

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY
DAVID J. KEARS, Agency Director



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

REMEDIAL ACTION COMPLETION CERTIFICATION

**StID 3820- 2099 Grand Street, Alameda, CA
(1-1000 gallon gasoline tank removed on May 24, 1988)**

March 16, 1999

Mr. Kurt Bolton
Harbor Master, Grand Marina
2099 Grand Marina
Alameda, CA 94501

Dear Mr. Bolton:

This letter confirms the completion of site investigation and remedial action for the underground storage tank formerly located at the above-described location. Thank you for your cooperation throughout this investigation. Your willingness and promptness in responding to our inquiries concerning the former underground storage tank are greatly appreciated.

Based on information in the above-referenced file and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground tank release is required.

This notice is issued pursuant to a regulation contained in Title 23, Section 2721(e) of the California Code of Regulations.

Please contact our office if you have any questions regarding this matter.

Sincerely,

Mee Ling Tung, Director

cc: Richard Pantages, Chief of Division of Environmental Protection
Chuck Headlee, RWQCB
Dave Deaner, SWRCB
Steve McKinley, Alameda Fire Department
files-ec (grandmarina-2)

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HEALTH CARE SERVICES

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StID 3820

March 16, 1999

Mr. Kurt Bolton
Harbor Master, Grand Marina
2099 Grand Marina
Alameda, CA 94501

Re: Fuel Leak Site Case Closure for Grand Marina, 2099 Grand Ave, Alameda, CA

Dear Mr. Bolton:

This letter transmits the enclosed underground storage tank (UST) case closure letter in accordance with Chapter 6.75 (Article 4, Section 25299.37[h]). The State Water Resources Control Board adopted this letter on February 20, 1997. As of March 1, 1997, the Alameda County Environmental Protection Division is required to use this case closure letter for all UST leak sites. We are also transmitting to you the enclosed case closure summary. These documents confirm the completion of the investigation and cleanup of the reported release at the subject site. The subject fuel leak case is closed.

SITE INVESTIGATION AND CLEANUP SUMMARY

Please be advised that the following conditions exist at the site:

- up to 340ppm TPH as gasoline, 4,700ppm TPH as diesel, 12,000ppm oil and grease and 0.15ppm benzene exists in soil beneath the site;
- up to 770ppb TPHg and 300ppb benzene exists in groundwater beneath the site; and,
- a site safety plan must be prepared for construction workers in the event of excavation/trenching is proposed in the vicinity of residual soil and groundwater contamination.

If you have any questions, please contact me at (510) 567-6762.

eva chu
Hazardous Materials Specialist

enclosures: 1. Case Closure Letter 2. Case Closure Summary

c: Vivian Day, City of Alameda, Planning Dept., City Hall, Room 190
Alameda, CA 94501
files (grandmarina-3)

MAY 11 1998

CASE CLOSURE SUMMARY
Leaking Underground Fuel Storage Tank Program
QUALITY CONTROL BOARD

I. AGENCY INFORMATION

Date: April 3, 1998

Agency name: Alameda County-HazMat Address: 1131 Harbor Bay Pkwy
 City/State/Zip: Alameda, CA 94502 Phone: (510) 567-6700
 Responsible staff person: Madhulla Logan Title: Hazardous Materials Spec.

II. CASE INFORMATION

Site facility name: Grand Marina
 Site facility address: 2099 Grand Street, Alameda, CA - 94501
 RB LUSTIS Case No: N/A Local Case No./LOP Case No.: 3820
 URF filing date: SWEEPS No: N/A

<u>Responsible Parties:</u>	<u>Addresses:</u>	<u>Phone Numbers:</u>
Norman Gentry	2099 Grand Marina, Alameda, CA - 94501	865-1200

<u>Tank No:</u>	<u>Size in gal.:</u>	<u>Contents:</u>	<u>Closed in-place or removed?:</u>	<u>Date:</u>
1	1000 gallon	gasoline	removed	5/24/88

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and type of release: Overspill, gasoline
 Site characterization complete? Yes
 Date approved by oversight agency: March 5, 1998
 Monitoring Wells installed? Yes Number: 5 (relating to the UST)
 Proper screened interval? Yes
 Highest GW depth below ground surface: 6ft Lowest depth: 0.4
 Flow direction: predominantly north to north east
 Most sensitive current use: next to Bay (approx 400 ft from UST)
 Are drinking water wells affected? No Aquifer name:
 Is surface water affected? No Nearest affected SW name:
 Off-site beneficial use impacts (addresses/locations):

Report(s) on file? YES Where is report(s) filed? Alameda County
 1131 Harbor Bay Pkwy
 Alameda, CA 94502

Treatment and Disposal of Affected Material:

<u>Material</u>	<u>Amount</u> <u>(include units)</u>	<u>Action (Treatment</u> <u>or Disposal w/destination)</u>	<u>Date</u>
Tank	1000 gallons	Disposed by H&H - LMC Corp, Richmond, CA	5/25/88

Maximum Documented Contaminant Concentrations - - Before and After Cleanup

<u>Contaminant</u>	<u>Soil (ppm)</u>		<u>Water (ppb)</u>	
	<u>Before¹</u>	<u>After³</u>	<u>Before²</u>	<u>After⁴</u>
TPH (Gas)	730	340	29000	770
TPH (Diesel)	N/A	4700	1200	
Benzene	0.3	0.15	4000	300
Toluene	0.3	0.87	11,000	15
Ethylbenzene	ND	1.0	500	7.6
Xylenes	0.7	5.8	2900	31
Oil & Grease	-	12000	ND	-
Heavy metals	-	-	NA	-

1. The before soil samples are those taken during tank removal at 4.5' bgs
No confirmation samples were collected since no documentation of overexcavation
2. The before water samples are those taken from the MW-2 in 5/92
3. The after soil samples are max conc in borings, TP1 to TP9 installed 5/92 at 4.5' bgs
4. The results from the recent monitoring event (March 1996)

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? _____

Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? _____

Does corrective action protect public health for current land use? **YES**

Site management requirements: **A site safety plan must be prepared for construction workers in the event excavation/trenching is proposed in the vicinity of residual soil and groundwater contamination.**

Should corrective action be reviewed if land use changes? **YES**

Monitoring wells Decommissioned: No

Number Decommissioned: 0 Number Retained 5 with subject to UST but a total of 10 exists on site

List enforcement actions taken: N/A

List enforcement actions rescinded: N/A

V. LOCAL AGENCY REPRESENTATIVE DATA

Name: Madhulla Logan Title: Haz Mat Specialist

Signature: Date:

Reviewed by

Name: Barney Chan Title: Haz Mat Specialist

Signature: *Barney Chan* Date: 4/8/98

Name: Thomas Peacock Title: Supervisor

Signature: *Thomas Peacock* Date: 4-17-98

VI. RWQCB NOTIFICATION

Date Submitted to RB: RB Response:

RWQCB Staff Name: Chuck Headlee Title: ~~AWRE~~ 66

Signature: *Chuck Headlee* Date: 5/14/98

VII. ADDITIONAL COMMENTS, DATA, ETC.

Subsequent to a removal of 1000 gallon gasoline underground storage tank in May 1988, two samples were collected from either ends of the tank and analyzed for gasoline and BTEX. The tank was observed to contain scaling and pitting, but no holes were found. A heavy dark sheen was observed floating on the water within the pit. Gasoline up to 730 ppm and benzene up to 0.3 ppm was detected in the samples. There is no documentation that overexcavation was done on site.

In May 1992, nine soil borings, Tp-1 to Tp-9 were advanced around the area of the former UST, and in the area between the tank pit and the above ground tank farm (that is being investigated concurrently further northwest of the site and the summary for which is given below). Gasoline up to 340 ppm, benzene up to 0.15 ppm, diesel up to 4100 ppm and oil and grease up to 12,000 ppm was identified in the samples. Out of the four monitoring wells installed on-site to delineate the extent of contamination in the groundwater from both the above ground tank farm and the UST, two wells, MW-2 and MW-3 were installed in the vicinity of the former UST. The groundwater samples collected from monitoring well, MW-2 contained the maximum concentrations of petroleum hydrocarbons; gasoline at 29000 ppb, benzene at 4000 ppb and diesel at 1200 ppb.

In October 1994, two additional borings were converted to monitoring wells, MW-5a and MW-6a. Soil samples collected from the borings contained up to 500 ppm of oil and grease and did not indicate the presence of gasoline or BTEX above the detection limits. Groundwater samples did not contain any gasoline, benzene or diesel above detection limits. However, up to 1 ppm of oil and grease was detected in monitoring well, Mw-6a.

Groundwater monitoring of wells, MW2, MW3, MW4, MW5a and MW6a was performed at quarterly intervals starting from November 1994. After three quarters, MW5a and MW3 were removed from the monitoring schedule based on the below detection concentrations observed in these wells. The rest of the wells were monitored up to March 1996 at quarterly intervals. Based on the results of the groundwater samples, the groundwater plume appears to be stable. A risk assessment was prepared for the site based on ASTM's Risk Based Corrective Action methodology (RBCA) based on a commercial use scenario. **Based on the risk assessment, the petroleum hydrocarbons identified around the area of the former underground storage tank does not cause an unacceptable risk to public health.**

**Summary of Previous Investigations Conducted in the
Aboveground Tank Farm Area
(Maps and Tables attached)**

In April 1987 Harding and Lawson Associates conducted a soil and groundwater investigation in the vicinity of the former above ground storage tank area and significant concentrations of petroleum hydrocarbons, as diesel and oil were identified on site. Based on the results of the investigation, approximately 285 tons of petroleum hydrocarbon soil was removed to a maximum depth of five feet below ground surface.

On January 21 and January 22, 1992, the above ground storage tanks which were used to store petroleum hydrocarbons in the range of diesel and oil were removed by Zaccor Corporation. Subsequently, Zaccor installed twelve borings in the vicinity of the ASTs and the investigation revealed that the greatest diesel concentrations in the soils were present at depths of two feet beneath the AST farm floors and beneath the former pump house. Additional borings were augured outside the tank farm perimeter and significant concentrations of both diesel and oil and grease were identified. However, no gasoline or BTEX was identified in the soil samples. Four monitoring wells, MW1 to MW4 were also installed on site.

In October 1993, additional soil and groundwater investigation was performed by Secor to delineate the extent of contamination on site. Seventeen soil borings were advanced to depths ranging from five to thirteen feet and both soil and groundwater samples were collected. In the soil samples, diesel and gasoline were detected up to 800 ppm and 13 ppm respectively, but no benzene was detected. In the grab groundwater samples, diesel was found up to

450,000 ppb, however no gasoline or benzene was detected.

In October 1994, four additional monitoring wells, MW-5 through MW-8 were installed to delineate the extent of the groundwater plume. Based on the groundwater monitoring conducted until June 1996, and the concentrations of diesel found in the monitoring wells, the plume appears to be stable. Also, except for monitoring well, MW-2, BTEX have not been identified in any of the monitoring wells. The source of the BTEX observed in monitoring well MW-2, is the 1000-gallon underground storage tank located approximately 300 feet south of the AST which is discussed above.

In August 1996, a risk assessment was submitted to this Department, which was amended and re-submitted in October 1997. Based on the results of the risk assessment, the plume stability, and insignificant concentrations of gasoline and BTEX, **the petroleum hydrocarbons identified around the area of the former above ground storage tank area does not cause an unacceptable risk to public health**

Rationale for Closure

In summary, case closure is recommended for both the UST and the AST related contamination because:

- the tanks (both the UST and the AST) have been removed;
- the site has been adequately characterized;
- the dissolved plume does not appear to be migrating; the plume appears to be stable
- no water wells, surface water, or other sensitive receptors are likely to be impacted due to plume stability (no increasing trends have been observed in the monitoring wells)
- the site presents no significant risk to human health or the environment.
- The site has experienced petroleum fuel releases from both the 1K gasoline tank and the seven aboveground tanks, sumps and piping. The release appears to be naturally attenuating and is recommended for closure as a low risk groundwater case. The elevated oil and grease and diesel found near the UST is likely a result of past usage of the site as a shipyard, lumberyard, warehousing, oil distribution and vegetable oil storage.

Encinal Marine- 2041 Grand ST., Alameda, CA
May 24, 1988 Job# 14588T2S

Not A Property Line

TANK
REMOVAL

Building

Fortman Street

#3 (water)

#1
@ 4.5'

#2
@ 4.5'

Not A Property
Line

5 10 15 20 25
Scale (feet)

Sidewalk



HAZCAT Mobile Organics Lab

733 Dartmouth Avenue
San Carlos, CA 94070 • (415) 591-5820

*Samples Results
- Tank Removal
- UST*

Environmental Services Inc.
BOX 3833
San Carlos, CA 95352

Date Sampled: 05-24-88
Date Received: 05-24-88
Date Reported: 05-25-88

Sample Number

058091

Sample Description

14588T2S -Alameda
Grand St.-Encino Marina
2 SOIL

ANALYSIS

	Detection Limit ----- ppm	Sample Results ----- ppm
Total Petroleum Hydrocarbons Gasoline	1	730
<i>Benzene</i>	0.1	0.3
<i>Toluene</i>	0.1	0.3
<i>Xylenes</i>	0.1	0.7
<i>Ethylbenzene</i>	0.1	<0.1

Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

HAZCAT

Bill G. Evans
Bill G. Evans
Director

HAZCAT Mobile Organics Lab

733 Dartmouth Avenue
San Carlos, CA 94070 • (415) 591-5820

Environmental Services Inc.

BOX 3833
to, CA 95352

Date Sampled: 05-24-88
Date Received: 05-24-88
Date Reported: 05-25-88

Sample Number

058090

Sample Description

14588T2S -Alameda
Grand St.-Encino Marina
1 SOIL

ANALYSIS

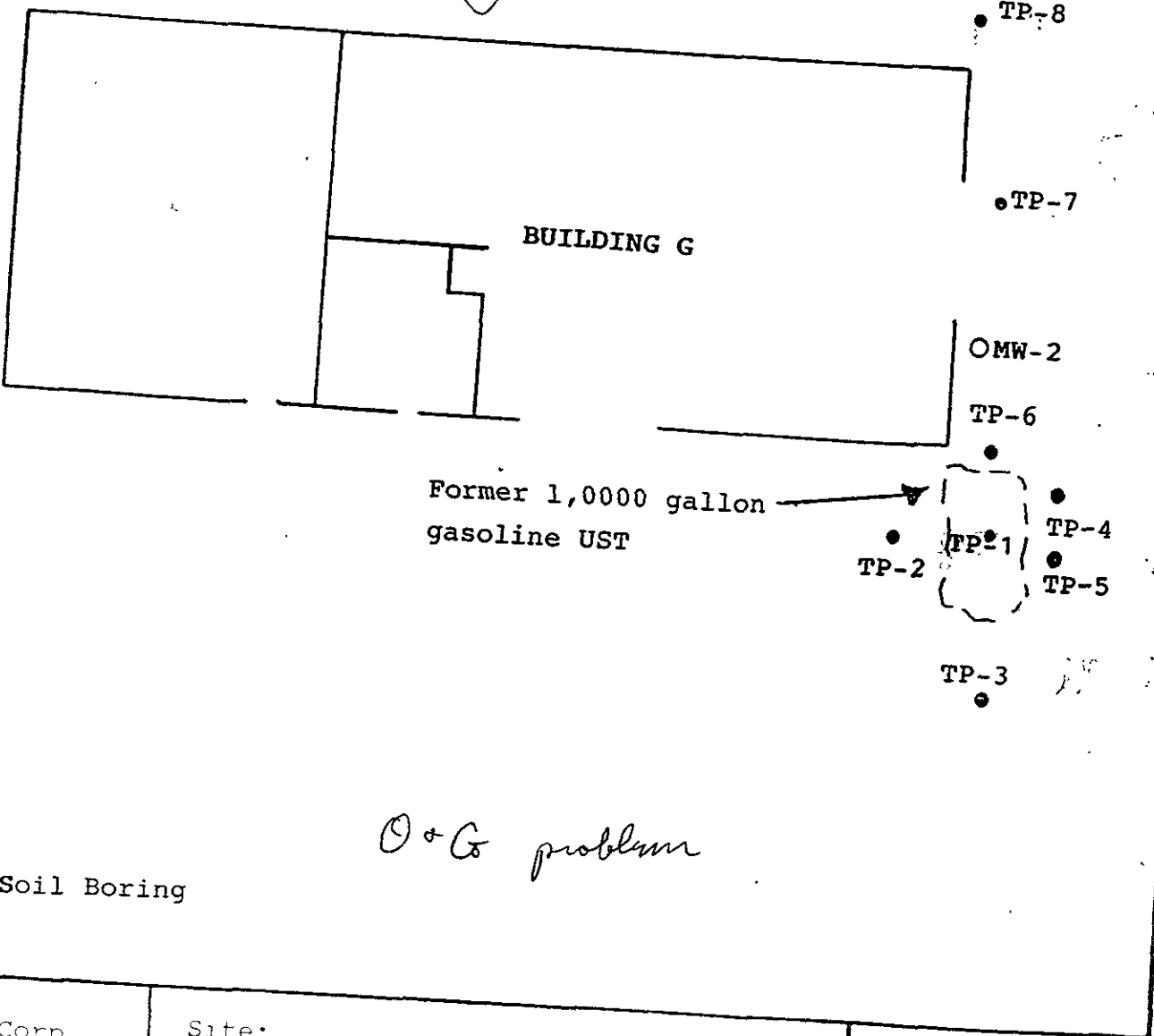
	Detection Limit	Sample Results
	-----	-----
	ppm	ppm
Petroleum Hydrocarbons	1	<1.0
Gasoline		
Benzene	0.1	<0.1
Toluene	0.1	<0.1
Xylenes	0.1	<0.1
Ethylbenzene	0.1	<0.1

Analysis was performed using EPA methods 5020 and 8015 with
method 8020 used for BTX distinction.

G. Evans
G. Evans
Director

*Soil borings
May 1992*

0 10'
scale:

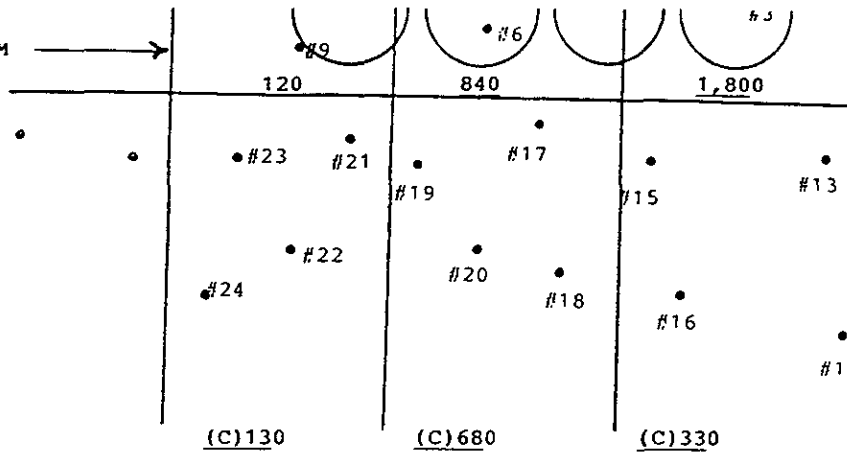


O+G problem

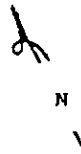
Soil Boring

Corp. Hilton Ave. Park, CA	Site: GRAND MARINA FOOT OF GRAND STREET ALAMEDA, CALIFORNIA	
5.	Former 1,000 Gallon Gasoline UST	Drawn: 6/26/92

TANK FARM →



0 10'
 ┌───┐
 scale:



• TP-9
3,100

• TP-8
410

• TP-7
480

OMW-2

TP-6
7,500

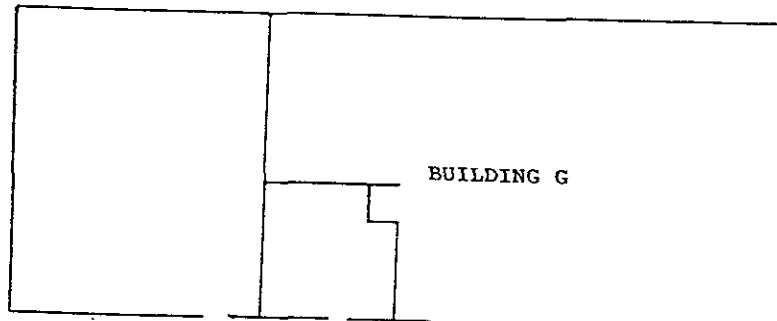
TP-4 NA

TP-1
2000

TP-2
350

TP-5
12,000

TP-3
4,400



BUILDING G

TOTAL OIL AND GREASE
 Results reported in mg/kg

Former 1,000 gallon
 gasoline UST →

Sample Depth: 4.0' - 6.0'

LEGEND

- (C) = Composite Sample
- (D) = Discrete Sample
- R = Refusal
- = Analytical Results are Underlined

Zaccor Corp.
 791 Hamilton Ave.
 Menlo Park, CA

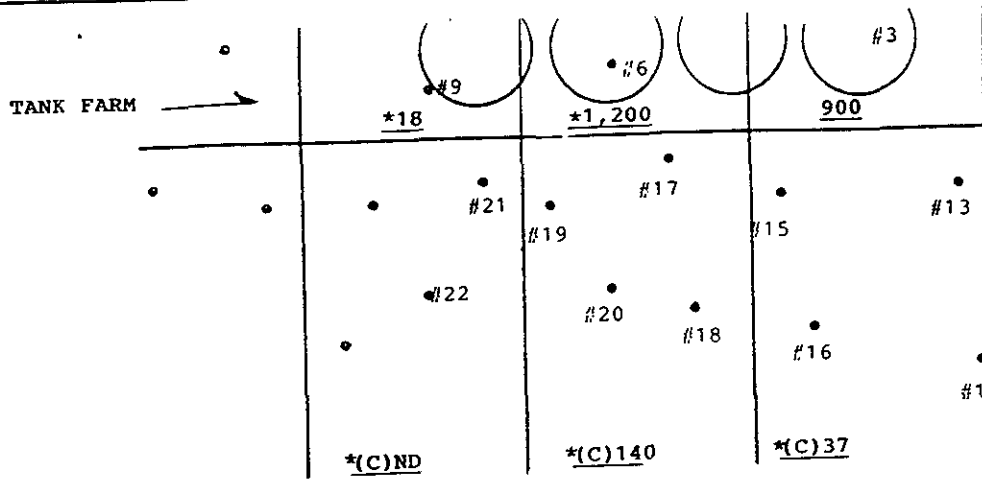
Site:
 GRAND MARINA
 2407 GRAND STREET
 ALAMEDA, CALIFORNIA

Sampling performed:
 April 30; May 1 & 2
 1992

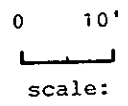
TOG

Inter Farm & Its former 1,000 gal. Tank

Dr. [unclear]



**The concentration reported as diesel is primarily due to the presence of a combination of a heavier petroleum product, possibly motor oil, and a lighter petroleum product, possibly gasoline or kerosene.



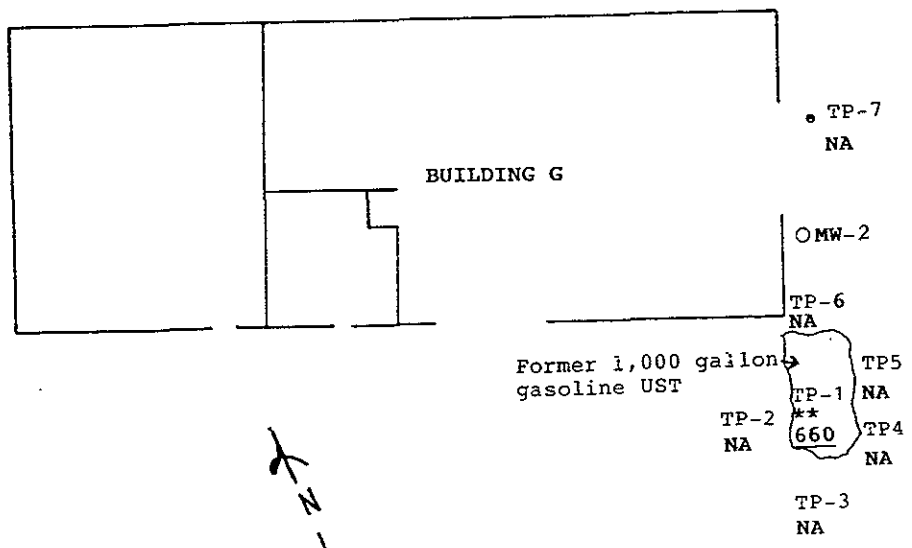
TOTAL PETROLEUM HYDROCARBONS AS DIESEL
Results reported in mg/kg

Sample Depth: 4.0' - 6.0'

• TP-9
4,700

* The concentration reported as diesel is primarily due to a heavier petroleum hydrocarbon, possibly motor oil.

• TP-8
*82



LEGEND

- (C) = Composite Sample
- (D) = Discrete Sample
- R = Refusal
- = Analytical Results are Underlined

Zaccor Corp.
791 Hamilton Ave.
Menlo Park, CA

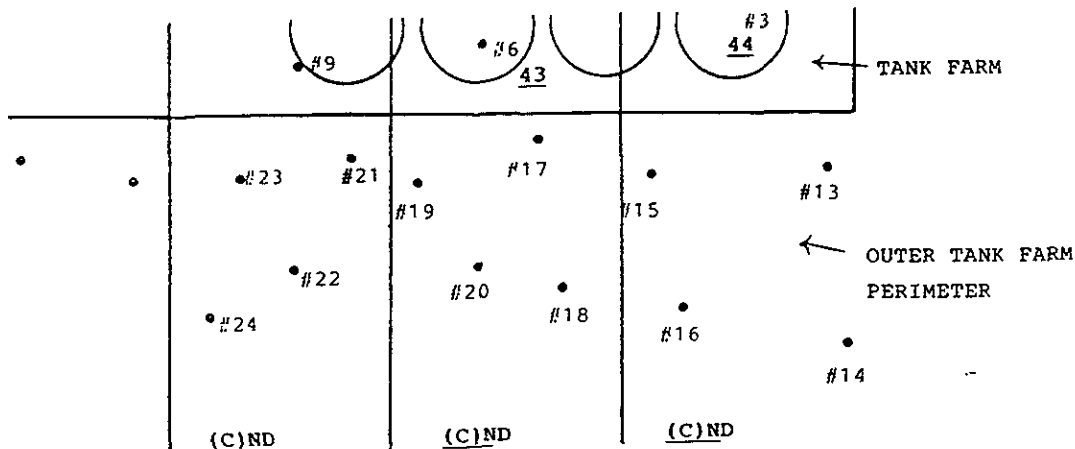
Site:
GRAND MARINA
2407 GRAND STREET
ALAMEDA, CALIFORNIA

Sampling performed
April 30/ May 1 & 2
1992

TPHd

Tank Farm & Its Outer Perimeter, 1K Gal. Tank

Drawn: 6/26/92



0 10'

scale:

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
Results reported in mg/kg



• TP-9
**490
**Primarily Diesel

• TP-8
ND

• TP-7
5.2

OMW-2

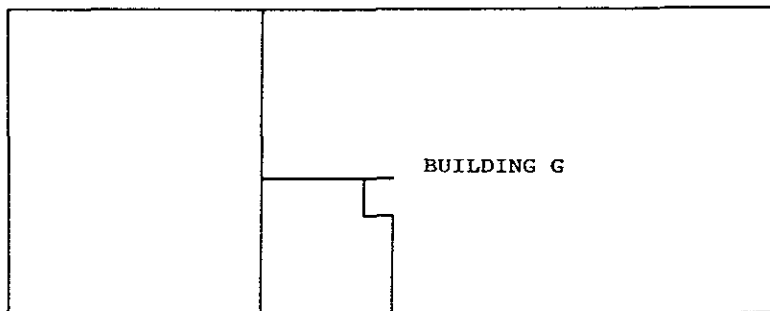
TP-6
26

Former 1,000 gallon gasoline UST

TP-2
88

TP-4 NA
TP-5 ND

TP-3
17



LEGEND

- (C) = Composite Sample
- (D) = Discrete Sample
- R = Refusal
- = Analytical Results are Underlined

sample Depth: 4.0' - 4.5'

Zacor Corp.
791 Hamilton Ave.
Menlo Park, CA

Site:
GRAND MARINA
2407 GRAND STREET
ALAMEDA, CALIFORNIA

Sampling performed:
April 30/ May 1 & 2
1992

TABLE Va

SOIL SAMPLES/PREVIOUS 1,000 GALLON GASOLINE TANK

Matrix: Soil

Depth: 4.0' - 4.5'

Results are reported in mg/kg

Date Sampled: 5/1/92

Sample	TPHg	B	T	E	X
TP1	340	ND	0.87	1.0	2.1
TP2	88	ND	0.54	0.34	0.59
TP3	17	0.15	0.18	0.131	0.40
TP5	ND	ND	ND	ND	ND
TP6	26	ND	0.088	0.20	0.64
TP7	5.2	ND	0.013	0.059	0.15
TP8	ND	ND	ND	ND	ND
TP9	*490	ND	ND	ND	5.8

*The concentration reported as gasoline for sample TP-9 is primarily due to the presence of a heavier petroleum product, possibly diesel or kerosene.

TABLE Vb

SOIL SAMPLES/PREVIOUS 1,000 GALLON GASOLINE TANK

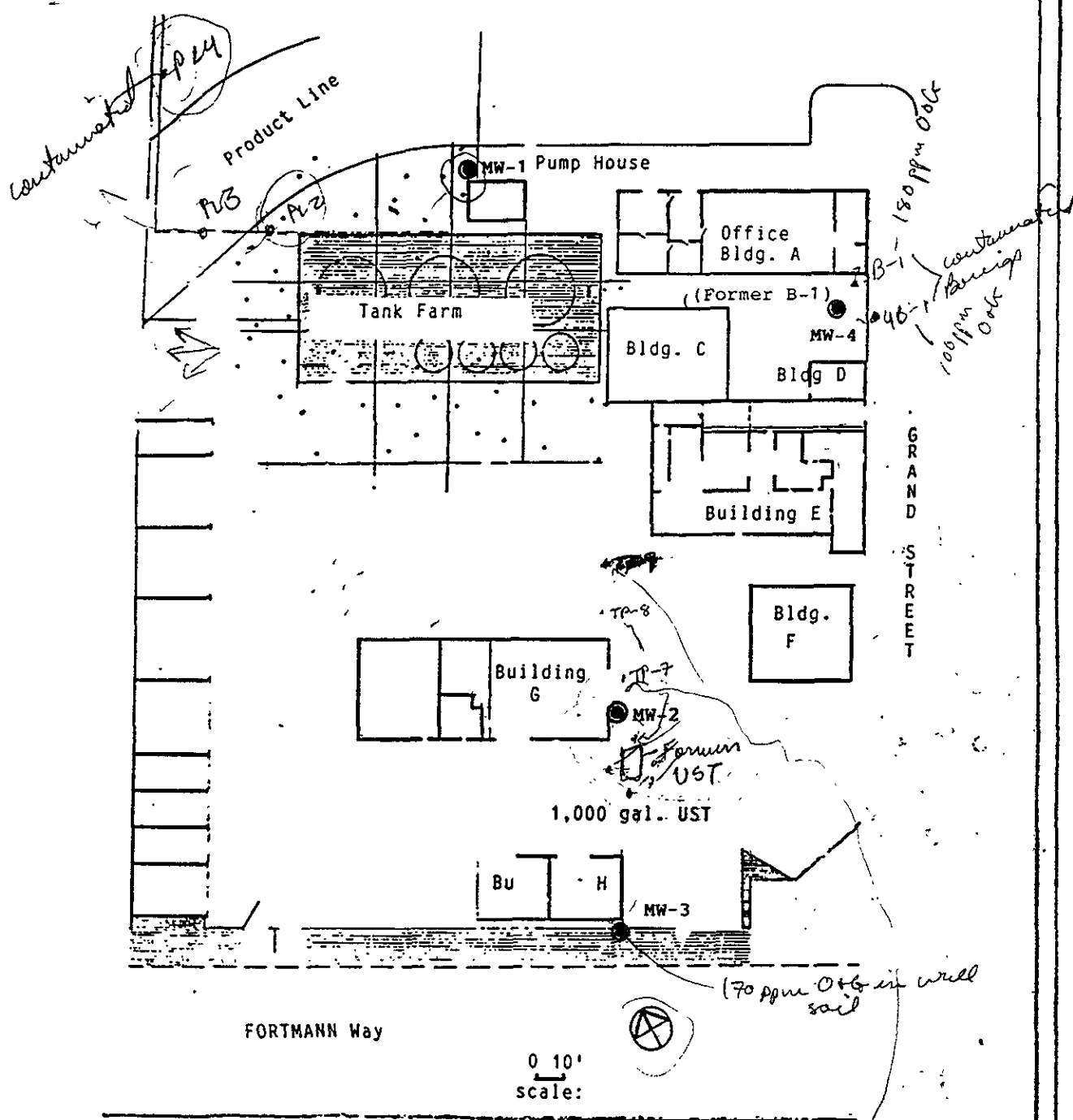
Matrix: Soil Depth: 4.0' - 4.5'
 Results are reported in mg/kg

Date sampled: 5/1/92

<u>Sample</u>	<u>TPH as Diesel</u>	<u>Total Oil & Grease</u>
TP-1	**660	2000
TP2	NA	350
TP3	NA	4400
TP5	NA	12000
TP6	NA	7500
TP7	NA	480
TP8	*82	410
TP9	4700	3100

**The concentration reported as diesel for sample #TP-1 is due to the presence of a combination of a heavier petroleum product, possibly motor oil, and a lighter petroleum product, possibly gasoline or kerosene.

FORTMANN BASIN



● Monitoring Well

Pennzoil Corp.

Zaccor Corp.
791 Hamilton Ave
Menlo Park, CA

Site: GRAND MARINA
2407 GRAND STREET
ALAMEDA, CALIFORNIA

*Soil samples
MW's*

TABLE VIIIa

MONITORING WELL SOIL ANALYTICAL RESULTS

Date Sampled: 5/4/92		Results reported in <u>mg/kg</u>				
<u>Sample</u>	<u>Depth</u>	<u>TPH-g</u>	<u>B</u>	<u>T</u>	<u>E</u>	<u>X</u>
MW-1	4.0'-4.5'	ND	ND	ND	ND	ND
MW-1	10.0'-10.5'	NA	NA	NA	NA	NA
MW-1	15.0'-15.5'	NA	NA	NA	NA	NA
MW-2	4.0'-4.5'	19	0.24	0.62	0.050	0.26
MW-2	10.0'-10.5'	NA	NA	NA	NA	NA
MW-2	16.0'-16.5'	NA	NA	NA	NA	NA
MW-3	6.0'-6.5'	ND	ND	ND	ND	ND
MW-3	10.0'-10.5'	NA	NA	NA	NA	NA
MW-4	10.0'-10.5'	NA	NA	NA	NA	NA
MW-4	15.0'-15.5'	NA	NA	NA	NA	NA

TABLE VIIIb

MONITORING WELL SOIL ANALYTICAL RESULTS

Date Sampled: 5/4/92

Results reported in mg/kg

Sample#	Depth	TPH as Diesel	Total Oil & Grease
MW-1	4.0'-4.5'	970	2,400
<i>Adjacent Tank Farm</i>			
MW-1	10.0'-10.5'	NA	NA
MW-1	15.0'-15.5'	NA	NA
MW-2	4.0'-4.5'	150	57
MW-2	10.0'-10.5'	NA	NA
MW-2	16.0'-16.5'	NA	NA
MW-3	6.0'-6.5'	ND	170
MW-3	10.0'-10.5'	NA	NA
MW-4	10.0'-10.5'	NA	NA
MW-4	15.0'-15.5'	NA	NA

TABLE IX

*Initial
GW Samples*

MONITORING WELL GROUNDWATER ANALYTICAL RESULTS

Date Samples: 5/4/92

Results are reported in ug/L, except TOG reported in mg/kg

<u>Sample</u>	<u>TPH-g</u>	<u>B</u>	<u>T</u>	<u>E</u>	<u>X</u>
MW-1	ND	ND	0.8	ND	1.3
MW-2	29,000	4,000	11,000	500	2,900
MW-3	ND	ND	1.0	ND	ND
MW-4	ND	ND	ND	ND	ND

<u>Sample#</u>	<u>TPH as Diesel</u> <i>(ppb)</i>	<u>Total Oil & Grease</u> <i>(mg/kg)</i>
MW-1	ND	ND
MW-2	1,200	ND
MW-3	120	ND
MW-4	150	ND

3.0 FIELD PROCEDURES

After receiving approval for the permit application from the Water Conservation and Flood Control District - Zone 7, borings MW-5a and MW-6a were drilled on October 28, 1994 using a B-53 mobile drill rig equipped with 8-inch outside diameter hollow-stem augers. Concurrent with drilling, subsurface soil samples were obtained with a Modified California Split Spoon Sampler equipped with three six-inch long brass/stainless steel liners. Borings MW-5a and MW-6a were drilled to a total depth of 12 feet bgs. Figure 2 - Site Plan, illustrates the new and existing monitoring well locations.

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 three 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 driving the sampler eighteen inches into undisturbed material. Upon removal, each sample was labeled, and stored in an ice-filled cooler to be transported under chain of custody to Chromalab, Inc., a state certified laboratory.

3.1 Analytical Results - Soil

A minimum of one soil sample collected from each boring was submitted to Chromalab for analysis of TPH as gasoline with benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Test Method 8015/8020, TPH as diesel by EPA test method 8015-Modified and total oil and grease by EPA test method 5520 E & F. Results of the soil sample analyses are summarized below, in Table 1. Analytical results with chain-of-custody form are attached as Appendix A.

TABLE 1 - Sample Results - Soil

Sample No.	Depth (feet)	TPHg (ppm)	BTEX (ppm)	Oil & Grease (ppm)	TPH as diesel (ppm)
MW5a - 3.5	3.5	<1.0	<0.005	500	<1.0
MW5a - 4.5	4.5	<1.0	<0.005	79	<1.0
MW6a - 3	3	<1.0	<0.005	<50	<1.0

Notes: TPHg = Total Petroleum Hydrocarbons as gasoline
 BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes
 TPH = Total Petroleum Hydrocarbons
 ppm = parts per million

Soil Samples For MW-5a & 6a

The soil cuttings and samples were logged by an ACC geologist during drilling operations. The soil cuttings are described in accordance with the Unified Soil Classification System. Lithologic logs of the borings and the Unified Soil Classification System are attached in Appendix B. Soil cuttings were placed in labeled drums pending laboratory analysis for determining appropriate disposal.

4.2 Analytical Results - Groundwater

Groundwater samples were collected from the monitoring wells on May 9, 1995. The groundwater samples collected were submitted to Chromalab for analysis of TPH as gasoline with BTEX.

Analysis results from the groundwater samples are illustrated in Table 3. Copies of the analytical results are attached in Appendix B.

For all wells upto 5/95

TABLE 3 - Sample Results - Groundwater

Well No.	Date Sampled	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	E.benzene (ug/L)	Xylenes (ug/L)	TPHd (ug/L)	O&G (ug/L)
MW2	11/03/94	5400	510	670	65	320	<50	<50
	02/06/95	1900	360	230	20	100	NA	NA
	05/09/95	2200	550	350	28	120	NA	NA
MW3	11/03/94	<50	<0.5	<0.5	<0.5	<0.5	<50	<50
	02/06/95	NA	NA	NA	NA	NA	NA	NA
	05/09/95	NA	NA	NA	NA	NA	NA	NA
MW4	11/03/94	NA	NA	NA	NA	NA	NA	NA
	02/06/95	80	<0.5	<0.5	<0.5	<0.5	NA	NA
	05/09/95	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW5a	11/03/94	<50	<0.5	<0.5	<0.5	<0.5	<50	<1
	02/06/95	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	05/09/95	NA	NA	NA	NA	NA	NA	NA
MW6a	11/03/94	<50	<0.5	<0.5	<0.5	<0.5	<50*	1
	02/06/95	<50	<0.5	<0.5	<0.5	2.5	<50**	NA
	05/09/95	<50	<0.5	<0.5	<0.5	<0.5	NA	NA

-discon after 5/95

discontinue after 5/95

Notes: TPHg = Total Petroleum Hydrocarbons as gasoline
 E.benzene = Ethylbenzene
 TPHd = Total Petroleum Hydrocarbons as diesel
 O&G = Total Oil and Grease
 ug/L = micrograms per liter = parts per billion (ppb)

* unknown hydrocarbons found in the diesel range estimated to be 80 ug/L with a diesel standard.

** unknown hydrocarbons found in the diesel range estimated to be 270 ug/L with a diesel standard.

5.0 CONCLUSIONS

An aboveground tank farm and one underground storage tank were formerly located onsite. The tanks have since been removed. Subsurface investigations are being conducted by SEACOR in the vicinity of the former above ground tank farm. ACC has conducted further

TABLE 3 - GROUNDWATER SAMPLE ANALYTICAL RESULTS

Well No.	Date Sampled	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
MW2	11/03/94	5,400	510	670	65	320
	02/06/95	1,900	360	230	20	100
	05/09/95	2,200	550	350	28	120
	08/22/95	2,100	290	120	11	37
	12/07/95	1,000	190	35	6.4	16
	03/07/96	770	300	150	7.6	31
MW4	11/03/94	--	--	--	--	--
	02/06/95	80	<0.5	<0.5	<0.5	<0.5
	05/09/95	<50	<0.5	<0.5	<0.5	<0.5
	08/22/95	<50	<0.5	<0.5	<0.5	<0.5
	12/07/95	<50	<0.5	<0.5	<0.5	<0.5
	03/07/96	<50	<0.5	<0.5	<0.5	<0.5
MW6a	11/03/94	<50	<0.5	<0.5	<0.5	<0.5
	02/06/95	<50	<0.5	<0.5	<0.5	2.5
	05/09/95	<50	<0.5	<0.5	<0.5	<0.5
	08/22/95	<50	<0.5	<0.5	<0.5	<0.5
	12/07/95	<50	<0.5	<0.5	<0.5	<0.5
	03/07/96	<50	<0.5	<0.5	<0.5	<0.5

Notes: µg/L = micrograms per liter (approximately equivalent to parts per billion)

5.0 DISCUSSION

Results for MW3 & MW5 are included in previous page

This report documents the sixth consecutive quarterly monitoring conducted on groundwater wells MW-2, MW-4, and MW-6a at the Grand Marina facility. Groundwater sample results indicate detectable concentrations of gasoline constituents within well MW-2. Below detectable concentrations of TPHg and BTEX were reported in wells MW-4 and MW-6a, consistent with previous sampling events. Results reported in the sample collected from well MW-2 indicate concentrations of petroleum hydrocarbons as gasoline have decreased 23% since the December 7, 1995, sampling event. Groundwater flow direction has fluctuated slightly; however, the flow direction varies throughout the site.

4.2 Regional Hydrogeology

The site is located within the Bay Plain. The Bay Plain is a geomorphic terrain which is the gently bayward sloping alluvial plain of Alameda County adjacent to the east shore of San Francisco Bay. The Bay Plain is situated on the eastern side of the San Francisco Bay depression. This depression is an irregular warpage of the earth's crust resulting principally from downward movement along northwest-trending faults at its edge (California Department of Water Resources, 1963).

The Alameda County Flood Control and Water Conservation District, Geo-hydrology and Groundwater - Quality Overview, 205 (j) Report, June 1988 describes the geological formation of Alameda as comprised principally the Merritt Sand of Quaternary age and Bay Mud. The report notes that Bay Mud is unconsolidated dark plastic clay and silty clay rich in organic material. Locally the Mud contains lenses of sandier material and beds of peat. The Mud has a low permeability and functions as a barrier to vertical movement of salt water from the San Francisco Bay.

4.3 Analytical Results - Groundwater

Groundwater samples were collected from the monitoring wells on November 3, 1994. The groundwater samples collected were submitted to Chromalab for analysis of TPH as gasoline with BTEX, TPH as diesel, and total oil and grease.

Analysis results from the groundwater samples are illustrated in Table 3. Copies of the analytical results are attached in Appendix C.

TABLE 3 - Sample Results - Groundwater

Well No.	Date Sampled	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	E.benzene (ppb)	Xylenes (ppb)	TPHd (ppb)	O&G (ppm)
MW2	11/03/94	5,400	510	670	65	320	<50	<1
MW3	11/03/94	<50	<0.5	<0.5	<0.5	<0.5	<50	<1
MW5a	11/03/94	<50	<0.5	<0.5	<0.5	<0.5	<50	<1
MW6a	11/03/94	<50	<0.5	<0.5	<0.5	<0.5	<50*	1

Notes: TPHg = Total Petroleum Hydrocarbons as gasoline
E.benzene = Ethylbenzene
TPHd = Total Petroleum Hydrocarbons as diesel
O&G = Total Oil and Grease
ppb = parts per billion
ppm = parts per million

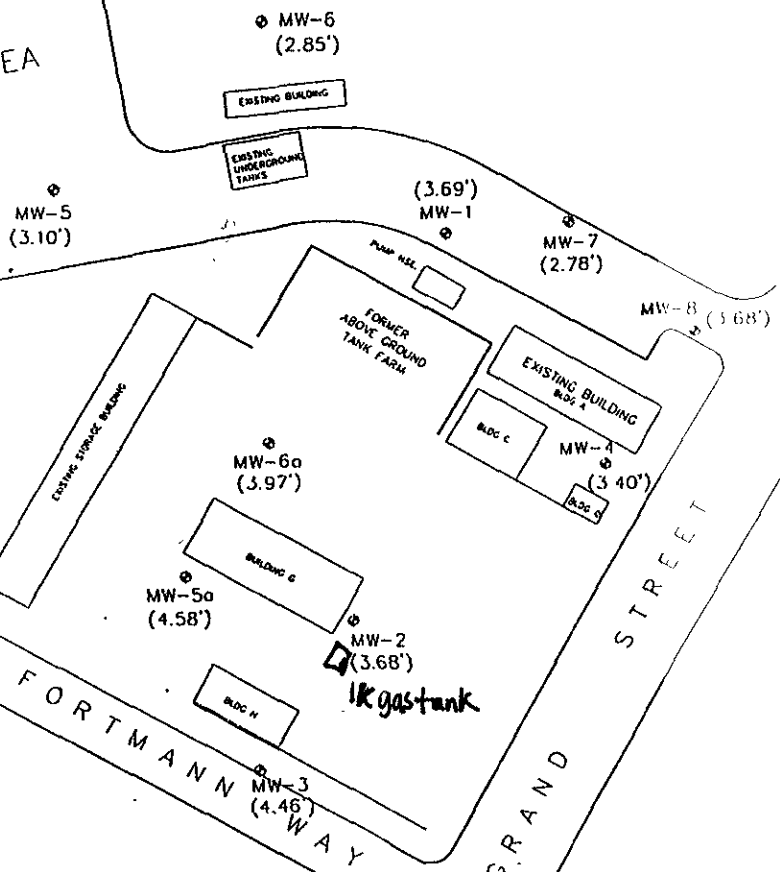
* unknown hydrocarbons found in the diesel range estimated to be 87 ppb with a diesel standard.

5.0 CONCLUSIONS


An above-ground tank farm and one underground storage tank were formerly located on-site. The tanks have since been removed. Subsurface investigations are being conducted by SEACOR in the vicinity of the former above ground tank farm. ACC has conducted further evaluation of the subsurface hydrocarbon impact in the area around a former gasoline storage UST excavation. During the investigation, fill material was observed in the borings extending from the surface to

EXISTING ASPHALT PARKING AREA

EXISTING CURB LINE



Legend

MW-2  - Groundwater Monitoring Well Location

NOTE: Elevation in feet above mean sea level measured March 7, 1996

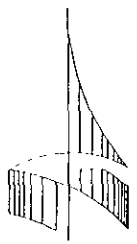


FIGURE NUMBER:
2.0
PROJECT NUMBER:
6176-1



7977 Capwell Drive, Suite 100
Oakland, California 94621
Ph: (510) 638-8400
Fax: (510) 638-8404

SITE PLAN
GRAND MARINA-2099 Grand Street
Alameda, California

DATE
/ MARCH 1996
DRAWN BY
JVC

Well No.	Sample Date	Well Elevation (MSL)	Groundwater Depth (feet bgs)	Groundwater Elevation (MSL)
MW-8	10/31/94	5.65	3.92	1.93
	11/31/94		2.21	3.44
	12/24/94		2.39	3.26
	01/13/95		2.62	3.03
	02/06/95		2.16	3.49
	03/07/95		2.77	2.88
	05/09/95		2.97	2.68
	08/22/95		2.59	3.06
	12/07/95		2.85	2.80
	03/07/96		1.97	3.68

Notes: All measurements in feet

3.2 Groundwater Gradient

The groundwater flow direction as determined from monitoring well data obtained on March 7, 1996, is illustrated on Figure 3. Based on groundwater elevation calculations, groundwater flow varies throughout the site and generally flows toward the north, northeast at an average gradient of 0.004 to 0.006 foot/foot. Table 2 summarizes current and previous gradients and approximate flow directions determined from water elevations.

TABLE 2 - GROUNDWATER GRADIENT AND FLOW DIRECTION

Date	Gradient	Direction
10/31/94	0.002-0.005	North - East*
11/30/94	0.002-0.008	North - Northeast*
12/29/94	0.004 - 0.01	Northeast*
01/13/95	0.007 - 0.016	North - East*
02/06/95	0.007 - 0.018	North - Northeast*
03/07/95	0.007 - 0.015	Northeast*
05/09/95	0.004 - 0.012	Northeast*
08/22/95	0.003 - 0.005	North*
12/07/95	0.009 - 0.01	North*
03/07/96	0.004 - 0.006	North - Northeast*

* Gradient varies throughout the site

MONITORING WELL BORING LOGS

ENVIRONMENTAL TECHNICAL SERVICES
for: ZACCOR CORPORATION

AT: Grand Marina
2407 Grand Street
Alameda, CA

MW-2

R.G. Roger Greensfelder # 3011

Drilling Method : Augers

Sample Method : Spoon Split Method : Spoon

Project Manager: Gary Zaccor

5/4/92

DEPTH	SAMPLE COLLECTED: INT. SAMPLE#	Soil Description	USCS	LOG	BLOW COUNTS	WELL CONSTRUCTION
		Fine Sand (75%) & Clay (25%). Gray, moist, plastic.	SC			Well Cap
5'	MW-2 4.5'-5'	Gravel & Sand (30%) & Trace Silt. Gray, saturated, slight fuel odor	GM			0.010" Slot 2" PVC
10'	MW-2 10-10.5'	Clay, dark gray, plastic with gravel (5%). Slight odor.	CI			
15'	MW-2 16-16.5'	Decomposed wood with plastic Clay, gray. Sewage like odor.				TD=15'
20'		TD = 16.5'				
25'						
30'						

Grout
Bento-Pellets
Lone-Star #3 Sand

MONITORING WELL BORING LOGS

ENVIRONMENTAL TECHNICAL SERVICES
ZACCOR CORPORATION

AT: Grand Marina
2407 Grand Steet
Alameda, CA

MW-3

Roger Greensfelder #3011

Logging
Method : Augers

Sample Split
Method : Spoon

Project Manager: Gary Zaccor

5/4/92

SAMPLE
COLLECTED:

DEPTH. SAMPLE#

Soil
Description

USCS

L
O
G

BLOW
COUNTS

WELL
CONSTRUCTION

MW-3 6'-6.5'	Sand & Gravel fill with some silt. Brown, dry. No odor.	GP		2	Well Cap	Grout
MW-3 6'-6.5'	Clay with thin lenses of fine Sand. Plastic, moist, mottled w/ black veins (carbon?). No odor.	CI		3 4	0.010" Slot	Bento-Pellets
MW-3 10-10.5'	Clay, dark gray, plastic, wet, loose, no odor.	CH		1 1	2" PVC	Lone-Star #3 Sand
MW-3 15-15.5'	Clay (as above) with decayed wood.					
	TD = 16.5'				TD=15'	

MONITORING WELL BORING LOGS

ENVIRONMENTAL TECHNICAL SERVICES
for: ZACCOR CORPORATION

AT: Grand Marina
2407 Grand Street
Alameda, Calif.

MW-4

Drilling Method : Augers

Sample Method : Split Spoon

Project Manager: Gary Zaccor 5/4/92

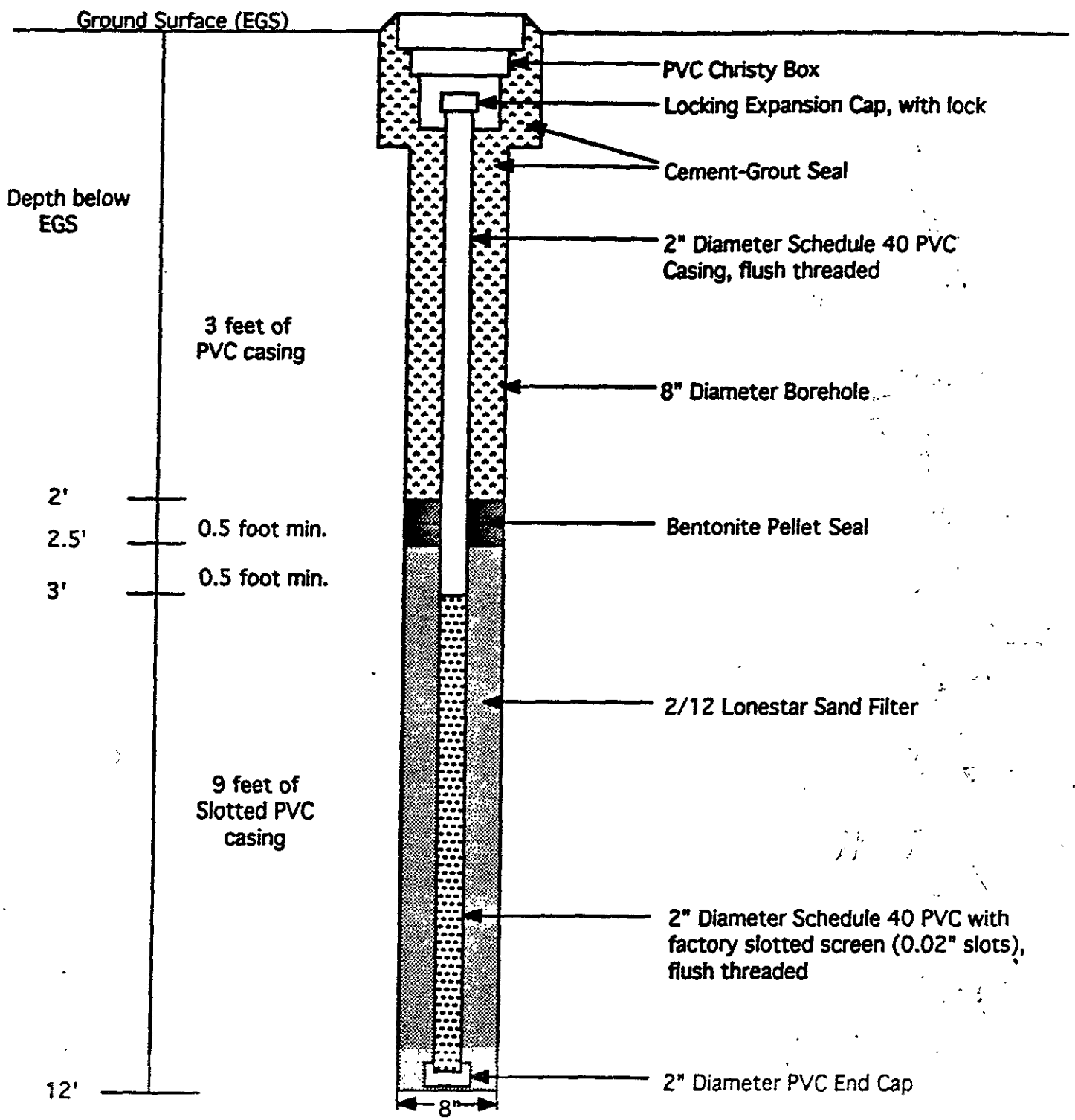
DEPTH	SAMPLE COLLECTED: INT. SAMPLE#	Soil Description	USCS	LOG	BLOW COUNTS	WELL CONSTRUCTION	
0 - 5'		Sand & Gravel fill. Brown, dry, no odor	GP	0.0 0.0 0.0 0.0 0.0 0.0		Well Cap	Grout Bento-Pellets
5' - 10'		Clay, dark gray, plastic, moist. No odor.	CI	[Pattern]		0.010" Slot 2" PVC	
10' - 10.5'	MW-4	Clay, dark gray, plastic, wet No odor. Bits of decayed wood.	CH	[Pattern]	1 1 2		Lone-Star #3 Sand
10.5' - 15'	10-10.5'						
15' - 15.5'	MW-4	TD = 16.5'				TD=15	
15.5' - 20'	15-15.5'						
20' - 25'							
25' - 30'							
30' - 35'							
35' - 40'							

Soil color described using Munsell soil color charts	Blows/foot	H _{Nu} (ppm)	SAMPLE #	Sample Int.	Depth (feet)	Driller: Gregg Drilling, B-53 Rig Equipment: Hollow Stem Auger Logged By: M. Kaltreider PROJECT: Grand Marina Start Date: 10/28/94
(Gley 3)	12	0	MW5a-1.5		0	Dark grey gravelly sand with (5-7% gravel) with trace clay, med. dense, very moist (interperated at Fill).
	4	0	MW5a-3.5 MW5a-4 MW5a-4.5		2 4	Black clayey sand (SC) to sandy clay (CL), soft, very plastic, very moist to wet.
	4	0			6	Black clay (CH) with mottling of dark grey material, slightly stiff to soft, very plastic, very moist with alternating horizons of peat and sand lenses, few shell fragments.
	2	0	MW5a-12		8 10 12	Bay and marsh deposits encountered, interperated as Bay Mud Formation Material.
						BOTTOM OF BORING @ 12 FEET Completed as monitoring well MW-5a 14 16 18 20 22 24 26 28

ACC ENVIRONMENTAL CONSULTANTS 1000 ATLANTIC AVEUNUE, SUITE 110 ALAMEDA, CA 94501	JOB NO: 94-6176-1	Boring MW-5a Grand Marina 2009 Grand Street Alameda, California
	DATE: 10/28/94	

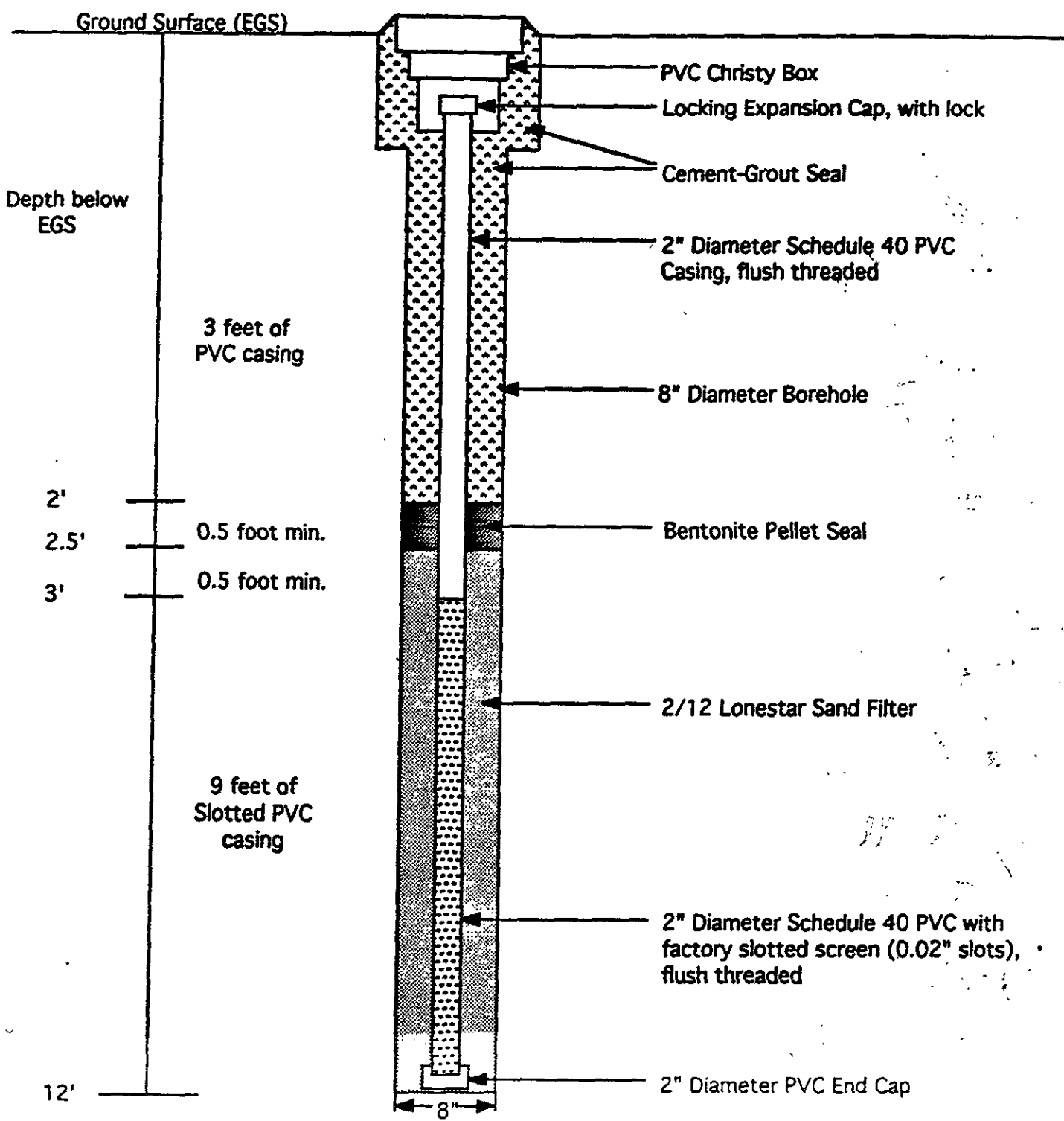
Soil color described using Munsell soil color charts	Blows/foot	H _{Nu} (ppm)	SAMPLE #	Sample Int.	Depth (feet)	Driller: Gregg Drilling, B-53 Rig Equipment: Hollow Stem Auger Logged By: M. Kaltreider PROJECT: Grand Marina Start Date: 10/28/94
(Gley 3)					0	Dark grey gravelly sand with (5-7% gravel) with trace clay, med. dense, very moist (interperated at Fill).
	4	0	MW6a-3	▼	2	
	2	0	MW6a-5	▼	4	
	2	0			6	Black clay (CH) with mottling of dark grey material, slightly stiff to soft, very plastic, very moist with alternating horizons of peat and sand lenses, few shell fragments.
	2	0	MW6a-12	▼	10	Bay and marsh deposits encountered, interperated as Bay Mud Formation Material.
	2	0			12	BOTTOM OF BORING @ 12 FEET Completed as monitoring well MW-6a
					14	
					16	
					18	
					20	
					22	
					24	
					26	
					28	

ACC ENVIRONMENTAL CONSULTANTS 1000 ATLANTIC AVEUNUE, SUITE 110 ALAMEDA, CA 94501	JOB NO: 94-6176-1	Boring MW-6a Grand Marina 2009 Grand Street Alameda, California
	DATE: 10/28/94	



Not to Scale

ACC Environmental Consultants 1000 Atlantic Avenue, Suite 110 Alameda, CA 94501	Job No.: 6176-1	Schematic of Monitoring Well No.: MW-5a
	Date: 11/16/94	Grand Marina Alameda, CA



Not to Scale

ACC Environmental Consultants
 1000 Atlantic Avenue, Suite 110
 Alameda, CA 94501

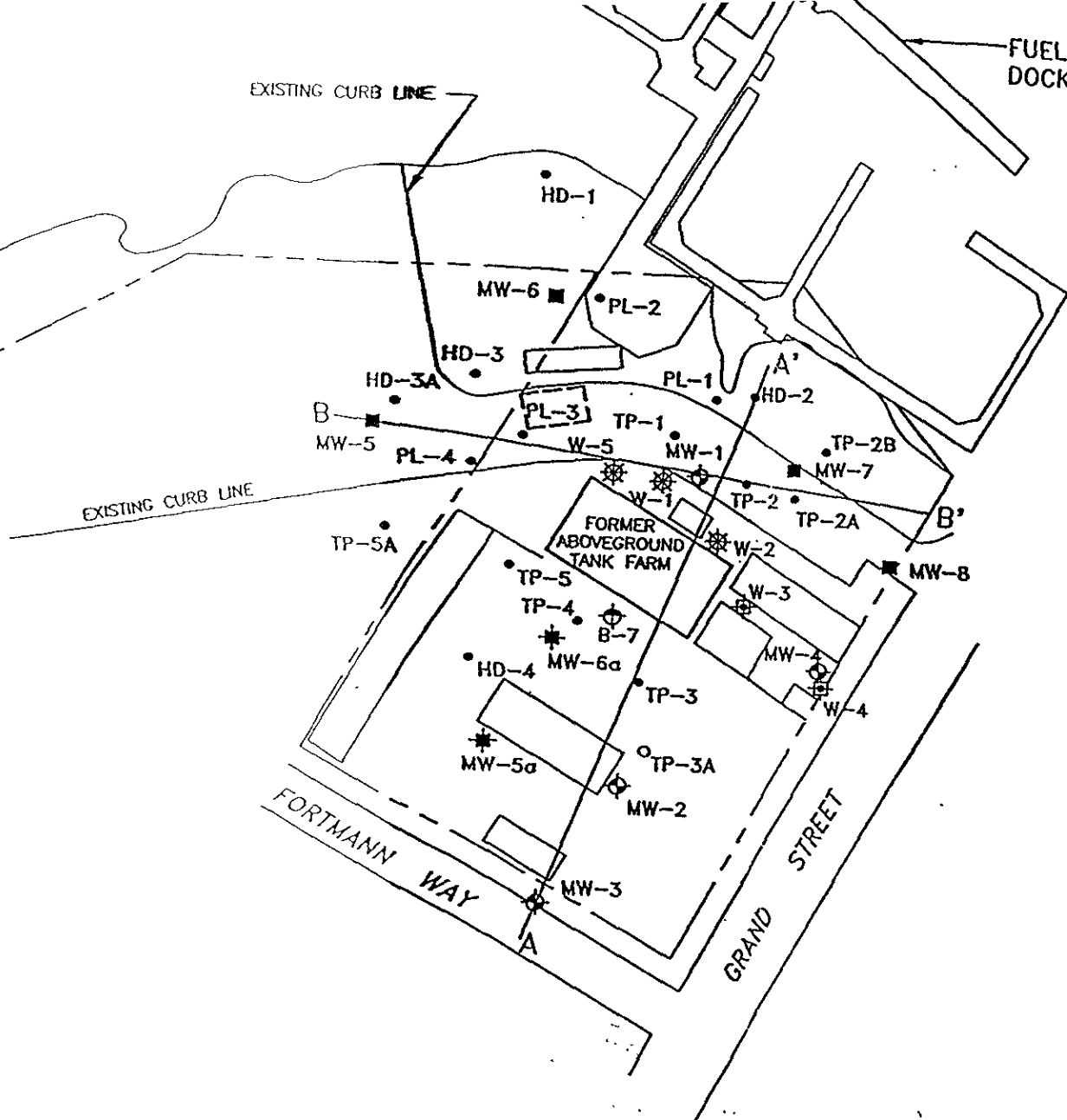
Job No.: 6176-1

Date: 11/16/94

Schematic of Monitoring
 Well No.: MW-6a

Grand Marina
 Alameda, CA

**ABOVE GROUND STORAGE TANK
RELATED INFORMATION**



- MW-5a * MONITORING WELL (ZAC)
- MW-8 ■ MONITORING WELL (ZAC)
- TP-3A ○ BORING (SECOR, 10/84)
- PL-2 ● BORING (SECOR, 10/83)
- MW-1 ⊕ MONITORING WELL (ZAC)
- B-7 ⊕ MONITORING WELL (ZAC)
- W-3 * ABANDONED MONITORING WELL (CROWLEY ENVIRONMENTAL)
- W-4 ⊕ MONITORING WELL (ZAC)
- PROPERTY LINE
- B ——— B' LINE OF CROSS SECTION

SECOR

Grand Street and Fortmann Way Property
Alameda, California

Sample Identification	Depth of Sample (feet)	Sample Date	Chemical																				
			TPH as Diesel			Total Oil and Grease			Benzene			Toluene			Ethylbenzene			Total Xylenes			Benzo(a)pyrene		
			Detection Limit (mg/kg) ¹	Reported Value (mg/kg)	Statistical Value (mg/kg)	Detection Limit (mg/kg)	Reported Value (mg/kg)	Statistical Value (mg/kg)	Detection Limit (mg/kg)	Reported Value (mg/kg)	Statistical Value (mg/kg)	Detection Limit (mg/kg)	Reported Value (mg/kg)	Statistical Value (mg/kg)	Detection Limit (mg/kg)	Reported Value (mg/kg)	Statistical Value (mg/kg)	Detection Limit (mg/kg)	Reported Value (mg/kg)	Statistical Value (mg/kg)	Detection Limit (mg/kg)	Reported Value (mg/kg)	Statistical Value (mg/kg)
TP-1	4.0-4.5	5/1/92	50	660	660	30	2000	2000	0.005	ND	0.0025	0.005	0.87	0.87	0.005	1.0	1	0.005	2.1	2.1	--	4.62E-05	4.62E-05
TP-2	4.0-4.5	5/1/92	NA	NA	NA	30	350	350	0.005	ND	0.0025	0.005	0.54	0.54	0.005	0.34	0.34	0.005	0.59	0.59	NA	NA	NA
TP-3	4.0-4.5	5/1/92	NA	NA	NA	30	4400	4400	0.005	0.15	0.15	0.005	0.18	0.18	0.005	0.131	0.131	0.005	0.40	0.4	NA	NA	NA
TP-5	4.0-4.5	5/1/92	NA	NA	NA	30	12000	12000	0.005	ND	0.0025	0.005	ND	0.0025	0.005	ND	0.0025	0.005	ND	0.0025	NA	NA	NA
TP-6	4.0-4.5	5/1/92	NA	NA	NA	30	7500	7500	0.005	ND	0.0025	0.005	0.088	0.088	0.005	0.20	0.2	0.005	0.64	0.64	NA	NA	NA
TP-7	4.0-4.5	5/1/92	NA	NA	NA	30	480	480	0.005	ND	0.0025	0.005	0.013	0.013	0.005	0.059	0.059	0.005	0.15	0.15	NA	NA	NA
TP-8	4.0-4.5	5/1/92	10	82	82	30	410	410	0.005	ND	0.0025	0.005	ND	0.0025	0.005	ND	0.0025	0.005	ND	0.0025	--	5.74E-06	5.74E-06
TP-9	4.0-4.5	5/1/92	100	4700	4700	30	3100	3100	0.005	ND	0.0025	0.005	ND	0.0025	0.005	ND	0.0025	0.005	5.8	5.8	--	3.29E-04	3.29E-04
PL-12	4.0-4.5	5/1/92	10	21	21	30	37	37	0.005	ND	0.0025	0.005	ND	0.0025	0.005	ND	0.0025	0.005	ND	0.0025	--	1.47E-06	1.47E-06
25-28	4.0-4.5	5/1/92	10	ND	5	30	310	310	0.005	ND	0.0025	0.005	ND	0.0025	0.005	ND	0.0025	0.005	ND	0.0025	7.00E-07	ND	3.50E-07
29, 30, 32B	4.0-4.5	5/1/92	10	13	13	30	43	43	0.005	ND	0.0025	0.005	ND	0.0025	0.005	ND	0.0025	0.005	ND	0.0025	--	9.10E-07	9.10E-07
3B-1	4.0-4.5	5/2/92	10	ND	5	30	180	180	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.00E-07	ND	3.50E-07
MW-1	4.0-4.5	5/4/92	200	970	970	30	2400	2400	0.005	ND	0.0025	0.005	ND	0.0025	0.005	ND	0.0025	0.005	ND	0.0025	--	6.79E-05	6.79E-05
MW-2	4.0-4.5	5/4/92	20	150	150	30	57	57	0.005	0.24	0.24	0.005	0.62	0.62	0.005	0.050	0.050	0.005	0.26	0.26	--	1.05E-05	1.05E-05
MW-3	6.0-6.5	5/4/92	10	ND	5	30	170	170	0.005	ND	0.0025	0.005	ND	0.0025	0.005	ND	0.0025	0.005	ND	0.0025	7.00E-07	ND	3.50E-07
TP3A-2		Oct-94	--	1,400	1,400	--	--	--	0.0025	ND	0.00125	0.0025	ND	0.00125	0.0025	ND	0.00125	0.0025	ND	0.00125	--	9.80E-05	9.80E-05
MW-5-2 S		Oct-94	--	23	23	--	--	--	0.0025	ND	0.00125	0.0025	ND	0.00125	0.0025	ND	0.00125	0.0025	ND	0.00125	--	1.61E-06	1.61E-06
MW-5 S		Oct-94	--	27	27	--	--	--	0.0025	ND	0.00125	0.0025	ND	0.00125	0.0025	ND	0.00125	0.0025	ND	0.00125	--	1.89E-06	1.89E-06
MW-5A-6		Oct-94	1,000	ND	0.5	--	--	--	0.0025	ND	0.00125	0.0025	ND	0.00125	0.0025	ND	0.00125	0.0025	ND	0.00125	7.00E-08	ND	3.50E-08
MS-6-2 S		Oct-94	--	28	--	--	--	--	0.0025	ND	0.00125	0.0025	ND	0.00125	0.0025	ND	0.00125	0.0025	ND	0.00125	--	1.96E-06	1.96E-06
MW-7 2		Oct-94	--	240	240	--	--	--	0.0025	ND	0.00125	0.0025	ND	0.00125	0.0025	ND	0.00125	--	15	15	--	1.68E-05	1.68E-05
MW-8-3 S		Oct-94	--	97	97	--	--	--	0.005	ND	0.0025	--	0.0057	0.0057	0.005	0.01	0.01	--	0.084	0.084	--	6.79E-06	6.79E-06

Footnotes
¹ mg/kg = milligrams per kilogram
² ND = not detected above the method detection limit. Consistent with USEPA (1989) guidelines, half of the method detection limit was used to represent a non-detect value, if the chemical was detected at least once.
³ -- = not available
⁴ NA = not analyzed

References
 USEPA. 1989. Risk Assessment Guidance for Superfund. Human Health Evaluation Manual Part A, Interim Final. July.

Table A-2
Results of Groundwater Sampling and Analyses
Grand Street and Fortmann Way Property
Alameda, California

Sample Identification	Sample Date	Chemicals																				
		TPH as Gasoline			TPH as Diesel			Total Oil and Grease			Benzene			Toluene			Ethylbenzene			Total Xylenes		
		Detection Limit (mg/L)	Reported Value (mg/L)	Statistical Value (mg/L)	Detection Limit (mg/L)	Reported Value (mg/L)	Statistical Value (mg/L)	Detection Limit (mg/L)	Reported Value (mg/L)	Statistical Value (mg/L)	Detection Limit (ug/L)	Reported Value (ug/L)	Statistical Value (ug/L)	Detection Limit (ug/L)	Reported Value (ug/L)	Statistical Value (ug/L)	Detection Limit (ug/L)	Reported Value (ug/L)	Statistical Value (ug/L)	Detection Limit (ug/L)	Reported Value (ug/L)	Statistical Value (ug/L)
MW-1	05/12/92	0.05	ND	0.025	0.05	ND	0.025	5.0	ND	2.5	0.5	ND	0.25	0.5	0.8	0.8	0.5	ND	0.25	0.5	1.3	1.3
MW-1	11/01/94	0.05	0.08	0.08	--	0.4	0.4	5.0	ND	2.5	--	0.5	0.5	--	1.1	1.1	0.05	ND	0.025	--	1.4	1.4
MW-1	02/06/95	0.05	ND	0.025	--	1.3	1.3	5.0	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-1	05/09/95	NS	NS		NS	NS		NS	NS		NS	NS		NS	NS		NS	NS		NS	NS	
MW-1	08/22/95	0.05	ND	0.025	..*	1.1	1.1	5.0	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-1	11/08/95	0.05	ND	0.025	..*	0.33	0.33	NA	NA		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-1	02/28/96	NS	NS		NS	NS		NS	NS		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-1	06/24/96	50	ND	25	NS	NS		NS	NS		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-2	05/12/92	0.05	29	29	0.25	1.2	1.2	5.0	ND	2.5	0.5	4000	4000	0.5	11000	11000	0.5	500	500	0.5	2900	2900
MW-2	11/01/94	NS	NS		NS	NS		NS	NS		--	510	510	--	670	670	--	65	65	--	320	320
MW-2	02/01/95	NS	NS		NS	NS		NS	NS		--	360	360	--	230	230	--	20	20	--	100	100
MW-2	05/01/95	NS	NS		NS	NS		NS	NS		--	550	550	--	350	350	--	28	28	--	120	120
MW-2	08/01/95	NS	NS		NS	NS		NS	NS		--	290	290	--	120	120	--	11	11	--	37	37
MW-2	12/01/95	NS	NS		NS	NS		NS	NS		--	190	190	--	35	35	--	6.4	6.4	--	16	16
MW-2	02/28/96	NS	NS		NS	NS		NS	NS		NS	NS		NS	NS		NS	NS		NS	NS	
MW-3	05/12/92	0.05	ND	0.025	0.05	0.12	0.12	5.0	ND	2.5	0.5	ND	0.25	0.5	1	1	0.5	ND	0.25	0.5	ND	0.25
MW-4	05/12/92	0.05	ND	0.025	0.05	0.15	0.15	5.0	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-4	11/01/94	0.05	ND	0.025	--	0.24	0.24	5.0	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-4	02/01/95	NS	NS		NS	NS		NS	NS		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-4	05/09/95	0.05	ND	0.025	0.05	ND	0.025	5	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-4	08/22/95	0.05	ND	0.025	--	0.41	0.41	5	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-4	11/08/95	0.05	ND	0.025	..*	0.46	0.46	NA	NA		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-4	02/28/96	NS	NS		NS	NS		NS	NS		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-4	06/24/96	50	ND	25	NS	NS		NS	NS		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-5	11/01/94	0.05	ND	0.025	--	0.560	0.560	5	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-5	02/06/95	--	1.0	1.0	--	0.460	0.460	5	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-5	05/09/95	0.05	ND	0.025	0.05	ND	0.025	5	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-5	08/22/95	0.05	ND	0.025	--	0.910	0.910	5	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-5	11/08/95	0.05	ND	0.025	--	0.260	0.260	NA	NA		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-5	02/28/96	NS	NS		NS	NS		NS	NS		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-5	06/24/96	50	ND	25	NS	NS		NS	NS		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-6	11/01/94	0.05	ND	0.025	--	0.5	0.5	5.0	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-6	02/06/95	0.05	ND	0.025	--	0.57	0.57	5.0	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-6	05/09/95	0.05	ND	0.025	0.05	ND	0.025	5.0	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-6	08/22/95	0.05	ND	0.025	--	0.79	0.79	5.0	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-6	11/08/95	0.05	ND	0.025	..*	0.33	0.33	NA	NA		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-6	02/28/96	NS	NS		NS	NS		NS	NS		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-6	06/24/96	50	ND	25	NS	NS		NS	NS		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-6a	11/01/94	NS	NS		NS	NS		NS	NS		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-6a	02/01/95	NS	NS		NS	NS		NS	NS		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-6a	05/01/95	NS	NS		NS	NS		NS	NS		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-6a	08/01/95	NS	NS		NS	NS		NS	NS		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-6a	12/01/95	NS	NS		NS	NS		NS	NS		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25

Table A-4
Results of Groundwater Sampling and Analyses
Grand Street and Fortmann Way Property
Alameda, California

Sample Identification	Sample Date	Chemicals																				
		TPH as Gasoline			TPH as Diesel			Total Oil and Grease			Benzene			Toluene			Ethylbenzene			Total Xylenes		
		Detection Limit (mg/L) ¹	Reported Value (mg/L)	Statistical Value (mg/L)	Detection Limit (mg/L)	Reported Value (mg/L)	Statistical Value (mg/L)	Detection Limit (mg/L)	Reported Value (mg/L)	Statistical Value (mg/L)	Detection Limit (ug/L) ²	Reported Value (ug/L)	Statistical Value (ug/L)	Detection Limit (ug/L)	Reported Value (ug/L)	Statistical Value (ug/L)	Detection Limit (ug/L)	Reported Value (ug/L)	Statistical Value (ug/L)	Detection Limit (ug/L)	Reported Value (ug/L)	Statistical Value (ug/L)
MW-7	11/01/94	0.05	ND	0.025	--	0.97	0.97	5.0	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-7	02/06/95	0.05	ND	0.025	--	1.3	1.3	5.0	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-7	05/09/95	0.05	ND	0.025	0.05	ND	0.025	5.0	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-7	08/22/95	0.05	ND	0.025	--	2.2	2.2	5.0	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-7	11/08/95	0.05	ND	0.025	--*	0.7	0.7	NA	NA		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-7	02/28/96	NS	NS		NS	NS		NS	NS		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-7	06/24/96	50	ND	25	NS	NS		NS	NS		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-8	11/01/94	0.05	ND	0.025	--	1.0	1.0	5.0	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-8	02/06/95	0.05	ND	0.025	--	0.93 (0.47) ³	0.7	5.0	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-8	05/09/95	0.05	ND	0.025	0.05	<0.05 (<0.05) ⁴	0.025	5.0	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-8	08/22/95	0.05	ND	0.025	--	1.5	1.5	5.0	ND	2.5	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-8	11/08/95	0.05	ND	0.025	--*	0.57	0.57	NA	NA		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-8	02/28/96	NS	NS		NS	NS		NS	NS		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25
MW-8	06/24/96	50	ND	25	NS	NS		NS	NS		0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25	0.5	ND	0.25

Footnotes
¹ mg/L = milligrams per liter
² ug/L = micrograms per liter
³ ND = not detected above the method detection limit. Consistent with USEPA (1989) guidelines, half of the method detection limit was used to represent a non-detect value, if the chemical was detected at least once.
⁴ -- = not available
⁵ NS = not sampled/well inaccessible
⁶ * Hydrocarbons found in the diesel range do not resemble the diesel fingerprint (0.47) Duplicate sample result

References
 USEPA. 1989. Risk Assessment Guidance for Superfund. Human Health Evaluation Manual Part A. Interim Final. July