

ALCO
HAZMAT

90 JUL 13 PM 4 00

GROUNDWATER CONTAMINATION
ASSESSMENT
208 JACKSON STREET
OAKLAND, CALIFORNIA
SCI 886.001

7-12-94

Prepared for:

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By:

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July 12, 1994



I INTRODUCTION

This report presents the results of a limited groundwater investigation conducted by Subsurface Consultants, Inc. (SCI) at the property identified as 208 Jackson Street in Oakland, California. The investigation was required by the Alameda County Health Care Services Agency (ACHCSA) to evaluate whether groundwater has been impacted by hydrocarbon releases. The location of the site is shown on the Site Plan, Plate 1.

As outlined in our service agreement dated March 2, 1994, the scope of our investigation included:

1. Preparing a work plan acceptable to the ACHCSA,
2. Obtaining the necessary drilling/well installation permits,
3. Drilling and logging two test borings, about 10 feet deep,
4. Obtaining samples of soil encountered in the borings,
5. Completing the test borings as monitoring wells,
6. Developing and obtaining water samples from the new and existing monitoring wells,
7. Performing a level survey to determine the well casing elevations, and
8. Performing analytical tests on four (4) groundwater samples.

II BACKGROUND

Four underground fuel storage tanks, the locations of which are shown on Plate 1, were removed from the site in March, 1990. Test results indicated that elevated levels of diesel and benzene, toluene, ethylbenzene and xylene (BTEX) were present in the soil from the excavation for Tank 1. Soils left in place in the other tank excavations had relatively low concentrations of gasoline, diesel and BTEX. Concentrations of gasoline, diesel and BTEX in the soil at the base of the tank excavations are presented in Table 1. Overburden soils from the tank locations, and a reported additional 125 cubic yards of soil was removed from the tank location(s) and stockpiled on site.

Three (3) test borings were drilled at the site in May of 1990, and converted to groundwater monitoring wells at the approximate locations shown on Plate 1. Concentrations of diesel in selected soil samples are presented in Table 1; concentrations of gasoline, diesel and BTEX in groundwater samples from the wells are presented in Table 2.

SCI previously obtained groundwater samples from wells MW-2 and MW-3, and from the Tank 2 excavation in January of 1994, and submitted them for analytical testing. The groundwater samples from wells MW-2 and MW-3 did not contain detectable levels of gasoline, diesel or BTEX; the water sample from the excavation contained diesel at a concentration of 3,700 ug/l, and xylene at concentration of 1.1 ug/l. Test results are summarized in Table 2.

III FIELD INVESTIGATION

A. General

Impacts to groundwater were investigated by drilling two test borings which were completed as groundwater monitoring wells. The wells were installed in general accordance with a work plan dated March 3, 1994. ACHCSA approved the scope of the work plan.

B. Test Borings

Two test borings, MW-4 and MW-5 were drilled at the locations shown on Plate 1. The test borings were drilled using a limited-access drill rig equipped with 8-inch diameter hollow stem augers. Our field engineer observed drilling operations, prepared a detailed log of the borings and obtained undisturbed samples of the materials encountered. The test boring logs are presented on Plates 2 and 3. Soils are classified in accordance with the Unified Soil Classification System described on Plate 4. Logs for previously drilled borings by others are presented in the Appendix.

A Modified California Drive Sampler having an outside diameter of 2.5 inches and an inside diameter of 2.0 inches was used to obtain soil samples. The number of blows required to drive the sampler the final 12 inches of each 18-inch penetration was recorded and is presented on the test boring logs. Drilling and sampling equipment was thoroughly steam-cleaned prior to its use.

Soil samples were retained in 2.0-inch diameter brass liners. Teflon sheeting was placed over the ends of the soil liners; the

liners were subsequently capped and sealed with tape. The shoe sample from each drive was retained in a plastic bag and screened for volatile organic chemicals using an Organic Vapor Meter (OVM). OVM measurements are recorded on the test boring logs. The sealed liners were placed in an ice-filled cooler and remained iced until delivery to the analytical laboratory. Chain-of-Custody records accompanied the samples to the laboratory. Soil cuttings and steam-cleaning water generated during drilling were placed in drums and left on-site.

follow up

C. Well Installation

Upon completion of drilling, monitoring wells were constructed in the borings. A well schematic is shown on the respective test boring logs. In general, the wells consist of 2-inch diameter, Schedule 40 PVC pipe having flush-threaded joints. The well pipe was steam-cleaned prior to being placed in the borehole. The lower 5 and 7 feet of wells MW-4 and MW-5, respectively, consist of machine-slotted well screen having 0.02-inch slots. The remaining portion of the wells consist of blank pipe. The wells were provided with a bottom cap and locking top cap. The well screen is encased in a filter composed of Lonestar No. 3 washed sand. The filter sand was placed by carefully pouring it through the annulus between the hollow stem of the auger and the well casing. Periodically, the augers were raised to allow the sand to fill the annulus between the casing and the borehole. The filter extends from just below the bottom of the well to one foot above the top of the screened section. A one-foot thick bentonite pellet seal was

Where's the bottom of boring?

placed above the sand filter. The annulus above the bentonite seal was backfilled with cement grout. The grout mixture consists of Portland cement mixed with clean water. The monitoring wells were completed below grade and are protected by traffic-rated valve boxes.

D. Well Development and Sampling

The wells were developed at least 24 hours after the grout seal was placed to allow for proper setting. Initially, the wells were checked for free floating product using a steel tape and a petroleum product sensitive paste. The depth to water was then measured below the top of the well casing using an electronic sounder.

The new and existing wells were developed by removing water with a disposable baler until 1) the wells went dry, or 2) water temperature, conductivity and pH had stabilized and the removed water appeared relatively clear. Approximately 5 gallons of water was removed from each well. Well development water was placed in a 55 gallon drum which is stored on-site. *follow up*

The two new wells and two of the existing wells, MW-2 and MW-3 were sampled during this study. We were unable to locate well MW-1. It appears that MW-1 was removed previously by subsequent excavation activities by others. The wells were allowed to recharge to about 80 percent of their original volume before sampling with a new disposable bailer. Groundwater samples were retained in pre-cleaned containers supplied by the laboratory. Groundwater samples were placed in an ice chest and remained

refrigerated until delivery to the analytical laboratory. Chain-of-Custody documents accompanied the samples to the laboratory, copies of which are presented in the Appendix. Well development/sampling forms are also presented in the Appendix.

E. Level Survey

A level survey was conducted to determine the top of the well casing elevations relative to City of Oakland datum. A benchmark at the northeast corner of the intersection of Second and Madison Streets was used to establish the elevations. Elevation data are presented in Table 3.

F. Analytical Testing

Groundwater samples from wells MW-2 through MW-5 were analyzed by Curtis & Tompkins, Ltd., a laboratory certified by the California Department of Health Services (DHS) for hazardous waste and water testing. The testing program included the following:

1. Total volatile hydrocarbons, as gasoline (TVH) - EPA 5030/8015,
2. Benzene, toluene, ethylbenzene and xylenes, (BTEX) - EPA 8020, and
3. Total extractable hydrocarbons, as diesel (TEH) - EPA 3550/8015.

Chain-of-Custody documents accompanied the samples to the laboratory. Test results are summarized in Table 2. Analytical test reports and Chain-of-Custody documents are presented in the Appendix.

Table 3. Groundwater surface contours are presented on Plate 1. In general, the groundwater surface slopes downward toward the southeast at a gradient of approximately 0.8 percent. No free product was encountered on the water surface in any of the wells during this study.

↓
or 0.008 ft/ft.

V CONCLUSIONS

A. Soil Contamination

Previous studies have indicated that elevated levels of hydrocarbons were present below the location of Tank 1. We understand that some of these soils were removed, however, additional confirmation testing was not performed after the soil was removed. Confirmation testing in the base of the excavations for Tanks 2 through 4 indicate that relatively low hydrocarbon concentrations were left in place.

B. Groundwater Contamination

High concentrations of gasoline and diesel range hydrocarbons and BTEX have been detected in wells MW-1, MW-4 and MW-5. ✓ It appears that petroleum hydrocarbons have impacted the groundwater at the southeast corner of the site. ✓ Given the direction of the groundwater flow, it is likely that groundwater contamination has migrated off site. ✓

Total extractable hydrocarbons were identified in the sample from well MW-3. The laboratory indicated that the result reported was due to a single peak, and as a result, did not match fuel

standards. This coupled with the fact that the January 1994 sample indicated non-detectible levels of petroleum hydrocarbons, we judge the result to be anomalous. *sk*

C. Recommendations

Remediation performed to date has apparently removed some impacted soil from the former tank areas. It does not appear that testing to verify if hydrocarbon contamination is present at areas adjacent to the tanks has been performed. As such, we recommend that additional soil samples be tested to determine the extent of soil contamination. The testing program should include total volatile and extractable hydrocarbons, and BTEX.

Additional groundwater samples should be obtained from off-site locations to determine the extent of groundwater contamination. Groundwater samples should also be analyzed for total volatile and extractable hydrocarbons, and BTEX.

VI LIMITATIONS

This assessment was intended to provide a preliminary means of checking groundwater quality impacts relative to hydrocarbon releases in the downgradient direction of the previous fuel tank locations.

The conclusions drawn from this assessment are an expression of our professional opinions, and do not constitute a warranty or guaranty, either expressed, or implied. Additional investigative work may modify the conclusions presented herein, as additional

information is generated.

SCI has performed this investigation in accordance with generally accepted standards of care which exist in Northern California at the time of this study. It must be recognized that the definition and evaluation of environmental conditions is difficult and inexact. Judgements leading to conclusions and recommendations are generally made with an incomplete knowledge of the subsurface and/or historic conditions applicable to the site. In addition, the conclusions made herein reflect site conditions at the time of the investigation. These conditions may change with time, and as such, the conclusions may also change.

The conclusions and opinions presented herein may be affected by rapid changes in the field of environmental engineering and the laws governing hazardous wastes. The reader is advised to consult with SCI prior to relying upon the information provided.

List of Attached Tables:

- Table 1 Hydrocarbon Concentrations in Soil
- Table 2 Hydrocarbon Concentrations in Groundwater
- Table 3 Groundwater Elevation Data

List of Attached Plates:

- Plate 1 Site Plan
- Plate 2 Logs of Test Borings MW-4 and MW-5
- Plate 3 Unified Soil Classification System

Appendix:

- Analytical Test Reports
- Chain-of-Custody Documents
- Well Development/Sampling Forms
- Logs of Borings MW-1 through MW-3

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 80 Swan Way
 Oakland, California

SML:JNA:RWR:jmw

Table 1.
Hydrocarbon Concentrations in Soil

during tank pulls

Sample No.	Depth (feet)	TVH (mg/kg)	TEH (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)
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Tank Excavation

1N	-	-	2,500	4,500	3,800	25,000	42,000
1S	-	-	82	6,100 was 61ppm	19,500	15,000	24,000
2N	-	<2.5	-	<5	<5	<5	<5
2S	-	<2.5	-	<5	<5	67	18
3N	-	-	140	<5	<5	<5	<5
3S	-	-	5	<5	<5	<5	<5
4E	-	<2.5	-	<5	<5	<5	<5
4W	-	11	-	17	<5	12	5.6

Soil Borings

MW 1-1	3.0	-	6.9	-	-	-	-
MW 1-2	5.0	-	<5.0	-	-	-	-
MW 2-1	3.0	-	<5.0	-	-	-	-
MW 3-1	3.0	-	<5.0	-	-	-	-
MW 3-2	6.0	-	<5.0	-	-	-	-

TVH = Total Volatile Hydrocarbons, as gasoline

TEH = Total Extractable Hydrocarbons, as diesel

BTEX = Benzene, Toluene, Ethylbenzene, Xylene

mg/kg = Milligrams per kilogram

ug/kg = Micrograms per kilogram

<5 = Chemical not detected at a concentration in excess of detection limit shown

Hydrocarbon Concentrations in Groundwater

Well No.	Date	TVH (µg/l)	TEH (µg/l)	B (µg/l)	T (µg/l)	E (µg/l)	X (µg/l)
MW-1	5/21/90	25,000	5,500	400	440	330	650
MW-2	5/21/90	<0.5	<0.5	<1.0	<1.0	<1.0	<1.0
	1/6/94	<50	<50	<0.5	<0.5	<0.5	<0.5
	6/3/94	<50 ✓	<50 ✓	<0.5 ✓	<0.5	<0.5	<0.5
MW-3	5/21/90	<0.5	<0.5	<1.0	<1.0	<1.0	<1.0
	1/6/94	<50	<50	<0.5	<0.5	<0.5	<0.5
	6/3/94	<50 ✓	230+ ✓	<0.5 ✓	<0.5	<0.5	<0.5
MW-4	6/3/94	210,000 ✓	9,800 (X)	7,600 ✓	28,000	3,700	24,000
MW-5	6/3/94	7,800 ✓	4,600 (X)	3.8 ✓	6.2	10	16
TEW-1	1/6/94	<50	3,700	<0.5	<0.5	<0.5	1.1

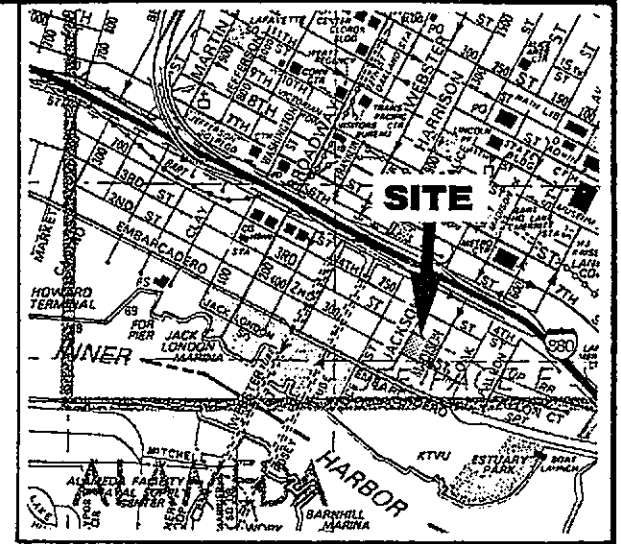
(X) Kerosene range

water in excavation

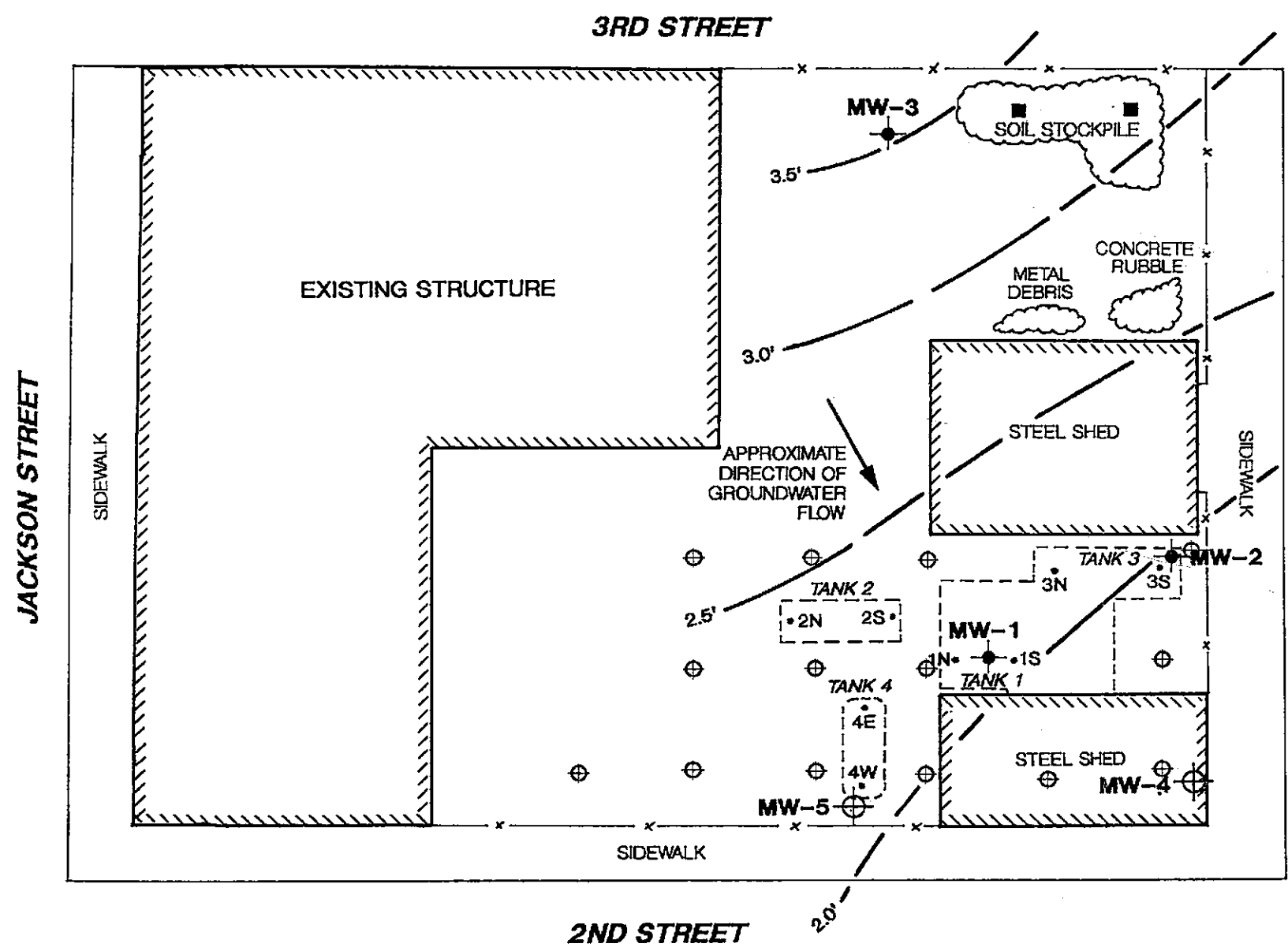
**Table 3.
Groundwater Elevation Data**

Well No.	TOC Elevation (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)
MW-2	6.64	1/6/94	4.63	2.01
		6/3/94	4.72	1.92
MW-3	7.71	1/6/94	5.4	2.31
		6/3/94	4.18	3.53
MW-4	6.74	6/3/94	4.96	1.78
MW-5	6.73	6/3/94	4.6	2.13

mg/l = Milligrams per liter
 µg/l = Micrograms per liter
 < = Chemical not detected at a concentration in excess of detection limit shown
 TVH = Total Volatile Hydrocarbons, as gasoline
 TEH = Total Extractable Hydrocarbons, as diesel
 BTEX = Benzene, Toluene, Ethylbenzene, Xylene
 TEW-1 = Tank 1 Excavation Water sample



VICINITY MAP



- ⊕ PROPOSED SOIL BORINGS
- PROPOSED SOIL STOCKPILE SAMPLES
- ⊕ APPROXIMATE LOCATION OF MONITORING WELLS INSTALLED BY OTHERS (NOTE: WELL MW-1 NOT LOCATED DURING THIS STUDY)
- 2N APPROXIMATE LOCATION OF SOIL SAMPLE RECOVERED DURING TANK REMOVAL
- ⊖ LOCATION OF REMOVED CONCRETE PAVEMENT
- ⊕ APPROXIMATE LOCATION OF NEW GROUNDWATER MONITORING WELLS
- GROUNDWATER CONTOUR ELEVATION (FEET) (6/3/94)

TANK NO.	PRODUCT STORED
1	UNLEADED GASOLINE
2	UNLEADED GASOLINE
3	DIESEL
4	DIESEL

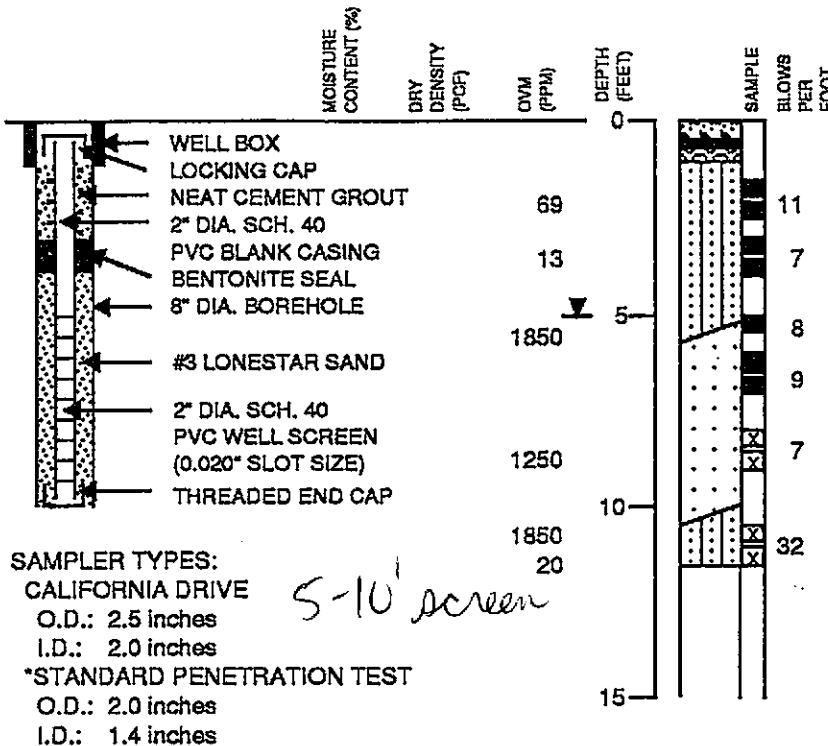


SITE PLAN		
208 JACKSON STREET - OAKLAND, CA		
JOB NUMBER 886.001	DATE 1/5/94	APPROVED SL
		PLATE 1

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LOG OF TEST BORING MW-4

EQUIPMENT 8" Hollow Stem Auger
 DATE DRILLED 5/26/94
 ELEVATION 6.74 feet *



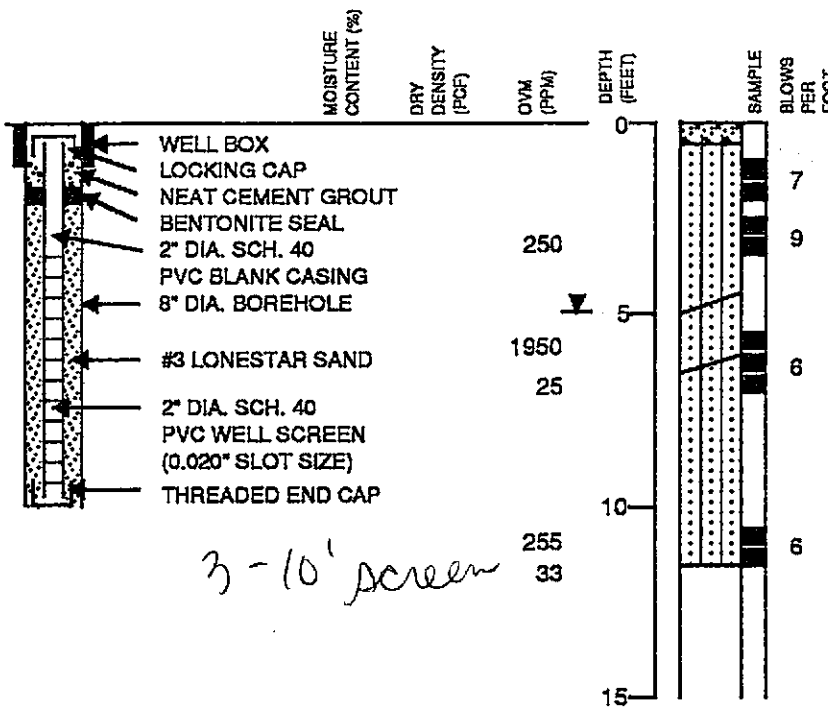
CONCRETE SLAB - 6" thick
 ASPHALTIC CONCRETE - 2" thick
 AGGREGATE BASE - 3" thick
 BLACK SILTY SAND (SM)
 medium dense, moist, occasional fine gravel (fill)
 GROUNDWATER LEVEL DURING DRILLING
 gasoline odor at 5 feet
 OLIVE GRAY SAND (SP)
 medium dense, wet, fine grained
 LIGHT BROWN AND GRAY MOTTLED SILTY SAND (SM)
 dense, moist

HAMMER WEIGHT: 140 pounds
 HAMMER DROP: 30 inches

* City of Oakland Datum

LOG OF TEST BORING MW-5

EQUIPMENT 8" Hollow Stem Auger
 DATE DRILLED 5/26/94
 ELEVATION 6.73 feet *



CONCRETE SLAB - 7" thick
 BROWN SILTY CLAYEY SAND (SM/SC)
 medium dense, moist (fill)
 strong gasoline odor
 some wood fragments
 gravelly at 3.5 feet
 GROUNDWATER LEVEL DURING DRILLING
 OLIVE GRAY SILTY SAND (SM)
 loose, wet, fine grained
 BROWN AND GRAY MOTTLED SILTY SAND (SM)
 loose, wet, fine grained

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208 JACKSON STREET - OAKLAND, CA

PLATE

JOB NUMBER
886.001

DATE
5/31/94

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2

GENERAL SOIL CATEGORIES			SYMBOLS	TYPICAL SOIL TYPES
COARSE GRAINED SOILS More than half is larger than No. 200 sieve	GRAVEL More than half coarse fraction is larger than No. 4 sieve size	Clean Gravel with little or no fines	GW	Well Graded Gravel, Gravel-Sand Mixtures
			GP	Poorly Graded Gravel, Gravel-Sand Mixtures
		Gravel with more than 12% fines	GM	Silty Gravel, Poorly Graded Gravel-Sand-Silt Mixtures
			GC	Clayey Gravel, Poorly Graded Gravel-Sand-Clay Mixtures
	SAND More than half coarse fraction is smaller than No. 4 sieve size	Clean Sand with little or no fines	SW	Well Graded Sand, Gravelly Sand
			SP	Poorly Graded Sand, Gravelly Sand
		Sand with more than 12% fines	SM	Silty Sand, Poorly Graded Sand-Silt Mixtures
			SC	Clayey Sand, Poorly Graded Sand-Clay Mixtures
FINE GRAINED SOILS More than half is smaller than No. 200 sieve	SILT AND CLAY Liquid Limit Less than 50%	ML	Inorganic Silt and Very Fine Sand, Rock Flour, Silty or Clayey Fine Sand, or Clayey Silt with Slight Plasticity	
		CL	Inorganic Clay of Low to Medium Plasticity, Gravelly Clay, Sandy Clay, Silty Clay, Lean Clay	
		OL	Organic Clay and Organic Silty Clay of Low Plasticity	
	SILT AND CLAY Liquid Limit Greater than 50%	MH	Inorganic Silt, Micaceous or Diatomaceous Fine Sandy or Silty Soils, Elastic Silt	
		CH	Inorganic Clay of High Plasticity, Fat Clay	
		OH	Organic Clay of Medium to High Plasticity, Organic Silt	
HIGHLY ORGANIC SOILS			PT	Peat and Other Highly Organic Soils

UNIFIED SOIL CLASSIFICATION SYSTEM

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208 JACKSON STREET - OAKLAND, CA

JOB NUMBER
886.001

DATE
5/31/94

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PLATE

3

NUMBER 0-100000 OAKLAND, CALIF.
 DATE 5/5/90 WEATHER SUNNY 60's
 LOGGED BY TOM SMITH DRILLED BY AQUA-SCIENCE
 DRILLING METHOD 1.8 5/8-inch HOLLOW-STEM AUGER SAMPLING METHOD 1.8-INCH CALIF. SPLIT SPOON
 GRAVEL PACK SAND 10 FEET TO 4 FEET SEAL BENTONITE 4 FT TO 3 FT GROUT 3 FT TO 0 FT.

CASING TYPE SCHEDULE 40 PVC DIAMETER TWO-INCH LENGTH 5 FT. HOLE TEN DIA. INCH

SCREEN TYPE PVC SLOT 0.01 INCH DIAMETER TWO-INCH LENGTH 5 FT. TOTAL TEN DEPTH FT

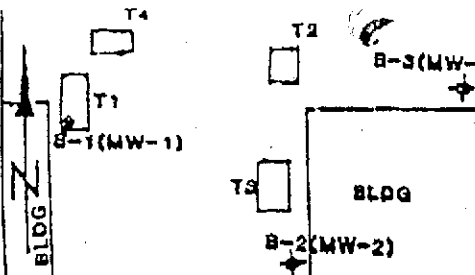
MOISTURE CONTENT SORTING DENSITY PLASTICITY SAMPLE NUMBER TP READING (PPH) DEPTH SAMPLE RECOVERY PENETRATION RESISTANCE HSPS LITHOLOGY/REMARKS WELL COMPLETION

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TP READING (PPH)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	HSPS	LITHOLOGY/REMARKS	WELL COMPLETION
						0					
						1					
						2					
HST	FR	LSE		1	NA	3	2	2	SM	0.00'-1.50' SAND, grayish-brown, fine-grained, sub-rounded.	
						4	1.6	2			
SAT	WELL	LSE		2	NA	5	2	4	SC	0.00'-0.45' SAND, grayish-brown, fine-grained, sub-rounded. Water at 6.0 FT.	
						6	0.45	1			
						7					
SAT	FR	MDNS		3	NA	8	1.5	6	SC	0.00'-1.50' SAND, brown, mottled, greenish-gray, slightly clayey.	
						9		11			
						10		21			
						11					
						12					
						13					
						14					
						15					
						16					
						17					
						18					
						19					
						20					



EXPLANATION: [Symbol] GROUT [Symbol] SAND [Symbol] SCREEN [Symbol] BENTONITE [Symbol] CASING [Symbol] WATER LEVEL AGENCY: Alameda Co. Flood Contr. & Wtr. Conserv. District

PERMIT # 90266



WELL NUMBER	B-2(MW-2)	LOCATION	208 JACKSON ST. OAKLAND, CA
DATE	5/5/90	WEATHER	SUNNY, 60's
LOGGED BY	TOM SMITH	DRILLED BY	AQUA SCIENCE
DRILLING METHOD	8 5/8-INCH HOLLOW STEM AUGER	SAMPLING METHOD	18-INCH CALIF. SPLIT-SPOON
GRAVEL PACK	SAND 10 FEET TO 4 FEET	SEAL	BENTONITE 4 FT TO 3 FT GROUT 3 FT TO 0 FT

CASING TYPE SCHEDULE 40 DIAMETER TWO-INCH LENGTH 5 FT HOLE DIA. TO-11CH

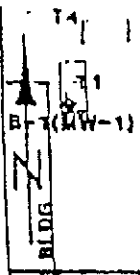
SCREEN TYPE PVC SLOT 0.01 INCH DIAMETER TWO-INCH LENGTH 5 FT TOTAL DEPTH

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPH)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	USCS	LITHOLOGY/REMARKS	WELL COMPLETION
						0					FLUSH MOUNT
damp mst	poor fair	mst		1	NA	3	1.7	3	ML	0.00'-0.50' SILT, brown, clayey.	
mst	fair	sl				4		1	SC	0.50'-1.30' SAND, brown, mottled, light brown, very fine-grained, clayey.	
						5					
						6				Water at 5.5 feet.	
sat	fair	lse		2	NA	7	0.10	2	SC	0.00'-0.10' SAND, yellowish-brown, fine-grained, very clayey. Very little sample recovery.	
						8		3			
						9					
						10					
						11					
						12					
						13					
						14					
						15					
						16					
						17					
						18					
						19					
						20					



EXPLANATION: GROUT SAND SCREEN BENTONITE CASINO WATER LEVEL

PERMIT # 90266 AGENCY: Alameda Co. Flood Cntrl. & Wtr Conserv. District



WELL NUMBER	B-3 (MW-3)	LOCATION	200 JACKSON ST. OAKLAND, CA
DATE	5/5/90	WEATHER	SUNNY, 60's
LOGGED BY	TOM SMITH	DRILLED BY	AQUA SCIENCE
DRILLING METHOD	8 5/8-INCH HOLLOW STEM AUGER	SAMPLING METHOD	1 1/2-INCH CALIF. SPLIT-SPOON
GRAVEL PACK	SAND 10 FEET TO 4 FEET	SEAL	BENTONITE 4 FT TO 3 FT GROUT 3 FT TO 0 FT

CASING TYPE SCHEDULE 40- DIAMETER TWO-INCH LENGTH 5 FT HOLE DIA. 1 1/2-INCH

SCREEN TYPE PVC SLOT 0.01 INCH DIAMETER TWO-INCH LENGTH 5 FT TOTAL DEPTH 10 FT

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPS)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	USCS	LITHOLOGY/REMARKS	WELL COMPLETION
						0					
						1					
						2					
						3					
damp	poor	mst				3.3	1	1	ML	0.00'-0.50' SILT, brown, clayey.	
mst	fair	stl		1	NA	4	4	4	SC	0.50'-1.30' SAND, brown, mottled, light brown, very fine-grained, clayey.	
						5					
						5.5				Water at 5.5 feet.	
sat	fair	lse				6.5	2	2	SC	0.00'-1.50' SAND, yellowish-brown, fine-grained, very clayey.	
				2	NA	7	3	3			
						7	7	7			
						8					
						9					
						10					
						11					
						12					
						13					
						14					
						15					
						16					
						17					
						18					
						19					
						20					



PERMIT # 90266

EXPLANATION: GROUT SAND SCREEN BENTONITE CASING WATER LEVEL

AGENCY: Alameda Co. Flood Cntrl. & Wtr Conserv. District



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

A N A L Y T I C A L R E P O R T

Prepared for:

Subsurface Consultants
171 12th Street
Suite 201
Oakland, CA 94608

Date: 13-JUN-94
Lab Job Number: 115882
Project ID: 886.001
Location: 208 Jackson

Reviewed by: Teresa K Morris

Reviewed by: Mary Plessas

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LABORATORY NUMBER: 115882
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 886.001
LOCATION: 208 JACKSON

DATE SAMPLED: 06/03/94
DATE RECEIVED: 06/07/94
DATE ANALYZED: 06/07,08/94
DATE REPORTED: 06/13/94

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
115882-1	MW-2	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
115882-2	MW-3	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
115882-3	MW-4	210,000 ✓	7,600 ✓	28,000	3,700	24,000
115882-4	MW-5	7,800 ✓	3.8 ✓	6.2	10	16

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	100



LABORATORY NUMBER: 115882
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 886.001
LOCATION: 208 JACKSON

DATE SAMPLED: 06/03/94
DATE RECEIVED: 06/07/94
DATE EXTRACTED: 06/09/94
DATE ANALYZED: 06/09/94
DATE REPORTED: 06/13/94

Extractable Petroleum Hydrocarbons in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT (ug/L)
115882-1	MW-2	ND	ND	50
115882-3	MW-4	9,800	***	50

ND = Not detected at or above reporting limit. Reporting limit
applies to all analytes.

*** Diesel range not reported due to overlap of hydrocarbon ranges.

QA/QC SUMMARY:

RPD, %	2
RECOVERY, %	92



LABORATORY NUMBER: 115882
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 886.001
LOCATION: 208 JACKSON

DATE SAMPLED: 06/03/94 ✓
DATE RECEIVED: 06/07/94
DATE EXTRACTED: 06/08/94
DATE ANALYZED: 06/08/94
DATE REPORTED: 06/13/94

Extractable Petroleum Hydrocarbons in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT (ug/L)
115882-2	MW-3	**	230+	50
115882-4	MW-5	4,600	***	50

** Kerosene range not reported due to overlap of hydrocarbon ranges.
+ Single peak contributing to sample result.
*** Diesel range not reported due to overlap of hydrocarbon ranges.

QA/QC SUMMARY:

RPD, %	6
RECOVERY, %	89

WELL SAMPLING FORM

Project Name: 319 & Jackson Well Number: MW 3
 Job No.: 886.001 Well Casing Diameter: 2 inch
 Sampled By: CODea Date: 6/3/94
 TOC Elevation: _____ Weather: Clear

Depth to Casing Bottom (below TOC) 4.78 10' feet
 Depth to Groundwater (below TOC) 4.18' feet
 Feet of Water in Well 5.82' feet
 Depth to Groundwater When 80% Recovered _____ feet
 Casing Volume (feet of water x Casing DIA² x 0.0408) _____ gallons
 Depth Measurement Method Tape & Paste / Electronic Sounder / Other _____
 Free Product None
 Purge Method teflon bailer

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°C)	Conductivity (micromhos/cm)	Salinity S%	Comments
<u>1</u>	<u>6.82</u>	<u>15.3</u>	<u>8440</u>	_____	_____
<u>2</u>	<u>6.72</u>	<u>15.1</u>	<u>8500</u>	_____	_____
<u>3</u>	<u>6.75</u>	<u>15.4</u>	<u>8500</u>	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Total Gallons Purged 4 gallons
 Depth to Groundwater Before Sampling (below TOC) _____ feet
 Sampling Method _____
 Containers Used 4 40 ml 1 liter _____ pint

Subsurface Consultants	JOB NUMBER	DATE	APPROVED	PLATE

WELL SAMPLING FORM

at 5' ... the vol.
3' ...
3' ...

Project Name: 3rd & Jackson Well Number: MW 4
 Job No.: _____ Well Casing Diameter: 5/31/94 inch
 Sampled By: _____ Date: _____
 TOC Elevation: _____ Weather: _____

Depth to Casing Bottom (below TOC) _____ feet
 Depth to Groundwater (below TOC) 4.96 feet
 Feet of Water in Well 5.04 feet
 Depth to Groundwater When 80% Recovered _____ feet
 Casing Volume (feet of water x Casing DIA² x 0.0408) .82 gallons
 Depth Measurement Method Tape & Paste / Electronic Sounder / Other _____
 Free Product none on tape w/ paste
 Purge Method slight odor

FIELD MEASUREMENTS

Gallons Removed	pH	Temp ^{OF} (°C)	Conductivity (micromhos/cm)	Salinity S%	Comments
<u>0</u>	<u>6.77</u>	<u>67.6</u>	<u>2500</u>	_____	<u>slight odor</u>
<u>2</u>	<u>6.75</u>	<u>66.0</u>	<u>1900</u>	_____	<u>solvent?</u>
<u>4</u>	<u>6.76</u>	<u>67.0</u>	<u>1958</u>	_____	<u>empty</u>
<u>5</u>	<u>6.70</u>	<u>65.9</u>	<u>1900</u>	_____	_____

6/3

Total Gallons Purged _____ gallons
 Depth to Groundwater Before Sampling (below TOC) _____ feet
 Sampling Method _____
 Containers Used _____ 40 ml _____ liter _____ pint

Subsurface Consultants

JOB NUMBER	DATE	APPROVED	PLATE

WELL SAMPLING FORM

Project Name: Mrs & Jackson Well Number: MW 5
 Job No.: _____ Well Casing Diameter: 2 inch
 Sampled By: _____ Date: 5/31/94
 TOC Elevation: _____ Weather: _____

Depth to Casing Bottom (below TOC) _____ feet
 Depth to Groundwater (below TOC) 4.60 feet
 Feet of Water in Well 5.40 feet
 Depth to Groundwater When 80% Recovered _____ feet
 Casing Volume (feet of water x Casing DIA² x 0.0408) 0.90 gallons
 Depth Measurement Method Tape & Paste Electronic Sounder Other _____
 Free Product None on hand 12/9/94
 Purge Method _____

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°C)	Conductivity (micromhos/cm)	Salinity S%	Comments
<u>0</u>	<u>7.26</u>	<u>66.0</u>	<u>1750</u>	---	<u>oily residue</u>
<u>2</u>					
<u>4</u>					

Total Gallons Purged _____ gallons
 Depth to Groundwater Before Sampling (below TOC) _____ feet
 Sampling Method _____
 Containers Used _____ 40 ml _____ liter _____ pint

Subsurface Consultants

		PLATE
JOB NUMBER	DATE	APPROVED