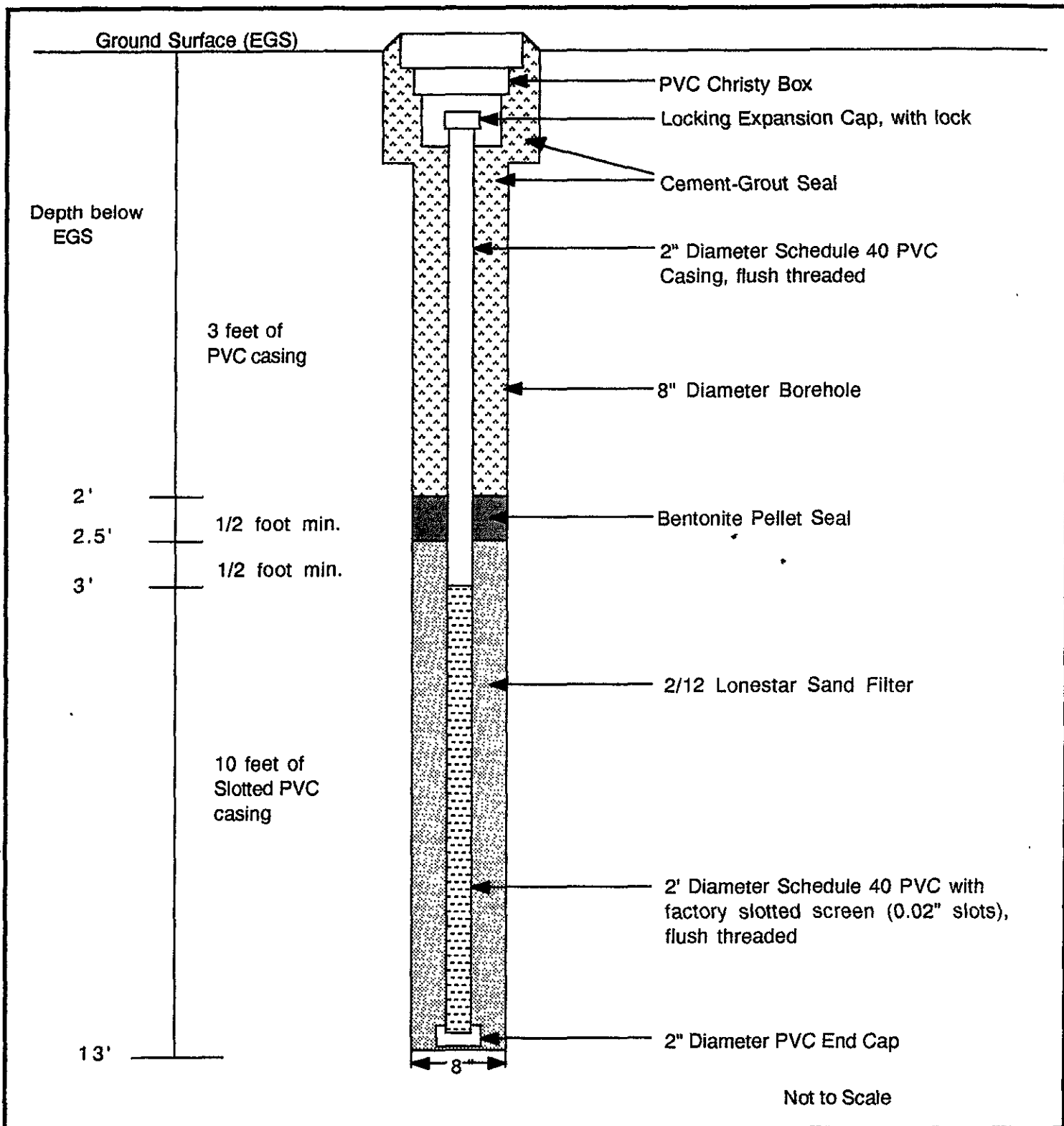
ACC ENVIRONMENTAL CONSULTANTS 1000 ATLANTIC AVEUNUE, SUITE 110 ALAMEDA, CA 94501	JOB NO: 6029-4	LOG OF BORING MW-1
	DATE: 7/4/92	Encinal High School



Gregg Drilling Semco Limited Access Rig	HNu (ppm)	SAMPLE #	Sample Int.	Depth (feet)	Equipment: Hollow Stem Auger Logged By: M. Kaltreider PROJECT: Encinal High School Start Date: 6/14/93	
Soil color described using Munsell soil color charts  <u>Color code</u>  (5GY-4/1)        (5GY-4/1)	0	MW-3-5		0	Asphalt: 4" lift. Lt. brown silty gravel (GM) & clayey gravel (GC), med grained, dense (baserock)	
				2	Merritt Sand: dark greenish grey sand (SP), with some silt, gravel, and shell fragments, medium dense, very moist to wet.	
				4		
				6		
				8		
				10		Same as above, with lenses of silt, saturated.
				12		
				14		
				16		BOTTOM OF BORING @ 15 FEET
				18		(Converted into Monitoring Well MW-3)
				20		
				22		
				24		
				26		
				28		
ACC ENVIRONMENTAL CONSULTANTS 1000 ATLANTIC AVEUNUE, SUITE 110 ALAMEDA, CA 94501	JOB NO: 6029-4	LOG OF BORING MW-3				
DATE: 7/4/92	Encinal High School					

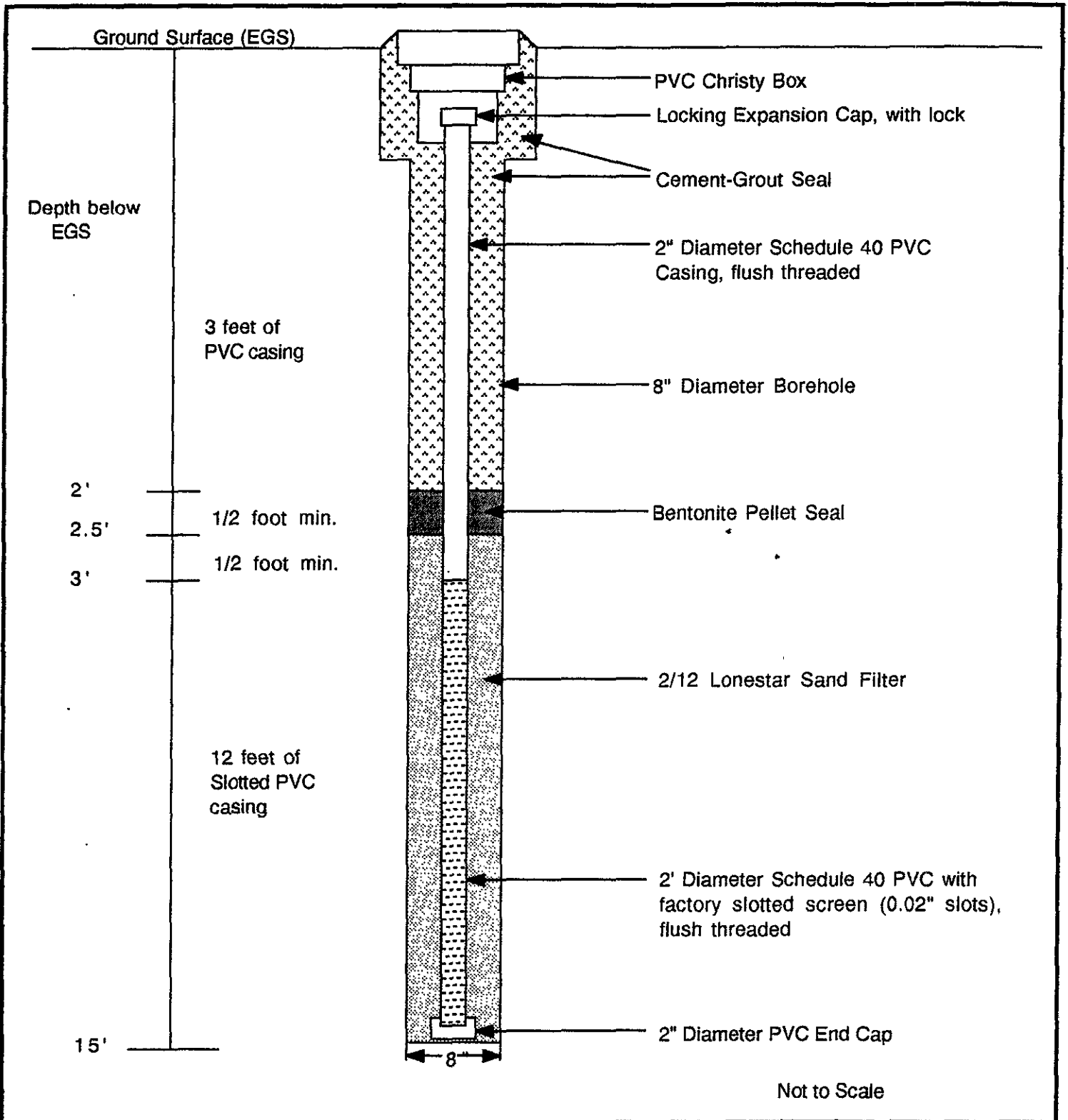


ACC Environmental Consultants 1000 Atlantic Avenue, Suite 110 Alameda, CA 94501	Job No.: 6029-4	Schematic of Monitoring Well No.: MW-1
	Date: 7/7/93	Encinal High School



ACC Environmental Consultants 1000 Atlantic Avenue, Suite 110 Alameda, CA 94501	Job No.: 6029-4	Schematic of Monitoring Well No.: MW-2
	Date: 7/7/93	Encinal High School





ACC Environmental Consultants 1000 Atlantic Avenue, Suite 110 Alameda, CA 94501	Job No.: 6029-4	Schematic of Monitoring Well No.: MW-3
	Date: 7/7/93	Encinal High School

APPENDIX C

Well Sampling  Well Development  check one

Well Number: MW-1

Job Number: 10029-4

Job Name: ENCINW/Hs

Date: 6/25/93

Sampler: mdc

Depth to Water (measured from TOC): 5.77'

Inside Diameter of Casing: 2'

Depth of Boring: 15'

Method of well development/purging: balling

Amount of Water Bailed/Pumped from well: 10 gal

Depth to Water after well development: \_\_\_\_\_

Depth to water prior to sampling: \_\_\_\_\_

Bailed water stored on-site ? How ? drummed

Number of well volumes removed: 4

TSP wash, distilled rinse, new rope ? yes

Water Appearance:

	yes	no
froth		<input checked="" type="checkbox"/>
irridescence		<input checked="" type="checkbox"/>
oil		<input checked="" type="checkbox"/>
smell		<input checked="" type="checkbox"/>
product		<input checked="" type="checkbox"/>
other, describe		<input checked="" type="checkbox"/>

Gallons Removed	pH	EC	Temp
5	8.43	3296	65.7
10	8.34	3240	64.9
15	8.26	3210	64.3
20			
25			
30			
35			
40			
45			
50			

Samples Obtained:

TPH (gasoline)	<input type="checkbox"/>
TPH (diesel)	<input checked="" type="checkbox"/>
TPH (motor oil)	<input type="checkbox"/>
BTXE	<input checked="" type="checkbox"/>
EPA 624	<input type="checkbox"/>
EPA 625	<input type="checkbox"/>
EPA 608	<input type="checkbox"/>
PCBs only	<input type="checkbox"/>
Metals	<input type="checkbox"/>
Other, specify	<input type="checkbox"/>
Field Blank	<input type="checkbox"/>

Well Sampling  Well Development  check one

Well Number: MW-2

Job Number: 10029-4

Job Name: Encinal NS

Date: 6/25/93

Sampler: McL

Depth to Water (measured from TOC): 4.30'

Inside Diameter of Casing: 2'

Depth of Boring: 13'

Method of well development/purging: \_\_\_\_\_

Amount of Water Bailed/Pumped from well: 7 gal.

Depth to Water after well development: \_\_\_\_\_

Depth to water prior to sampling: \_\_\_\_\_

Bailed water stored on-site ? How ? drummed

Number of well volumes removed: 4

TSP wash, distilled rinse, new rope ? yes

Water Appearance:

	yes	no
froth		
irridescence		
oil		
smell		
product		
other, describe		

Gallons Removed	pH	EC	Temp
5	8.50	1925	68.9
10	8.45	2160	66.6
15	8.80	2230	66.6
20			
25			
30			
35			
40			
45			
50			

Samples Obtained:

TPH (gasoline)	
TPH (diesel)	X
TPH (motor oil)	
BTXE	X
EPA 624	
EPA 625	
EPA 608	
PCBs only	
Metals	
Other, specify	
Field Blank	

Well Sampling

Well Development

check one

Well Number: MW-3

Job Number: 10029-4

Job Name: ENCINAL NLS

Date: 6/25/03

Sampler: MDL

Depth to Water (measured from TOC): 5.34'

Inside Diameter of Casing: 2

Depth of Boring: 15'

Method of well development/purging: bailing

Amount of Water Bailed/Pumped from well: 6.5 gal

Depth to Water after well development: \_\_\_\_\_

Depth to water prior to sampling: \_\_\_\_\_

Bailed water stored on-site ? How ? drained

Number of well volumes removed: 4

TSP wash, distilled rinse, new rope ? yes

Water Appearance:

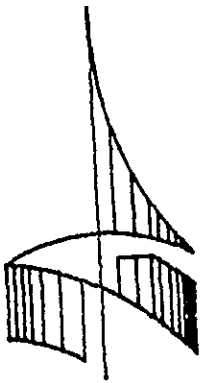
	yes	no
froth		Y
irridescence		
oil		
smell		
product		
other, describe		

Gallons Removed	pH	EC	Temp
5	8.20	1020	68.9
10	7.97	989	67.6
15	7.96	1050	67.6
20			
25			
30			
35			
40			
45			
50			

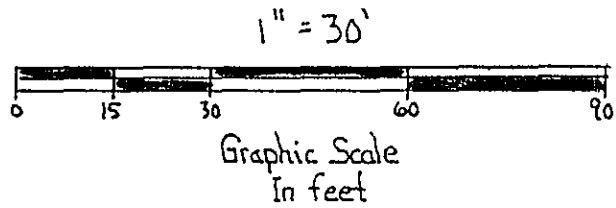
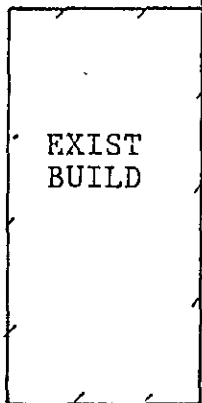
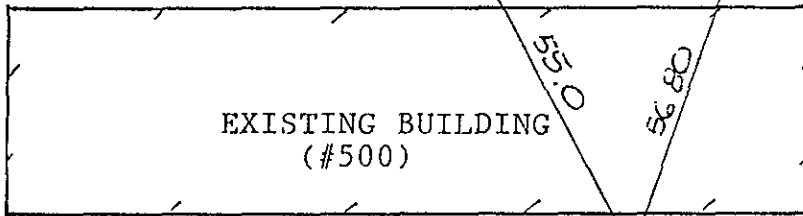
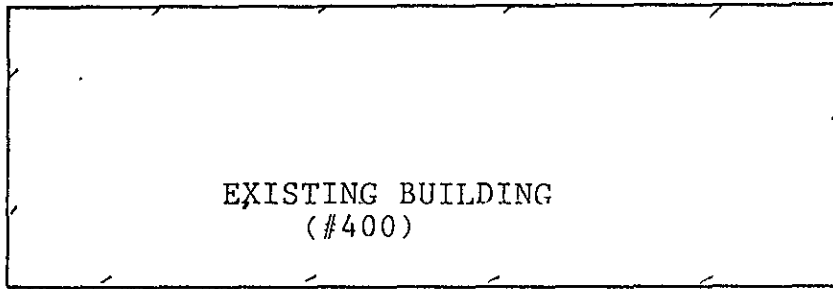
Samples Obtained:

TPH (gasoline)	<input type="checkbox"/>
TPH (diesel)	<input checked="" type="checkbox"/>
TPH (motor oil)	<input type="checkbox"/>
BTXE	<input checked="" type="checkbox"/>
EPA 624	<input type="checkbox"/>
EPA 625	<input type="checkbox"/>
EPA 608	<input type="checkbox"/>
PCBs only	<input type="checkbox"/>
Metals	<input type="checkbox"/>
Other, specify	<input type="checkbox"/>
Field Blank	<input type="checkbox"/>

APPENDIX D



SCALE 1" = 30'



PLAT SHOWING EXISTING MONITORING WELLS AT ENCINAL HIGH SCHOOL AROUND BLDG. 500, AT 210 CENTRAL AVE. AT LINCLN AVE., ALAMEDA, CA.

**RON ARCHER**  
CIVIL ENGINEER, INC.  
CONSULTING • PLANNING • DESIGN • SURVEYING  
4133 Mohr Ave., Suite E • Pleasanton, CA 94566  
(510) 462-9372

FOR: ACC

PROJ: 6029-4

DATE:  
JUNE 18, 1993

JOB NO.  
2031

# RON ARCHER

CIVIL ENGINEER, INC.

CONSULTING • PLANNING • DESIGN • SURVEYING

4133 Mohr Ave., Suite E • Pleasanton, CA 94566  
(610) 462-9372

JUNE 16, 1993

JOB NO. 2031

ELEVATIONS OF EXISTING MONITORING WELLS AT ENCINAL HIGH SCHOOL  
(AROUND BUILDING #500) LOCATED AT 210 CENTRAL AVENUE AT LINCOLN  
AVENUE, CITY OF ALAMEDA, ALAMEDA COUNTY, CALIFORNIA.

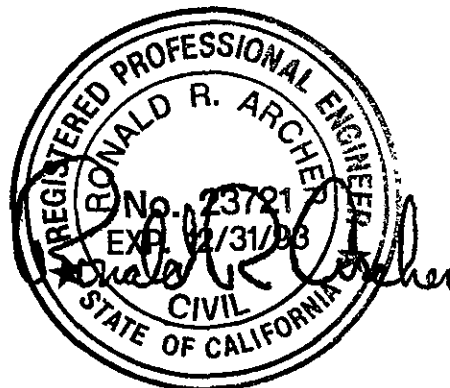
FOR: ACC ENVIRONMENTAL INC.  
PROJECT NO. 6029-4

BENCHMARK:

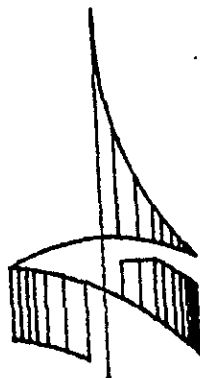
TOP OF BRASS DISC SET IN STANDARD CONCRETE MONUMENT  
50+/- WEST OF THE WEST CURB LINE OF LINCOLN AVENUE  
AT CENTERLINE OF CENTRAL AVENUE. ELEVATION TAKEN  
AS 8.191 M.S.L.

MONITOR WELL DATA TABLE

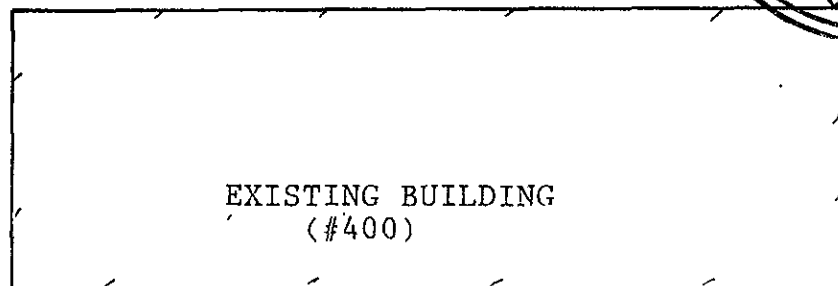
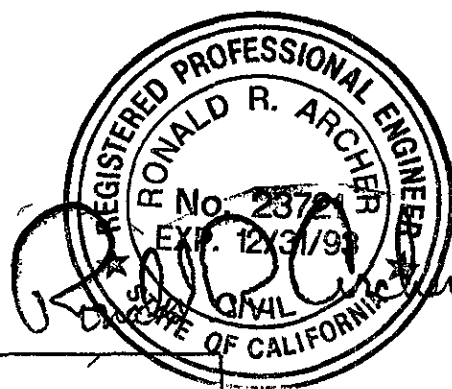
WELL NO.	ELEVATION	DESCRIPTION
MW1	10.06	TOP OF PVC CASING
	10.36	TOP OF BOX
MW2	8.41	TOP OF PVC CASING
	8.70	TOP OF BOX
MW3	9.55	TOP OF PVC CASING
	9.77	TOP OF BOX





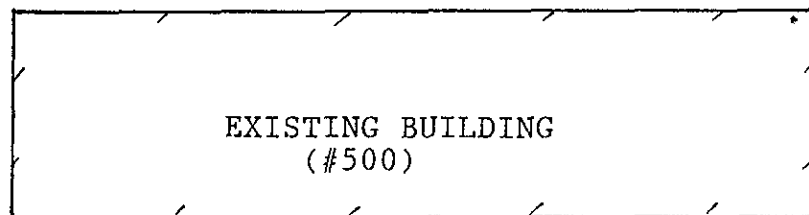


SCALE 1" = 30'



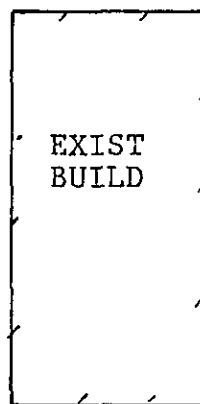
EXISTING BUILDING  
(#400)

MW3  MW1 



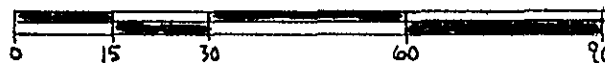
EXISTING BUILDING  
(#500)

MW2 



EXIST  
BUILD

1" = 30'



Graphic Scale  
In feet

PLAT SHOWING EXISTING MONITORING  
WELLS AT ENCINAL HIGH SCHOOL  
AROUND BLDG. 500, AT 210 CENTRAL  
AVE. AT LINCLN AVE., ALAMEDA, CA.

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PROJ: 6029-4

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JUNE 18, 1993

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2031

Two soil samples were selected from each boring and submitted to ChromaLab for analysis according to the "Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites", dated August 10, 1990. Samples from the borings were submitted for analysis for Total Petroleum Hydrocarbons (TPH) as diesel by EPA test method 8015-Modified and benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA test method 8020. Copies of the analytical results and chain of custody forms are attached in Appendix A.

The soil cuttings and samples were logged by an ACC geologist during drilling operations. Lithologic logs of the borings are attached in Appendix B. The soil cuttings are described in accordance with the Unified Soil Classification System, also attached in Appendix B. Soil cuttings are stored on-site in DOT approved drums.

### 3.1 Monitoring Well Construction and Development

Monitoring wells MW-1, MW-2 and MW-3 were installed within borings MW-1, MW-2 and MW-3, respectively, upon completion of drilling. Well construction details are presented in Appendix B. Monitoring Wells MW-1 and MW-3 were installed with well casings consisting of 2-inch I.D. Schedule 40 PVC with 12 feet of 0.020-inch factory slotted screen below 3 feet of solid casing. Monitoring well MW-2 was installed with well casing consisting of 2-inch I.D. Schedule 40 PVC with 10 feet of 0.020-inch factory slotted screen below 3 feet of solid casing.

The wells were installed with Lonestar #2/12 sand used as annular fill to at least one-half foot above the top of the screen. One-half foot of 1/4-inch pelletized bentonite was placed between the annular sand and neat cement seal. "Christy" boxes were cemented over the tops of the PVC casings and set slightly above grade to drain surface waters away from the well head. Locking expansion plugs with locks were placed on each well.

The wells were developed on June 17, 1993, using dedicated disposable bailers, one per well. The wells were developed until pH and conductivity of development water had stabilized and was substantially free of fine material. Approximately 10 well casing volumes of water were removed from each well.

### 3.2 Groundwater Sampling

Groundwater samples were taken on June 25, 1993 from monitoring wells MW-1, MW-2, and MW-3. Prior to groundwater sampling the depth to the surface of the water table was measured from the top of the PVC casing using a Solinst Water Level Meter. Information regarding well elevations and groundwater level measurements is summarized below in Table 1.