ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

StID 4035

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

June 18, 1997

Ms. Eileen Duffy
City of Alameda Housing Authority
701 Atlantic Ave
Alameda, CA 94501

Re: Fuel Leak Site Case Closure for 1916 Webster Street, Alameda, CA 94501

Dear Ms. Duffy:

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 2,100ppm TPHg, and 12ppm, 54ppm, 33ppm, and 100ppm BTEX, respectively remain in soil in the vicinity of the former undergound storage tank,
- A site safety plan is required if trenching or excavation in the vicinity of the former tank is performed, and
- corrective action should be reviewed if land use changes.

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

eva chu
Hazardous Materials Specialist

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

c: Vivian Day, Central Permits, Historic Alameda High, 2250 Central Ave, Room 190, Alameda, CA 94501
files (housing.11)

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

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

REMEDIAL ACTION COMPLETION CERTIFICATION

StID 4035 - 1916 Webster St, Alameda, CA
(1-280 gallon gasoline tank removed in July 1986)

June 18, 1997

Ms. Eileen Duffy
City of Alameda Housing Authority
701 Atlantic Ave
Alameda, CA 94501

Dear Ms. Duffy:

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: Chief, Division of Environmental Protection
Kevin Graves, RWQCB
Lori Casias, SWRCB (with attachment-case closure summary)
Cheryl Gordon, UST Cleanup Fund
files-ec (housing.10)

01-0780

CALIFORNIA REGIONAL WATER

MAR 14 1997

QUALITY CONTROL BOARD

ENVIRONMENTAL PROTECTION

CASE CLOSURE SUMMARY
Leaking Underground Fuel Storage Tank Program

I. AGENCY INFORMATION **Date: March 5, 1997**

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

II. CASE INFORMATION

Site facility name: **City of Alameda Housing Authority**
Site facility address: **1916 Webster Street, Alameda, CA 94501**
RB LUSTIS Case No: **N/A** Local Case No./LOP Case No.: **4035**
URF filing date: **7/30/86** SWEEPS No: **N/A**

Responsible Parties:	Addresses:	Phone Numbers:
City of Alameda Housing Authority c/o Eileen Duffy	701 Atlantic Ave Alameda, CA 94501	510/522-8422

Tank No:	Size in gal.:	Contents:	Closed in-place or removed?:	Date:
1	280	Gasoline	Removed	7/16/86

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and type of release: **Unknown**
Site characterization complete? **YES**
Date approved by oversight agency: **2/20/96**
Monitoring Wells installed? **Yes** Number: **6**
Proper screened interval? **Yes**
Highest GW depth below ground surface: **3.31'** Lowest depth: **4.91' in MW-5**
Flow direction: **North**
Most sensitive current use: **Commercial**
Are drinking water wells affected? **No** Aquifer name: **Merritt Sand**
Is surface water affected? **No** Nearest affected SW name: **NA**
Off-site beneficial use impacts (addresses/locations): **None**

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:

Material	Amount (include units)	Action (Treatment or Disposal w/destination)	Date
Tank	1 UST	Disposal Unknown	7/16/86
Piping			
Soil	75 cy	Altamont L.F. in Livermore, CA	8/96
	330 cy	BATM Facility in San Francisco	7/16/94
Groundwater	~150 gal.	Discharged over parking lot	10/86
	~1,300 gal	Recycled at Gibson Env, Redwood City	

Maximum Documented Contaminant Concentrations - - Before and After Cleanup

Contaminant	Soil (ppm) Before[1]	Soil (ppm) After	Water (ppb) Before[3]	Water (ppb) After[4]
TPH (Gas)	5,000	2,100[2]	4,900	1,200
TPH (Diesel)				
Benzene	130	12[2]	1,600	620
Toluene	390	54[2]	61	0.7
Ethylbenzene	42	33[2]	23	<3.0
Xylenes	190	100[2]	110	<10.0
Heavy metals **Pb**			140	**ND**
Other				

NOTE: 1 soil samples collected from boring HA-3 and/or B-7
2 soil sample collected from pit bottom, 8/96
3 highest historic concentrations from groundwater well MW-4 or MW-5. Lead concentrations were identified from boring B-8
4 latest groundwater concentrations, 9/96

Comments (Depth of Remediation, etc.):

See Section VII, Additional Comments, etc...

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: **Yes, a site safety plan should be provided to alert construction workers that petroleum hydrocarbon impacted soil may be encountered at shallow depths.**
Should corrective action be reviewed if land use changes? **YES, and if groundwater will be used for industrial or other purposes.**
Monitoring wells Decommissioned: **No, pending site closure**
Number Decommissioned: **0** Number Retained: **6**
List enforcement actions taken: **None**
List enforcement actions rescinded: **NA**

V. LOCAL AGENCY REPRESENTATIVE DATA

Name: **Eva Chu** Title: **Haz Mat Specialist**

Signature: Eva Chu Date: 3/11/97

Reviewed by

Name: **Juliet Shin** Title: **Sr. Haz Mat Specialist**

Signature: Juliet Shin Date: 3/5/97

Name: **Thomas Peacock** Title: **Supervisor**

Signature: Thomas Peacock Date: 3-10-97

VI. RWQCB NOTIFICATION

Date Submitted to RB: 3/12/97 RB Response: Approved

RWQCB Staff Name: **Kevin Graves** Title: **AWRCE**

Signature: Kevin Graves Date: 3-27-97

VII. ADDITIONAL COMMENTS, DATA, ETC.

On July 16, 1986 a 280-gallon gasoline underground storage tank (UST) was removed. Two soil samples (HA-1 and HA-2) collected from the excavation contained elevated Total Petroleum Hydrocarbons as Gasoline (TPHg) and Benzene, Toluene, Ethyl-benzene, and Xylenes (BTEX) compounds. The pit was therefore overexcavated and four confirmatory soil samples (HA-3 through HA-6) were collected along the perimeter of the excavation. Sample HA-3 contained the highest concentration of hydrocarbons at 5,000 parts per million (ppm) TPHg, and 56ppm, 230ppm and 168 ppm BTX, respectively. This sample was collected from ~4' below ground surface (bgs), ~15' north of the former tank location. The other samples collected from the periphery, ~25' away and at a depth of ~6' bgs, contained much lower levels of hydrocarbons. (See Figs 1, 2 and Table 1)

In August 1986 four soil borings (B-1 through B-4) were drilled around the excavation to assess the extent of contamination. Based on the soil and groundwater analytical results of samples collected from the boreholes, four additional borings (B-5, B-6, W-1 and W-2) were drilled, two of which were converted into groundwater monitoring wells (MW-1 and MW-2). Soil samples were collected from 2' and 4' bgs and groundwater samples were collected from each borehole. A "grab" water sample was also collected from the pit. Low levels of hydrocarbons were identified in soil and groundwater samples from each boring, including the standing water from the pit. (See Fig 2, Tables 2 and 2.1)

In September 1986 additional soil was excavated in the vicinity of borehole B-1 where elevated hydrocarbons were identified in both soil and groundwater samples. Two confirmatory soil samples (HA-7 and HA-8) were collected from the periphery of the excavation. Standing water was resampled as well. Low hydrocarbon levels were identified in these samples. A total of ~130 cy of contaminated soil was excavated and aerated onsite. The excavation was dewatered (removing ~150 gallons of groundwater) and the treated soil was re-used as backfill material. The site was repaved in October 1986. (See Fig 2 and Table 2.2)

In July 1991 two soil borings (B-7 and MW-3) were drilled at the site. The location of boring BH-7 was selected to delineate the extent of soil contamination in the northerly direction. And well MW-3 was located to determine groundwater flow direction. Soil from boring B-7 contained elevated TPHg and BTEX (see Fig 3, Table 3).

In July 1992 six borings (B-8 through B-13) were advanced, using a direct drive sampling system, at the site to further delineate the extent of soil and groundwater contamination. Soil and groundwater samples were collected from each borehole. The samples were analyzed for TPHg and BTEX. The samples from boring B-8 were also analyzed for total lead. None of the samples contained significant contamination except B-9 which identified up to 2,000 parts per billion (ppb) TPHg and 620 ppb benzene in groundwater. Additionally, 140 ppb total lead was identified in groundwater from boring B-8. (See Fig 4, Tables 4, 5)

In February 1994 four soil additional borings (B-14 through B-17) were advanced along and within the office area, just south of the former excavation. Elevated TPHg (2,500 ppm) and benzene (27 ppm) levels were identified in soil collected from boring B-16 and B-17, advanced just outside the building. (See Fig 5)

In March 1994 ~220 cy of additional hydrocarbon-impacted soil were excavated. Confirmatory soil samples (SW-1 through SW-8) were collected from the perimeter of the excavation. Analytical results indicate that impacted soil still remained in soils south of the former UST, between the excavation and the building. Prior to backfilling the excavation, trenching was conducted for the placement of horizontal soil vapor extraction piping (slotted PVC casing). Approximately, 1,300 gallons of groundwater in the pit was removed. The pit was filled with pea gravel to ~5'bgs, then the slotted PVC casing was laid within the trench, and backfilling completed to a depth of 10" bgs. (See Fig 6)

In September 1994 a groundwater extraction well (MW-4) was installed through the backfilled material and within 10' of the former UST. Another well, MW-5, was installed ~27' northeast of well MW-4, and well MW-6 was installed upgradient of the site (see Fig 7). An aquifer pump test was conducted to determine if groundwater extraction and/or soil vapor extraction (SVE) was a feasible remedial technology for the site. In August 1996 a final decision was made that excavation of the contaminated soil along the edge of the building with the preparation of a risk analysis of residual contamination at the site would be most economical. This

decision was supported by additional subsurface investigations conducted in May 1996 when 13 soil borings (FB-1 through FB-13) were advanced to ~8' bgs at various locations to collect more soil and groundwater data (see Fig 8 and Table 6). Analytical results indicate there was limited migration of hydrocarbons under the building and its removal was not warranted. However, approximately 75 cy of impacted soil just outside the building was removed. Confirmatory soil samples were collected from the excavation sidewalls at 2' and 4.5' bgs. (See Fig 9, Talbe 7)

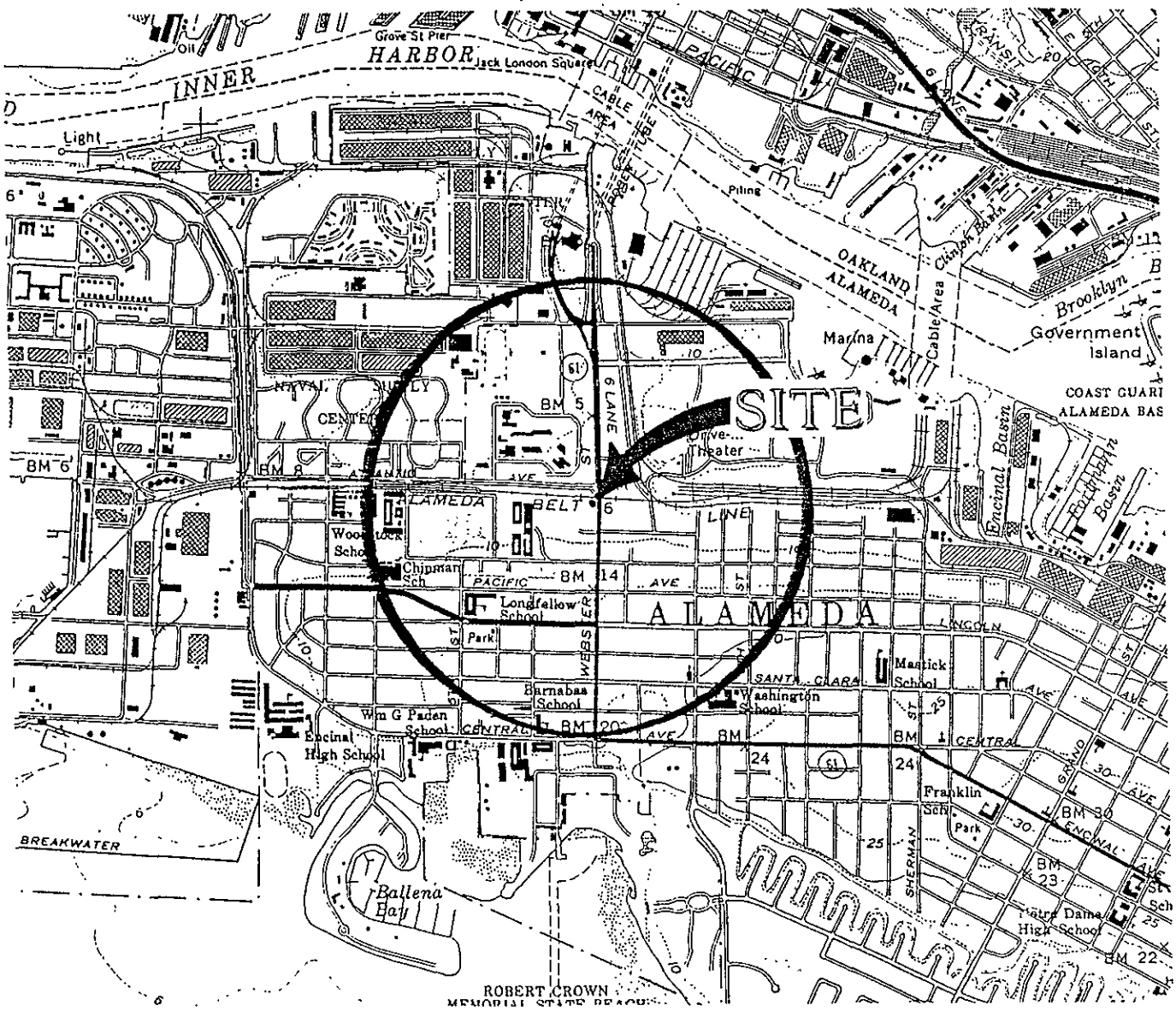
The latest soil excavation efforts in 1996, in conjunction with previous excavation activities, removed the majority of the hydrocarbon-impacted soil. Residual TPHg and BTEX in soil is limited in extent and is currently covered by the concrete slab and the existing building.

A risk based corrective action evaluation was prepared to determine the Site Specific Target Cleanup Levels (SSTL) for a 10^{-5} excess cancer risk to human health and the environment. Representative concentrations in soil and groundwater did not exceed the SSTL values which were calculated for the various potential exposure pathways. Therefore, residual contamination at the site should not pose a risk to current and future commercial facilities/development. (See Tables 8, 9)

Groundwater sampling of the two nearest downgradient wells (MW-4 and MW-5) has continued since October 1994 to September 1996. Hydrocarbon concentrations have stabilized in well MW-5 and appears to be decreasing in well MW-4. The other wells (further downgradient) have only detected trace or non-detectable levels of TPHg and BTEX (see Table 10). It appears the groundwater plume is not migrating offsite. Continued groundwater monitoring is not warranted.

In summary, case closure is recommended because:

- the leak and ongoing sources have been removed;
- the site has been adequately characterized;
- the dissolved plume is not migrating;
- no water wells, surface water, or other sensitive receptors are likely to be impacted (nearest irrigation wells are ~2,000' away and nearest surface water is three-quarters of a mile away); and,
- the site presents no significant risk to human health or the environment.



GENERAL NOTES:

BASE MAP FROM USGS
7.5 MINUTE TOPOGRAPHIC
OAKLAND WEST, CA

0 2000 4000
Approximate Scale in Feet

FUGRO	DRAWN BY: O. Hada	SITE LOCATION MAP	FIGURE 1
	DATE: September 19, 1994	Alameda Housing 1916 Webster Street Alameda, CA	PROJECT NUMBER: 94-37-7623
	REVISED BY:		
	DATE:		

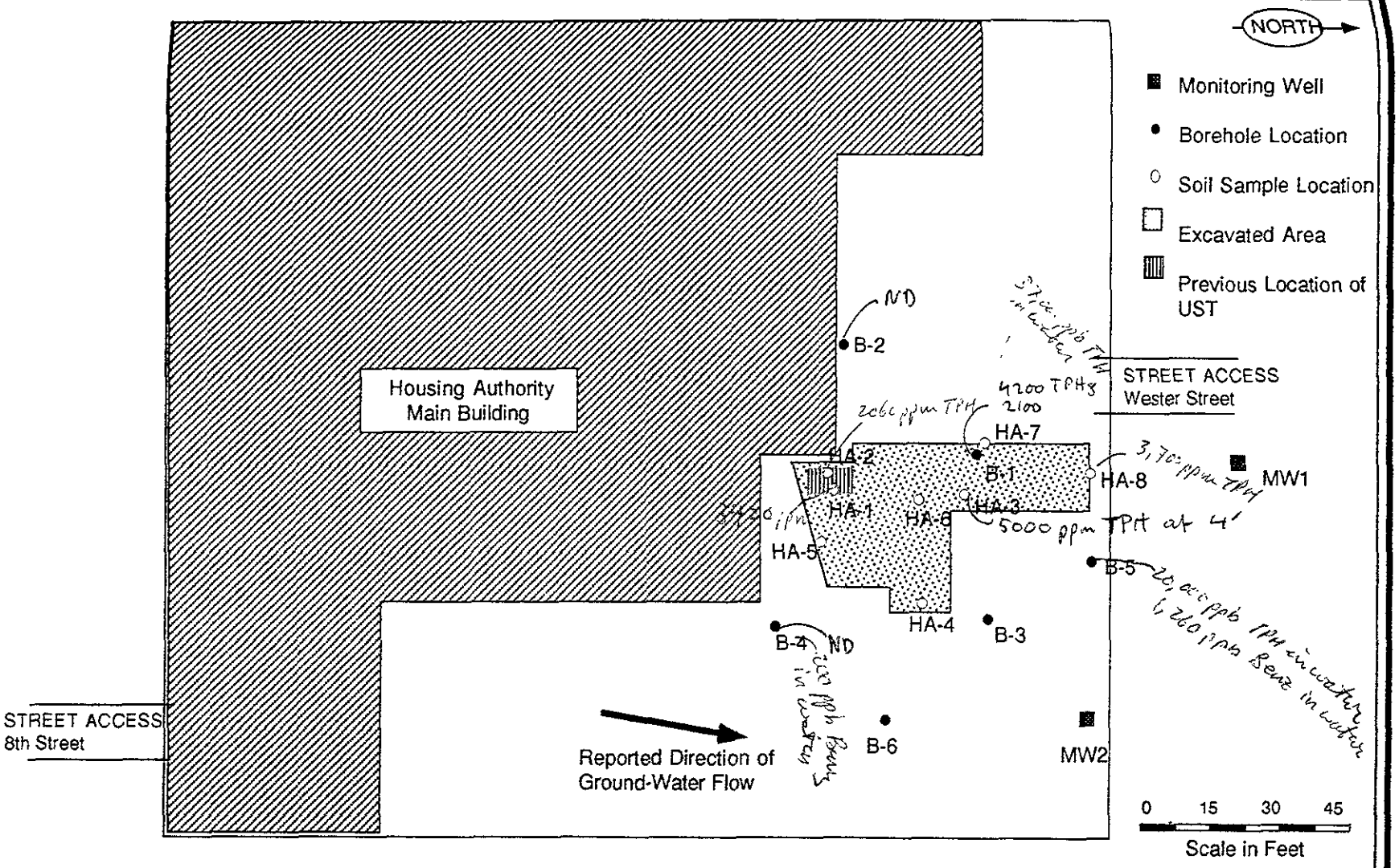
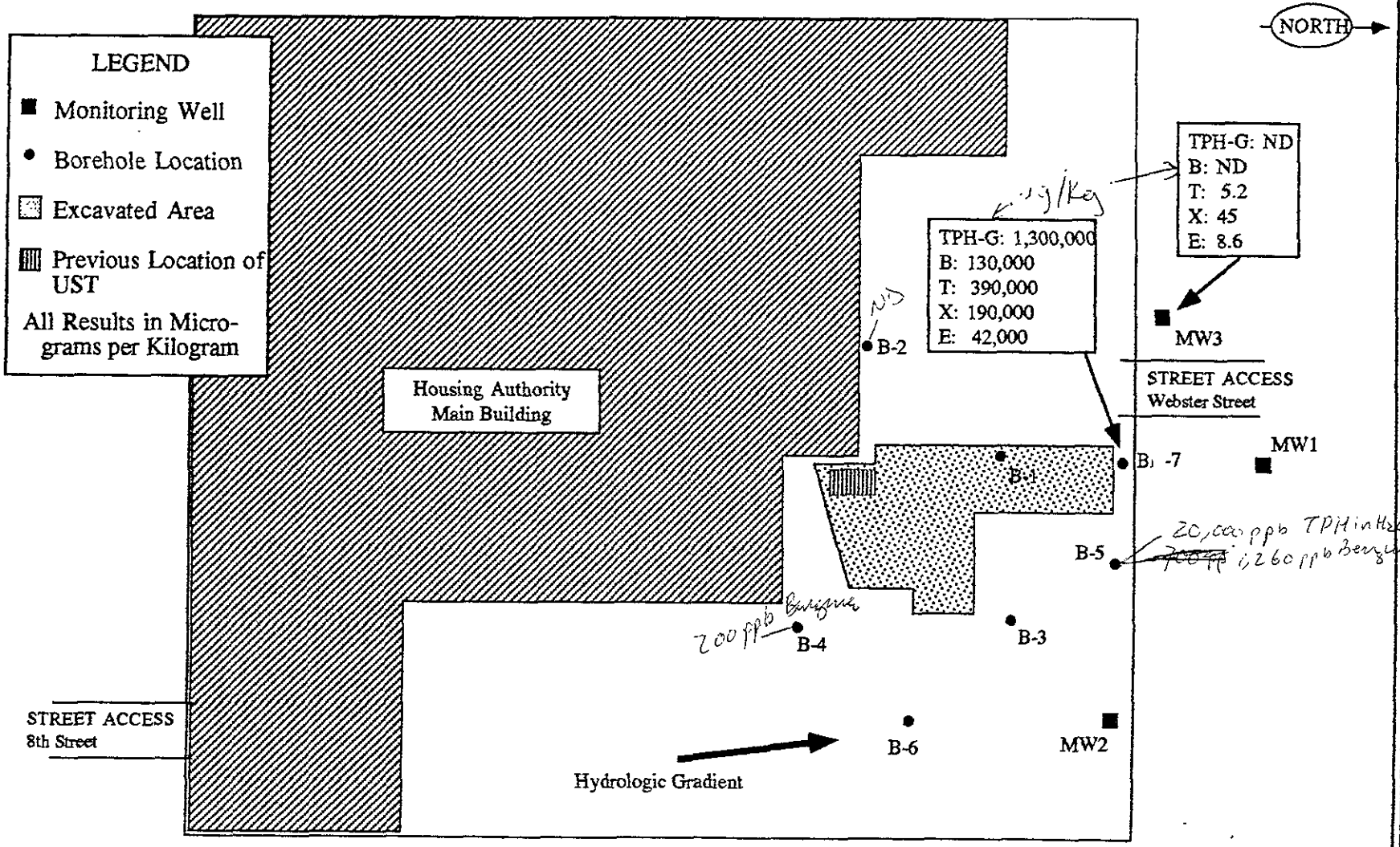
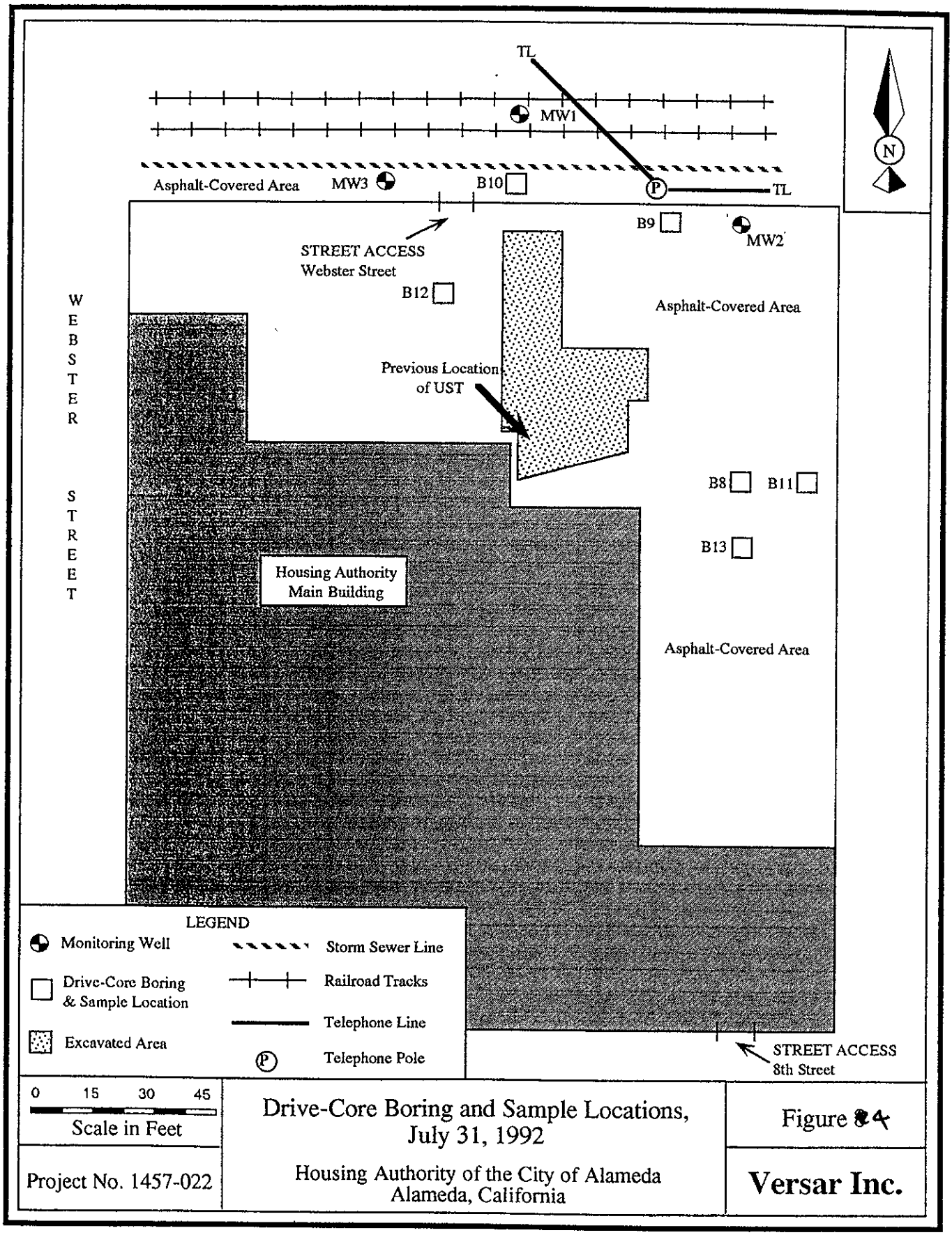


Figure 2. Monitoring Well, Borehole, and Soil Sample Locations from Previous Investigations


LEGEND
Monitoring Well
Borehole Location
Excavated Area
Previous Location of UST
All Results in Micro-grams per Kilogram
NORTH
TPH-G: ND
B: ND
T: 5.2
X: 45
E: 8.6
TPH-G: 1,300,000
B: 130,000
T: 390,000
X: 190,000
E: 42,000
ND
B-2
MW3
Housing Authority Main Building
STREET ACCESS
Webster Street
MW1
B-1
B-7
B-5
20,000 ppb TPH in H2O
1,260 ppb Benzene in H2O
700 ppb Benzene
B-4
B-3
STREET ACCESS
8th Street
B-6
MW2
Hydrologic Gradient
0 15 30 45
Scale in Feet
PROJECT NO.
7703.022
LABORATORY ANALYTICAL RESULTS
FROM SOIL SAMPLES
Housing Authority of the City of Alameda
Alameda, California
Figure 3
Versar Inc.



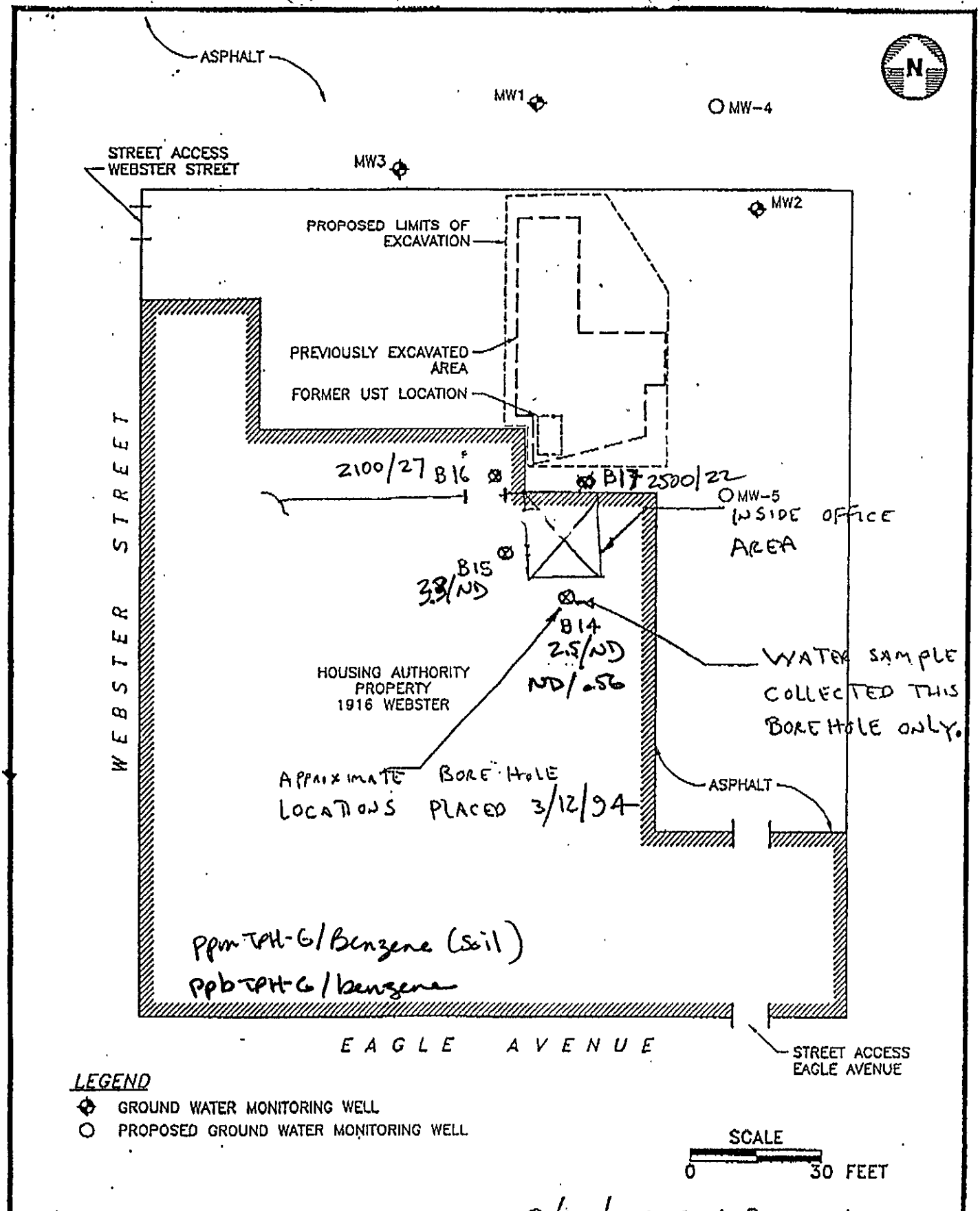
Drive-Core Boring and Sample Locations,
July 31, 1992

Housing Authority of the City of Alameda
Alameda, California

Figure 2-4

Project No. 1457-022

Versar Inc.



3/12/94 Soil Boring Locations

Environmental Science & Engineering, Inc.
A CILCORP Company

4080 NELSON AVENUE, SUITE J

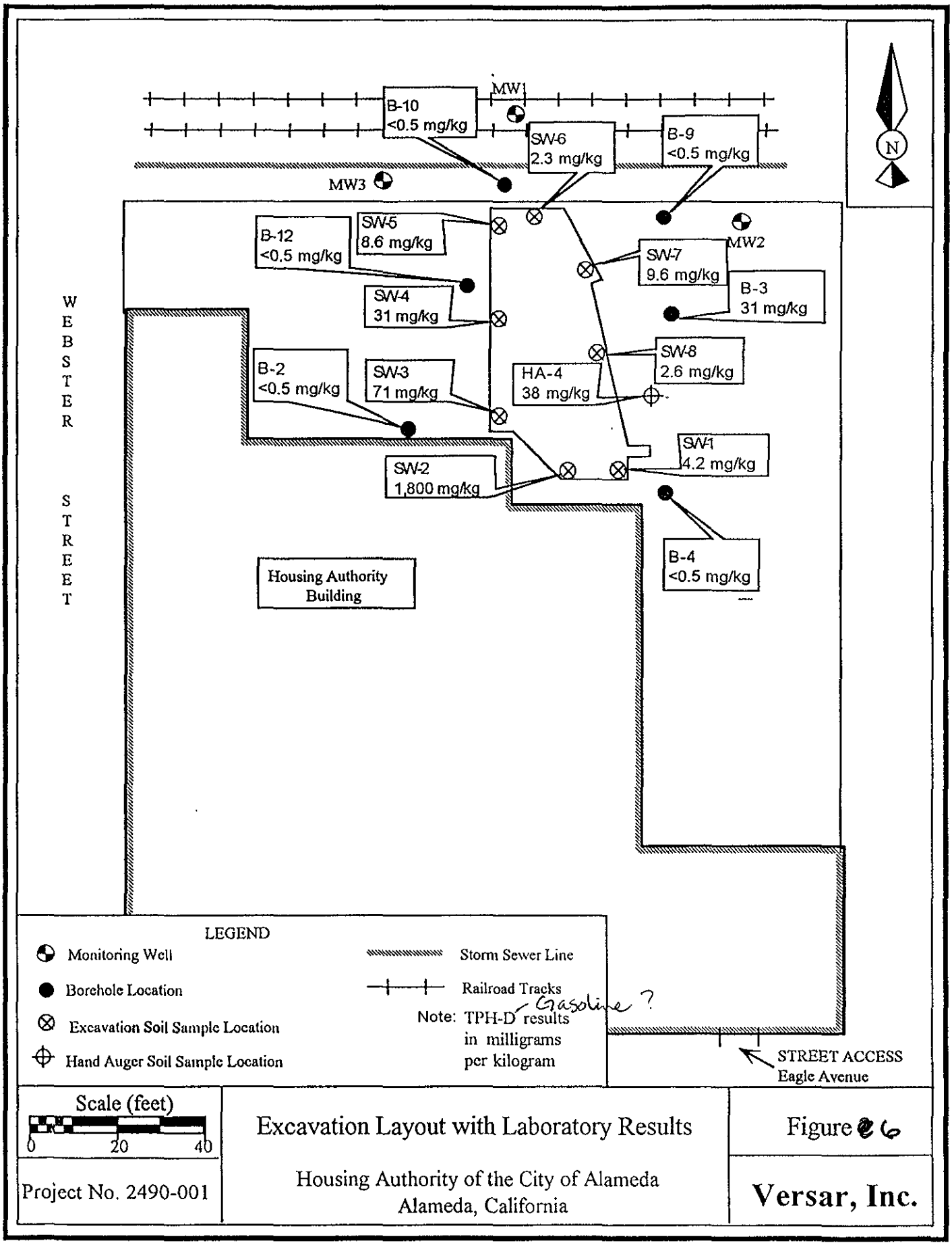
DATE 2/94

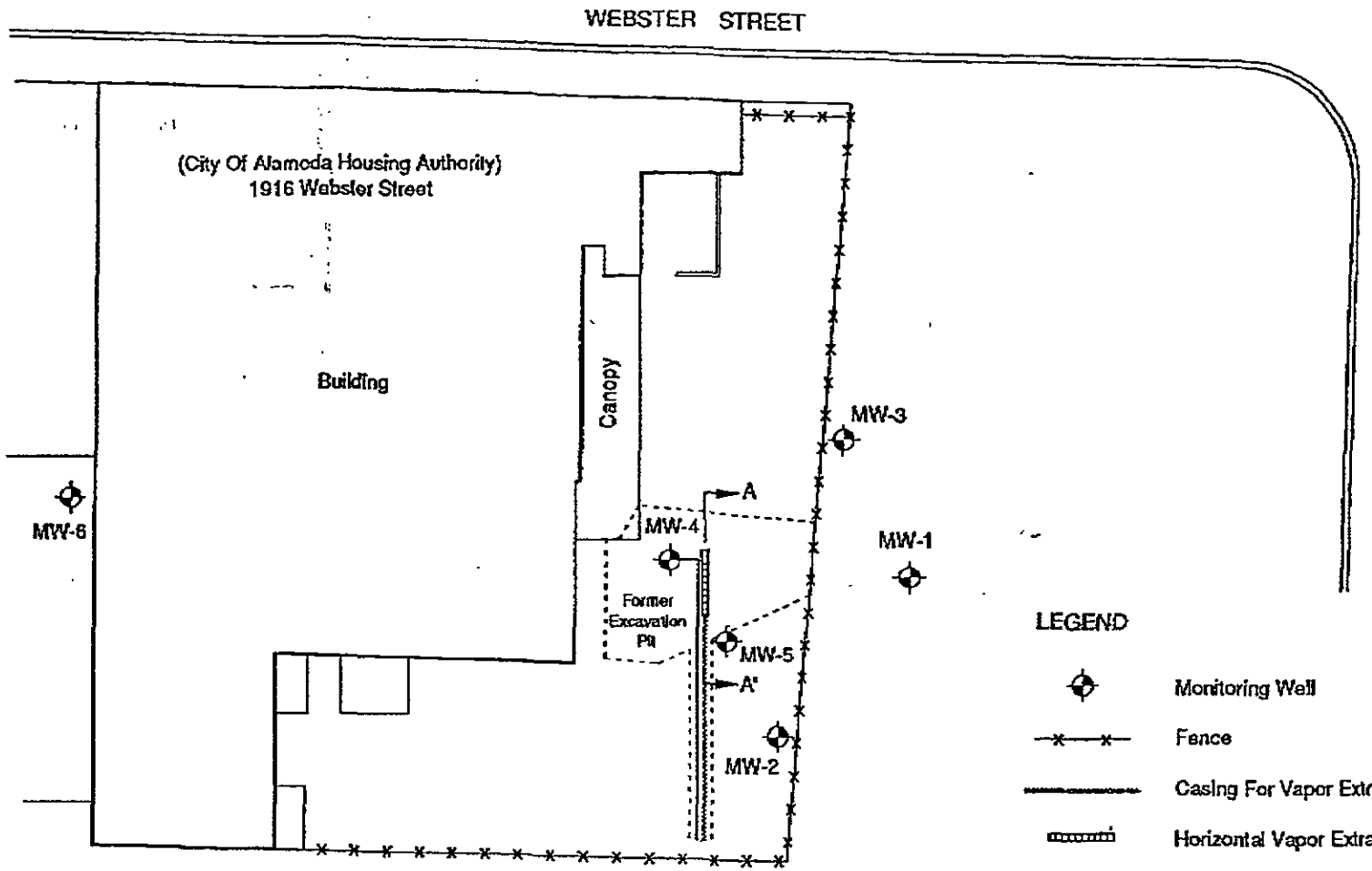
REVISED

PROPOSED MONITORING WELL LOCATIONS AND LIMITS OF EXCAVATION

ALAMEDA HOUSING AUTHORITY

FIGURE NO. 5


MW1
B-10
<0.5 mg/kg
SW-6
2.3 mg/kg
B-9
<0.5 mg/kg
MW3
N
B-12
<0.5 mg/kg
SW-5
8.6 mg/kg
MW2
SW-7
9.6 mg/kg
B-3
31 mg/kg
SW-4
31 mg/kg
WEBSTER STREET
B-2
<0.5 mg/kg
SW-3
71 mg/kg
HA-4
38 mg/kg
SW-8
2.6 mg/kg
SW-1
4.2 mg/kg
SW-2
1,800 mg/kg
B-4
<0.5 mg/kg
Housing Authority Building
LEGEND
Monitoring Well
Borehole Location
Excavation Soil Sample Location
Hand Auger Soil Sample Location
Storm Sewer Line
Railroad Tracks
Note: TPH-D (Gasoline ?) results in milligrams per kilogram
STREET ACCESS
Eagle Avenue
Scale (feet)
0
20
40
Excavation Layout with Laboratory Results
Figure 6
Project No. 2490-001
Housing Authority of the City of Alameda
Alameda, California
Versar, Inc.



LEGEND

- Monitoring Well
- Fence
- Casing For Vapor Extraction System
- Horizontal Vapor Extraction Well
- Casing For Groundwater Extraction System
- A — A' Cross Section Line For Horizontal Vapor Extraction Well, Figure 4

NOTES

Site Sketch After Map
By Ron Archer, Civil Engineer, Inc.

All Locations Are Approximate

0 50 100
Approximate Scale in Feet

FUGRO

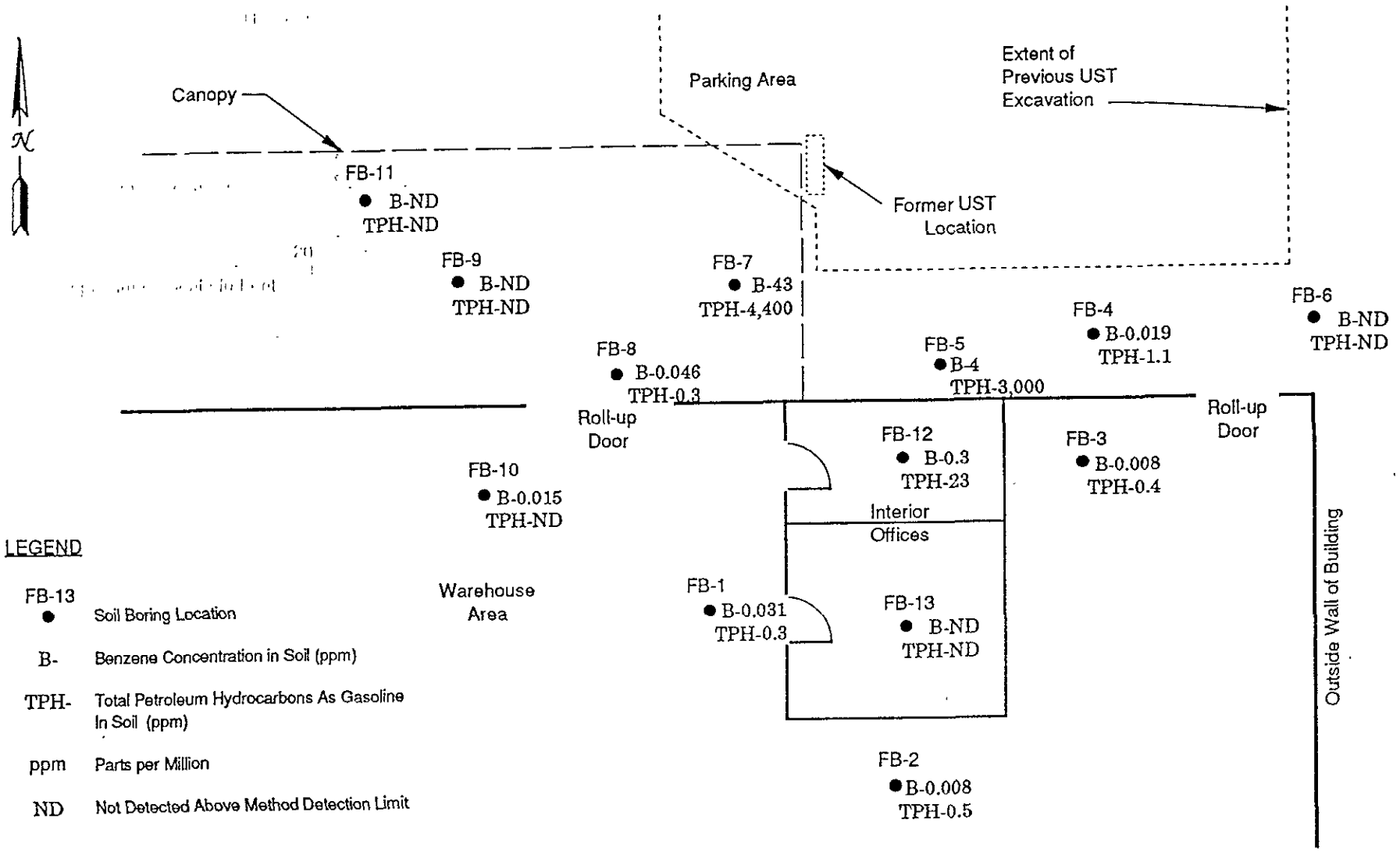
DRAWN BY: D. Hada
DATE: November 2, 1994
REVISED BY:
DATE:

GROUNDWATER AND VAPOR EXTRACTION SYSTEM CASINGS INSTALLED

Alameda Housing
1916 Webster Street
Alameda, CA

FIGURE 7

PROJECT NUMBER: 94-37-7623



LEGEND

FB-13 ●	Soil Boring Location
B-	Benzene Concentration in Soil (ppm)
TPH-	Total Petroleum Hydrocarbons As Gasoline In Soil (ppm)
ppm	Parts per Million
ND	Not Detected Above Method Detection Limit

NOTES:

ppm = milligrams per kilogram (mg/kg)

Soil Sample Interval:
1.5-2.5 Foot Depth (typical)

All Locations Are Approximate

0 10 20
Approximate Scale In Feet

FUGRO

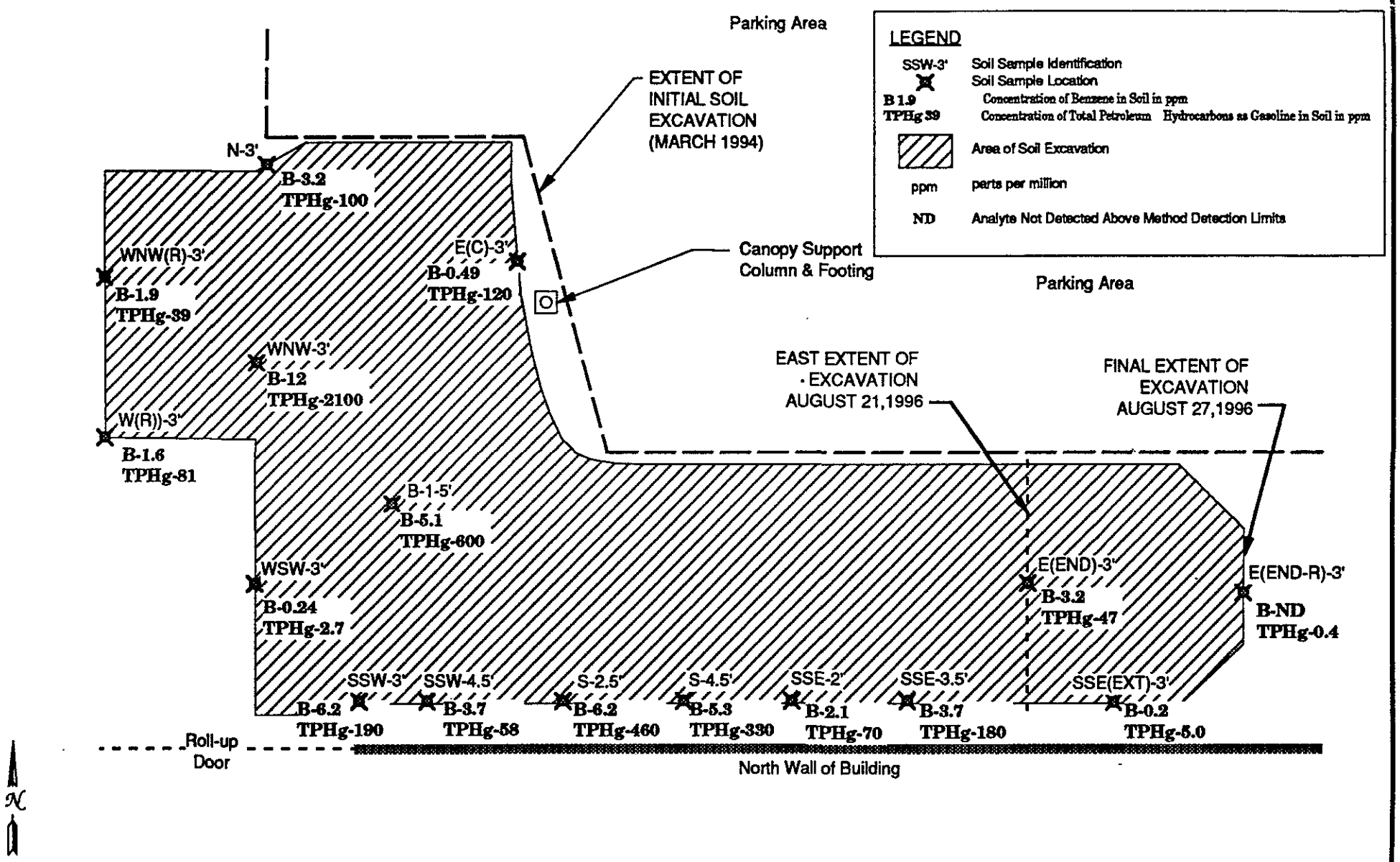
DRAWN BY: J. Paradis
DATE: May 31, 1996
REVISED BY:
DATE:

LOCATION OF SOIL BORINGS, DISTRIBUTION OF BENZENE AND GASOLINE CONTAMINATION IN SOIL

Alameda Housing
1916 Webster Street
Alameda, CA

FIGURE
8

PROJECT NUMBER:
94-37-7623



NOTES:

All Locations Are Approximate

0 4 8

Approximate Scale In Feet

FUGRO

DRAWN BY:	J. Paradis
DATE:	May 31, 1996
REVISED BY:	J. Paradis
DATE:	September 20, 1996

EXCAVATION SOIL SAMPLE LOCATIONS

City of Alameda Housing Authority Property
1916 Webster Street
Alameda, CA

FIGURE 59

PROJECT NUMBER: 95-37-1311

Versar INC. SACRAMENTO

Table 1

Summary of Excavation and Borehole
Soil Sampling Analytical Results
at HACA Site (July - August, 1986)

Alameda, California

		EPA Method 5020\8015	EPA Method 5020/8020		
Sample ID	Location	TPH-G[1]	Benzene[1]	Toluene[1]	Xylene[1]
HA #1	excavation	3420	38.5	159	649
HA #2	excavation	2060	18.8	94.2	379
HA #3	excavation	5000	56	230	168
HA #4	excavation	38	0.268	0.122	0.315
HA #5	excavation	3.4	0.224	0.113	0.160
HA #6	excavation	2.1	0.341	0.016	0.010
B1A	borehole	4200	0.022	0.222	0.453
B2A	borehole	<0.10	0.003	0.003	0.003
B3A	borehole	28	0.355	0.177	0.322
B4A	borehole	<0.1	<0.005	<0.005	0.005
B5A	borehole	0.70	0.024	0.061	0.058
B6A	borehole	0.70	0.014	0.022	0.020
W1A	borehole	0.060	0.014	0.022	0.057
W2A	borehole	<0.050	0.003	0.008	0.003
HA7	excavation	38	0.12	0.97	1.8
HA8	excavation	3700	28	260	360

[1]Results reported in milligrams per kilogram (mg/kg)
Reporting limits: TPH - unknown?; benzene - 0.2 ug/L; toluene - 0.2 ug/L; xylene - unknown? (micrograms per liter (ug/L)

Versar INC. SACRAMENTO

Table 2

Summary of Borehole and Monitoring Well
Ground-Water Sampling Analytical Results
at HACA Site (July - August, 1986)

Alameda, California

		EPA Method 5020/8015	EPA Method 5020/8020		
Sample ID	Location	TPH-G[1]	Benzene[1]	Toluene[1]	Xylene[1]
B-1	borehole	37	5.1	5.2	1.3
B-2	borehole	<0.050	<0.001	<0.001	<0.001
B-3	borehole	<0.050	<0.001	0.003	0.004
B-4	borehole	<0.050	0.20	0.003	0.005
B5	borehole	20	1.26	0.033	0.32
B6	borehole	0.050	0.005	0.003	0.024
W1	monitoring well (MW1)	<0.050	0.003	0.003	0.006
W2	monitoring well (MW2)	0.29	<0.010	0.006	0.009

[1]Results reported in milligrams per liter (mg/L)
Reporting limits: TPH - unknown?; benzene - 0.2 ug/L;
(micrograms per liter (ug/L)

WESCO Laboratories

Table 2.1

Date: September 2, 1986

Client: AquaScience Engineers

Submitted by: David Prull

Report to: AquaScience Engineers

WESCO Job #: AQS 8684

Client Job/P.O. #: Alameda Housing Authority/6465

Date collected: 8-15-86

Date submitted: 8-20-86

& type of sample(s): 2 Water

Lab No.	Client ID	Motor Fuel (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Xylene (mg/l)	Fuel Type
5141	Water W2	0.29	< 0.010*	0.006	0.009	Aged Gas
5142	Water TP1	3.3	0.32	0.38	0.06	Gasoline

grab water from tank pit

METHOD(S): Note 1

NOTES:

Note 1 - EPA Methods 5020/8015/8020.
*High detection limit due to interferences in sample.

RECEIVED
SEP 8 1986
AQUA SCIENCE EN

Analytical Supervisor

1a Gali Drive, Suite A
Novato, California 94947 (415) 883-8425

Table 2.2

WESCO Laboratories

Date: October 8, 1986

Client: AquaScience Engineers

Submitted by: Dave Prull

Report to: Terry Carter

WESCO Job #: AQS 86107

Client Job/P.O. #: Alameda Housing Authority/

Date collected: 9-29-86

Date submitted: 9-29-86

& type of sample(s): 2 Soil / WATER

Lab No.	Client ID	Motor Fuel (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Xylene (mg/kg)	Fuel Type	
5596-97	Soil N (collate)	15	0.02	0.095	0.060	Gasoline	
5598	~~Soil~~ WATER Pit standing water in pit	1.4	0.030	0.041	0.008	Gasoline	?
	METHOD(S): Note 1						

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

Analytical Supervisor

FIGURE 3

RECEIVED
OCT 10 1986
AQUA SCIENCE ENG.

14 Galli Drive Suite A
Novato, California 94947 415 883-6425

Versar INC. SACRAMENTO

Table 3

Summary of Borehole Soil Sampling
Analytical Results
at HACA Site (July, 1991)

Alameda, California

	EPA Method 5030/ DHS Method	EPA Method 5030/Modified 8020			
Sample ID	TPH-G[1]	Benzene[1]	Toluene[1]	Xylenes[1]	Ethylbenzene[1]
MW3-2[2]	ND[3]	ND	ND	ND	ND
MW3-4[2]	ND	ND	5.2	45	8.6
B7-2[4]	1,300,000	130,000	390,000	190,000	42,000
B7-4[5]	59,000	2,200	6,400	7,300	2,100

[1]Results reported in micrograms per kilogram (ug/kg)

[2]Reporting limits: TPH-G - 500 ug/kg; benzene - 5.0 ug/kg; toluene - 5.0 ug/kg; xylenes - 15 ug/kg; ethylbenzene - 5.0 ug/kg

[3]ND - not detected at or above the reporting limit

[4]Reporting limits: TPH-G - 48,000 ug/kg; benzene - 2,300 ug/kg; toluene - 4,200 ug/kg; xylenes - 16,000 ug/kg; ethylbenzene - 3,500 ug/kg

[5]Reporting limits: TPH-G - 9,700 ug/kg; benzene - 460 ug/kg; toluene - 840 ug/kg; xylenes - 3,200 ug/kg; ethylbenzene - 690 ug/kg

TABLE 4

LABORATORY ANALYTICAL RESULTS FOR SOIL[1]
DRIVE-CORE BORING SAMPLES, JULY 31, 1992

Housing Authority of the City of Alameda
Alameda, California

Sample ID	TPH as Gasoline[2] (μg/kg)	Benzene[3] (μg/kg)	Toluene[3] (μg/kg)	Ethylbenzene[3] (μg/kg)	Xylenes[3] (μg/kg)	Total Lead[4] (μg/kg)
B8-5	<500	<5	<5	<5	<15	18,000
B9-5	<500	<5	<5	<5	63	NA[5]
B10-6	<500	<5	<5	<5	<15	NA
B11-5	<500	<5	<5	<5	<15	NA
B12-6	<500	<5	<5	<5	<15	NA
B13-6	<500	<5	<5	<5	<15	NA

[1]Results are expressed in micrograms per kilogram (μg/kg), approximately equal to parts per billion.

[2]DHS Method, LUFT Field Manual, Purge and Trap.

[3]Modified EPA Method 8020, Purge and Trap.

[4]EPA Method 7420.

[5]Not analyzed for this constituent.

TABLE 5

LABORATORY ANALYTICAL RESULTS FOR GROUND WATER[1] -
DRIVE-CORE BORING SAMPLES, JULY 31, 1992

Housing Authority of the City of Alameda
Alameda, California

Sample ID	TPH as Gasoline[2] (μg/L)	Benzene[3] (μg/L)	Toluene[3] (μg/L)	Ethylbenzene[3] (μg/L)	Xylenes[3] (μg/L)	Total Lead[4] (μg/L)
B8	<50	<0.50	<0.50	<0.50	<1.5	140
B9	2,000	620	<25	<31	180	NA[5]
B10	<50	<0.50	<0.50	<0.50	<1.5	NA
B11	<50	<0.50	<0.50	<0.50	<1.5	NA
B12	<50	1.5	<0.50	<0.50	<1.5	NA
B13	<50	<0.50	<0.50	<0.50	<1.5	NA

[1]Results are expressed in micrograms per kilogram (μg/L), approximately equal to parts pe billion.

[2]DHS Method, LUFT Field Manual, Purge and Trap.

[3]Modified EPA Method 8020, Purge and Trap.

[4]EPA Method 7420.

[5]Not analyzed for this constituent.

Table 6

Analytical Results of Soil and Groundwater Samples

Housing Authority of The City of Alameda
1916 Webster Street
Alameda, California

All Concentrations in Parts Per Million (PPM)

Sample I.D.	Sample Interval (Feet)	TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes (Total)
Soil						
FB-1	2-2.5	0.3	0.031	ND	ND	ND
FB-2	2.3-2.6	0.5	0.008	ND	ND	ND
FB-3	2.0-2.6	0.4	0.008	ND	ND	ND
FB-4	1.5-2.0	1.1	0.019	ND	0.007	0.028
FB-5	1.5-2.5	3.000	4	63	33	130
FB-6	1.0-1.5	ND	ND	0.008	ND	0.008
FB-7	1.6-2.2	4.400	43	210	52	200
FB-8	0.7-1.2	0.3	0.046	ND	ND	ND
FB-9	1.1-2.0	ND	ND	ND	ND	ND
FB-10	1.1-1.7	ND	ND	ND	ND	ND
FB-11	0.9-1.9	ND	ND	ND	ND	ND
FB-12	1.3-2.1	23	0.3	0.180	0.060	0.210
FB-13	2-2.8	ND	ND	ND	ND	ND
MRL *1		0.2	0.005	0.005	0.005	0.005
Water						
FB-11	2.3	ND	ND	ND	ND	ND
MRL		0.05	0.0005	0.0005	0.0005	0.0005

Physical Parameters:
Soil Sample obtained from FB-11 at 2 Foot Depth
Organic Carbon content 1000*2
Bulk Density : Wet unit weight: 125.6 PCF
Dry unit weight: 104.0 PCF
Water content : 20.77%
Total Porosity (average): 38.26

Notes:
PPM = Milligrams Per Kilogram (mg/kg)
TPH = Total Petroleum Hydrocarbons
ND = Not detected above method reporting limit
TDS = *Total dissolved solids. Not performed on water sample* due to acidified sample
—— = No sample analyzed
MRL = Method Reporting Unit
*1 = MRL may be increased in some samples due to elevated concentrations
*2 = Recovery limits were exceeded for the matrix spike duplicate and relative percent acceptability limits were exceeded due to sample heterogenrity
PCF = Pounds per Cubic Foot

Sample intervals determined by headspace analysis performed in the field with a photoionization detector (PID). Interval with highest headspace concentration submitted for laboratory analysis

TABLE 7
ANALYTICAL RESULTS OF VERIFICATION SOIL SAMPLING
Soil Excavation - August 1996

Housing Authority of the City of Alameda
1916 Webster Street
Alameda, California

All Concentrations in Parts per Million (ppm)

Soil Sample Location and Depth	Sampling Date	TPH - Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes (Total)	Total Lead
SP-A,B COMP[1]	8/21/96	16	0.13	0.76	0.27	1.1	40
N-3'	8/21/96	100	3.2	0.49	1.5	3.7	NA
S-2.5'	8/21/96	460	6.2	16	5.9	22	NA
SSW-3'	8/21/96	190	6 2	1.7	3.9	13	NA
SSW-4.5'	8/21/96	58	3.7	0.28	0.68	2.1	NA
SSE-2'	8/21/96	70	2.1	5.0	1.1	4.6	NA
SSE-3.5'	8/21/96	180	3.7	6.9	3.9	15	NA
SSE(EXT)-3'	8/27/96	5 (0.2)	0.2	0.006	0.025	0.068	NA
W(R)-3'	8/27/96	81 (0.2)	1.6	ND	0.8	1.9	NA
WSW-3'	8/21/96	2.7	0.24	ND	0.044	0.11	NA
WNW-3'	8/21/96	2,100	12	54	33	100	NA
WNW(R)-3'	8/21/96	39 (4)	1.9 (0.1)	ND (0.1)	0.27 (0.10)	0.68 (0.1)	NA
S-4.5'	8/21/96	330	5.3	13	5.0	14	NA
E(C)-3'	8/21/96	120	0.49	3.5	1.9	6 6	NA
E(END)-3'	8/21/96	47	3.2	0.33	0.97	3.1	NA
E(END-R)-3'	8/27/96	0.4 (0.2)	ND	ND	ND	ND	NA
B1-5'	8/21/96	600	5.1	15	5.5	18	NA
Method Reporting Limit *		0.5	0 005	0.005	0.005	0.005	1

NOTES:

TPHg Total Petroleum Hydrocarbons as gasoline analysis performed using EPA Method 8015 modified and California LUFT.
Benzene, Toluene, Ethylbenzene and Xylenes analysis performed using EPA Method 8020 and EPA Method 5030.
Parts per Million (ppm) = milligrams per Liter (mg/L)=1,000 x.ug/kg or parts per billion (ppb)
1 - Soil Sample SP-A,B COMP was collected for stockpile profiling purposes.
ND - Not Detected above indicated method reporting limit.
NA - Not Analyzed
* - Method Reporting Limits unless otherwise noted by value in parentheses

subsurface soil sampling conducted in 1994 which indicates non-detected concentrations of benzene 10 feet east of the excavation.

Conclusions of SSTL Re-calculation

The representative BTEX concentrations decreased as a result of applying the parameters requested by the ACDEH following their review of the initial RBCA analysis. Fugro determined that the representative concentrations for the source area (Table 1) do not exceed the calculated SSTLs (Table 2) for the critical pathway (subsurface soils to enclosed space). Tier 2 Worksheet 9.1 through 9.3 summarize the subsurface, surface and groundwater SSTL values established as a result of the re-calculation.

These SSTLs were based on a target risk of 10E-5 for commercial property, as specified by the ACHED. Based on the re-calculated values of the SSTLs, it is Fugro's opinion that the future risks associated with the hydrocarbon impacted soil remaining beneath the existing warehouse building is low.

Table 8
Table 2. Applicable SSTL Values for Complete Exposure Pathways

Exposure Pathways	Applicable SSTL			
	Benzene	**Toluene**	**Ethyl Benzene**	**Xylenes**
Volatilization to ambient (outdoor) air from subsurface soils.	>Res	>Res	>Res	>Res
Volatilization to enclosed space from subsurface soils	1.5 mg/kg	>Res	>Res	>Res
Volatilization to ambient (outdoor) air from impacted groundwater	>Sol	>Sol	>Sol	>Sol
Volatilization to enclosed space from groundwater.	2.5 mg/l	300 mg/l	>Sol	>Sol
Direct ingestion or dermal contact of soil for construction workers.	32 mg/l	>Res	>Res	>Res

>Res = (Residual) Selected risk level is not exceeded for pure compound present at any concentration.
>Sol = (Solubility) Selected risk level is not exceeded for all possible dissolved levels

Table 9

RBCA SITE ASSESSMENT — Tier 2 Worksheet 9.1

Site Name: Alameda Housing Authority
Site Location: 1916 Webster St. Alameda

Completed By. Fugro West Inc.
Date Completed. 1/14/1997

SURFACE SOIL SSTL VALUES (< 3 FT BGS)

Target Risk (Class A & B) 1 0E-5
Target Risk (Class C) 1 0E-5
Target Hazard Quotient 1 0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

SSTL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	Soil Leaching to Groundwater			X Ingestion, Inhalation and Dermal Contact		X Construction Worker	Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential (on-site)	Commercial (on-site)	Regulatory(MCL) (on-site)	Residential (on-site)	Commercial (on-site)	Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
71-43-2	Benzene	9.3E-1	NA	NA	NA	NA	3.2E+1	>Res	3 2E+1	☐	<1
100-41-4	Ethylbenzene	2.9E-1	NA	NA	NA	NA	>Res	>Res	>Res	☐	<1
108-88-3	Toluene	2.2E-1	NA	NA	NA	NA	>Res	>Res	>Res	☐	<1
1330-20-7	Xylene (mixed isomers)	8.1E-1	NA	NA	NA	NA	>Res	>Res	>Res	☐	<1

Software: GSI RBCA Spreadsheet
Version: v 1.0

Serial: g-343-ofx-980

cont. Table 9

RBCA SITE ASSESSMENT — Tier 2 Worksheet 9.2

Site Name: Alameda Housing Authority
Site Location: 1916 Webster St. Alameda

Completed By: Fugro West Inc.
Date Completed: 1/14/1997

SUBSURFACE SOIL SSTL VALUES (> 3 FT BGS)

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

SSTL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration		Soil Leaching to Groundwater			X	Soil Volatilization to Indoor Air		X	Soil Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential (on-site)	Commercial (on-site)	Regulatory(MCL) (on-site)		Residential (on-site)	Commercial (on-site)		Residential (on-site)	Commercial (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
71-43-2	Benzene	9.3E-1	NA	NA	NA		NA	1.5E+0		NA	>Res	1.5E+0	☐	<1
100-41-4	Ethylbenzene	2.9E-1	NA	NA	NA		NA	>Res		NA	>Res	>Res	☐	<1
108-88-3	Toluene	2.2E-1	NA	NA	NA		NA	>Res		NA	>Res	>Res	☐	<1
1330-20-7	Xylene (mixed isomers)	8.1E-1	NA	NA	NA		NA	>Res		NA	>Res	>Res	☐	<1

Software: GSI RBCA Spreadsheet
Version: v 1.0

Serial: g-343-ofx-980

cont. Table 9

RBCA SITE ASSESSMENT — Tier 2 Worksheet 9.3

Site Name: Alameda Housing Authority
Site Location: 1916 Webster St. Alameda

Completed By: Fugro West Inc.
Date Completed: 1/14/1997

GROUNDWATER SSTL VALUES

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 2

SSTL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	Groundwater Ingestion			X Groundwater Volatilization to Indoor Air		X Groundwater Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)	Residential (on-site)	Commercial (on-site)	Regulatory(MCL). (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential (on-site)	Commercial (on-site)	(mg/L	"■" If yes	Only if "yes" left
71-43-2	Benzene	6.2E-1	NA	NA	NA	NA	2.5E+0	NA	9.4E+2	2.5E+0	☐	<1
100-41-4	Ethylbenzene	5.0E-1	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1
108-88-3	Toluene	5.0E-1	NA	NA	NA	NA	3.0E+2	NA	>Sol	3.0E+2	☐	<1
1330-20-7	Xylene (mixed isomers)	5.0E-1	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1

Software: GSI RBCA Spreadsheet
Version: v 1.0

Serial: g-343-ofx-980

TABLE 10

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Housing Authority of the City of Alameda Facility
1916 Webster Street
Alameda, California

Sample I.D.	Date	TPHg (µ/L)	Benzene (µ/L)	Toluene (µ/L)	Ethylbenzene (µ/L)	Xylenes (µ/L)	Organic Lead (mg/L)
MW-1	07/91	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	11/91	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	02/92	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	07/92	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	03/93	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	04/93	NS	NS	NS	NS	NS	NA
	06/93	ND (50)	ND (0.30)	ND (0.30)	ND (0.30)	ND (0.50)	NA
	01/94	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (50)
	07/16/94	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (20)
	10/10/94	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	NA
	3/29/95	ND (50)	0.9	1.3	ND (0.5)	ND (0.5)	NA
	05/25/95	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (25)*
	08/16/95	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.01)
	11/30/95	NS	NS	NS	NS	NS	NS
	03/07/96	NS	NS	NS	NS	NS	NS
	06/12/96	NS	NS	NS	NS	NS	NS
	09/10/96	**ND (50)**	**ND (0.5)**	**ND (0.5)**	**ND (0.5)**	**ND (2)**	**NA**
MW-2	07/91	ND (50)	3.7	ND (0.50)	0.50	5.1	NA
	11/91	ND (50)	1.1	ND (0.50)	ND (0.50)	4.5	NA
	02/92	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	1.6	NA
	07/92	ND (50)	ND (0.50)	0.59	ND (0.50)	ND (1.5)	NA
	03/93	ND(250)	ND (52)	ND (50)	ND (59)	ND (150)	NA
	04/93	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	06/93	ND (50)	ND (0.30)	ND (0.30)	ND (0.30)	0.95	NA
	01/94	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (50)
	07/16/94	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.50)	ND (20)
	10/10/94	NS	0.5	ND (0.5)	ND (0.5)	1.2	NA
	3/29/95	NS	NS	NS	NS	NS	NS
	05/25/95	NS	NS	NS	NS	NS	NS
	08/16/95	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.01)
	11/30/95	NS	NS	NS	NS	NS	NS
	03/07/96	NS	NS	NS	NS	NS	NS
	06/12/96	NS	NS	NS	NS	NS	NS
	09/10/96	**60**	**0.9**	**ND (0.5)**	**ND (0.5)**	**ND (2)**	**NA**

Table 3 notes on Page T3-3

cont. TABLE # 10

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
(continued)

Housing Authority of the City of Alameda Facility
1916 Webster Street
Alameda, California

Sample I.D.	Date (µ/L)	TPHg (µ/L)	Benzene (µ/L)	Toluene (µ/L)	Ethylbenzene (µ/L)	Xylenes (µ/L)	Organic Lead (µ/L)
MW-3	07/91	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	11/91	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	02/92	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	07/92	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	03/93	ND	ND (52)	ND (50)	ND (59)	ND (152)	NA
	04/93	(250)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.5)	NA
	06/93	ND (50)	ND (0.30)	ND (0.30)	ND (0.30)	ND	NA
	01/94	ND (50)	ND (0.50)	ND (0.50)	ND (0.50)	(0.50)	ND (50)
	07/16/94	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND	ND (20)
	10/10/94	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	(0.50)	NA
	3/29/95	ND (50)	ND (0.5)	0.9	ND (0.5)	ND (0.5)	NA
	05/25/95	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (25)*
	08/16/05	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.01)
	11/30/95	NS	NS	NS	NS	NS	NS
	03/07/96	NS	NS	NS	NS	NS	NS
	06/12/96	NS	NS	NS	NS	NS	NS
	09/10/96	**ND (50)**	**ND (0.5)**	**ND (0.5)**	**ND (0.5)**	**ND (2)**	**NA**
MW-4	10/10/94	2,400	900	44	12	80	NA
	3/29/95	1,500	580	4.9	4.3	7.0	NA
	05/25/95	1,100	260	6.0	5.5	3.3	ND (25)*
	08/16/95	650	230	2.6	23	1.9	ND (0.01)
	11/30/95	700	280	ND (3)	8	ND (10)	ND(0.04)
	03/07/96	1,800	600	4.3	15	ND (10)	NA
	06/12/96	300	37	ND (3)	ND (3)	ND (10)	NA
	09/10/96	**130**	**16**	**0.7**	**ND (0.5)**	**ND (2)**	**NA**
MW-5	10/10/94	2,000	840	4.8	0.6	110	NA
	3/29/95	4,900	1,600	61	20	76	NA
	05/25/95	2,500	680	6.5	3.5	110	ND (25)*
	08/16/95	2,200	930	6	6.5	100	ND (0.01)
	11/30/95	3,400	1,400	4	5	21	ND(0.04)
	03/07/96	2,200	920	3	ND (3)	25	NA
	06/12/96	2,100	800	ND (3)	3 (3)	20	NA
	09/10/96	**1,200**	**620**	**ND (3)**	**ND (3)**	**ND (10)**	**NA**

Table 3 notes on Page T3-3

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
(continued)

Housing Authority of the City of Alameda Facility
1916 Webster Street
Alameda, California

Sample I.D.	Date (µ/L)	TPHg (µ/L)	Benzene (µ/L)	Toluene (µ/L)	Ethylbenzene (µ/L)	Xylenes (µ/L)	Organic Lead (µ/L)
MW-6	10/10/94	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	NA
	3/29/95	ND (50)	0.5	0.9	ND (0.5)	ND (0.5)	NA
	05/25/95	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (25)*
	08/16/95	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND(0.01)
	11/30/95	NS	NS	NS	NS	NS	NS
	03/07/96	NS	NS	NS	NS	NS	NS
	06/12/96	NS	NS	NS	NS	NS	NS
	09/10/96	**ND (50)**	**ND (0.5)**	**ND (0.5)**	**ND (0.5)**	**ND (2)**	**NA**

NOTES:

mg/L = Milligrams per Liter (ppm)
µg/L = Micrograms per Liter (ppb)
ND (0.5)= Not detected at or above the method reporting limit shown in parenthesis
NA = Not analyzed
NS = No sample collected
Data prior to 1/94 reported by Versar, Inc.
* = Total lead

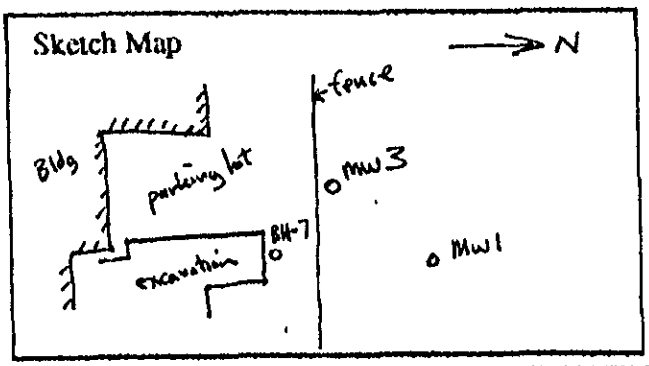
File: 0.0

DRILLING LOG

Job Number 7703.022

Project ALAMEDA HOUSING / HACA
Location WEBSTER & ATLANTIC, ALAMEDA, CA
Borehole Number MW3
Date Drilled 7-12-91
Contractor WOODWARD DRLG. CO.
Drilling Method HOLLOW STEM AUGER
Driller WAYNE WOODWARD
Hole Diameter 8"
Log By JAMES G. JENSEN
Total Depth 15½'

Sketch Map



Depth (ft)	Advanced/ Recovered	Blow Counts per Six Inches	Water Table	Well Construction	Sample Description (Soil or Rock Type, Color, Grain Size, Sorting, Roundness, Plasticity, Moisture Content, Trace Materials, Odor, Staining, Trace Gas Readings)	OVA Reading (headspace) ppm
					samples ↓ MW3-2 surface - asphalt; Gravel to 2 feet; clay - "bay mud"	5
5'		1-3-5	▼		water table by samples; MW3-4 clay - dark gray to black, moist, moderate odor; sand - gray, medium grained, clayey, wet, no odor	39
		4-4-3	5 samples		broke through something right @ 6 feet (by driller); MW3-6 sand - gray, med. grained, moderately sorted, clayey; moist - wet, no odor	1.6
		4-8-12			MW3-8 sand - orange-brown to gray, med. grained, mod. sorted, clayey, less wet, plant material (roots), no odor	0
10'		17-22-27			MW3-10 sand - orange-brown, med. grained, mod. sorted, moist, no odor	1.2
		12-24-33			MW3-12 sand - orange-brown, med. grained, mod. sorted, wet, no odor	1.0
15'		10-16-25			MW3-14 sand - orange-brown, med. grained, mod. sorted, wet, no odor	0.8
					Total Depth: 15½ feet, reached @ 945 AM, 7-12-91	
					Water Table: 4.47 feet, measured @ 1220 PM, 7-12-91	

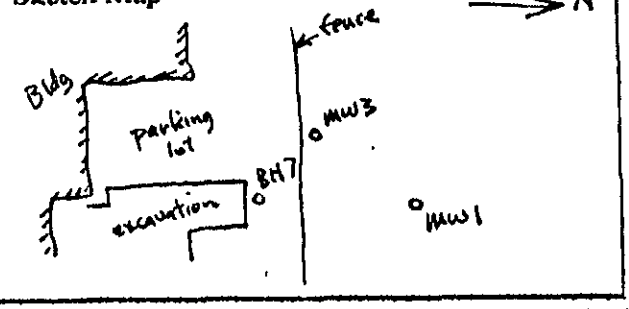
James G. Jensen

DRILLING LOG

Job Number 7703.022

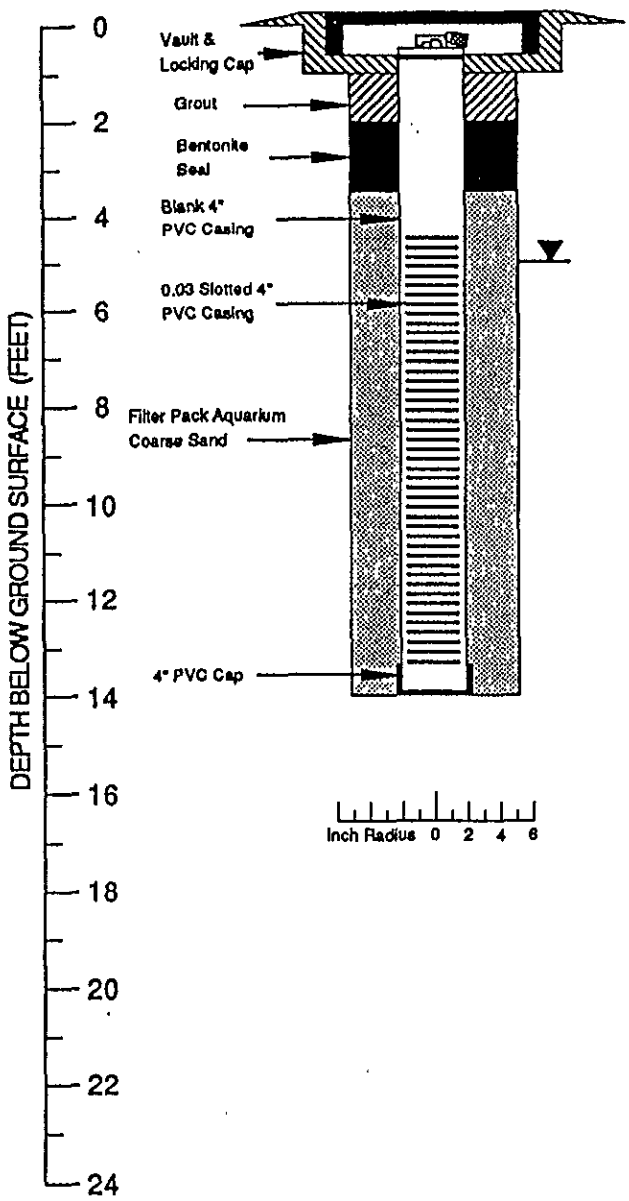
Project ALAMEDA HOUSING / HACA
Location WEBSTER & ATLANTIC, ALAMEDA, CA
Borehole Number BH-7
Date Drilled 7-12-91
Contractor WOODWARD DRLG. CO.
Drilling Method HOLLOW STEM AUGER
Driller WAYNE WOODWARD
Hole Diameter 8"
Log By JAMES CO. JENSEN
Total Depth 5½ ft.

Sketch Map

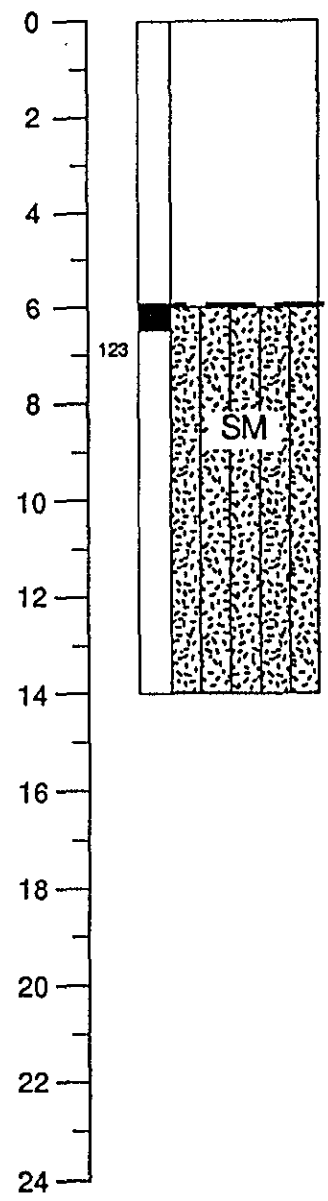


Depth (ft)	Advanced/ Recovered	Blow Counts per Six Inches	Water Table	Well Construction	Sample Description (Soil or Rock Type, Color, Grain Size, Sorting, Roundness, Plasticity, Moisture Content, Trace Materials, Odor, Staining, Trace Gas Readings)
					Surface - asphalt (parking lot); crushed gravel (¾) to 6" — OVA Readings: (headspace)
					Sand - dark gray
2		3-2-2			Sample: B7-2: sand - dark gray, medium grained, damp, 1000+ ppm @ 2'
					fairly strong hydrocarbon odor, slight sheen on water when washing sampling tools.
3.5					
4		1-1-2			sand - dark gray, med. grained, moderately sorted, damp, 320 ppm @ 4'
					fairly strong odor (as above)
5'					
5.5			by samples		Sample: B7-4 @ 5½ feet (bottom tube): sand - medium gray, medium grained, clayey, wet, no odor
					Total Depth: 5½ feet, reached @ 11 AM 7-12-91
					Water Table: 5', estimated by samples
10'					
					NOTES: Borehole 7 was drilled about 3' north of the edge of the excavation.
					James M. Jensen

WELL CONSTRUCTION DETAIL



GRAPHIC LOG



DESCRIPTION

No drilling, sampled thru conductor pipe

Gray black silty SAND, fine, wet, odor (sample # S1)

Total depth = 14 feet

Logged by:	J. Ung	Drilling Company:	West Hazmat Drilling	Well Head Completion:	10:30 hrs
Project Mgr:	S. Boudreau	Drilling Method:	Hollow Stem Auger	Type of Sampler:	Split Spoon
Date Drilled:	September 12, 1994	Driller:	Scott & Rueben	TD (Total Depth):	14'

Explanation

- Water level in completed well
- First water found during drilling
- Location of recovered drill sample
- Location of sample sealed for chemical analysis
- Sieve sample
- Continuous Core

Contacts:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational
- est K — Estimated permeability (hydraulic conductivity) 1K= primary, 2K= secondary
- NR — No Recovery

Monitoring Well 4

Alameda Housing
1916 Webster Street
Alameda, CA

FUGRO

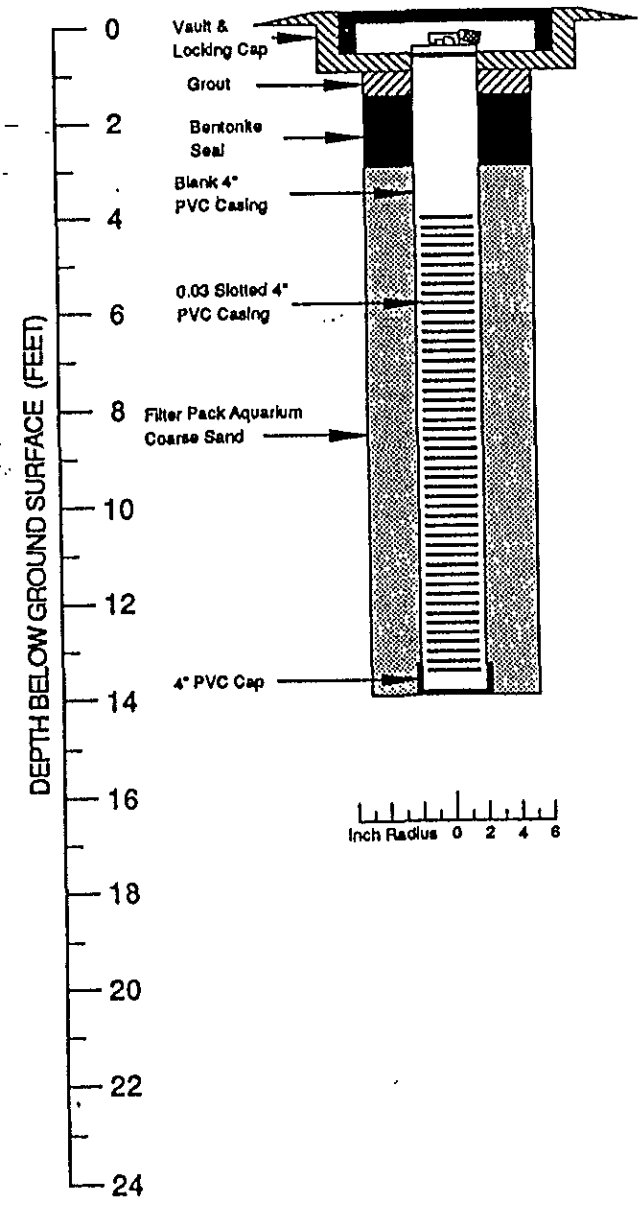
Drawn By: D. Hada
Date: September 13, 1994
Revised By:
Date:

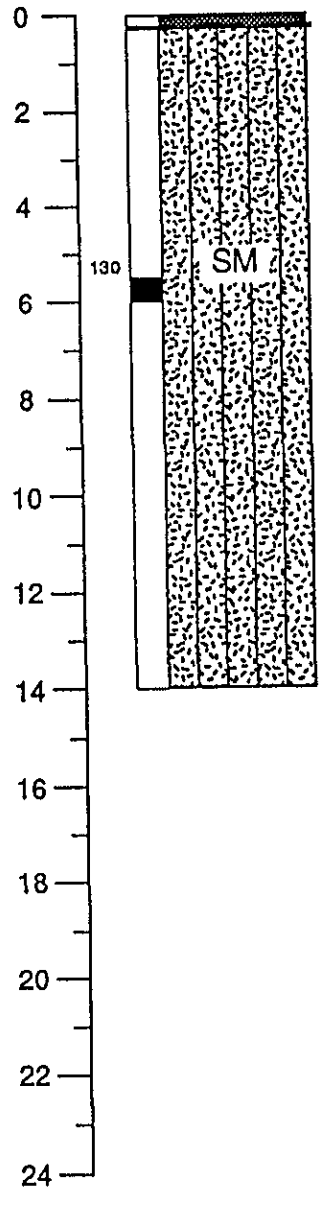
Page: 1 of 1

Well Number: MW-4

Job Number: 94-37-7623

WELL CONSTRUCTION DETAIL





Logged by:	J. Ung	Drilling Company:	West Hazmat Drilling	Well Head Completion:	12:45 hrs
Project Mgr:	S. Boudreau	Drilling Method:	Hollow Stem Auger	Type of Sampler:	Split Spoon
Date Drilled:	September 12, 1994	Driller:	Scott & Rueben	TD (Total Depth):	14'

Explanation

- Water level in completed well
- First water found during drilling
- Location of recovered drill sample
- Location of sample sealed for chemical analysis
- Sieve sample
- Continuous Core

Contacts:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational
- est K — Estimated permeability (hydraulic conductivity) 1K= primary, 2K= secondary
- NR — No Recovery

Monitoring Well 5

Alameda Housing
1916 Webster Street
Alameda, CA

FUGRO

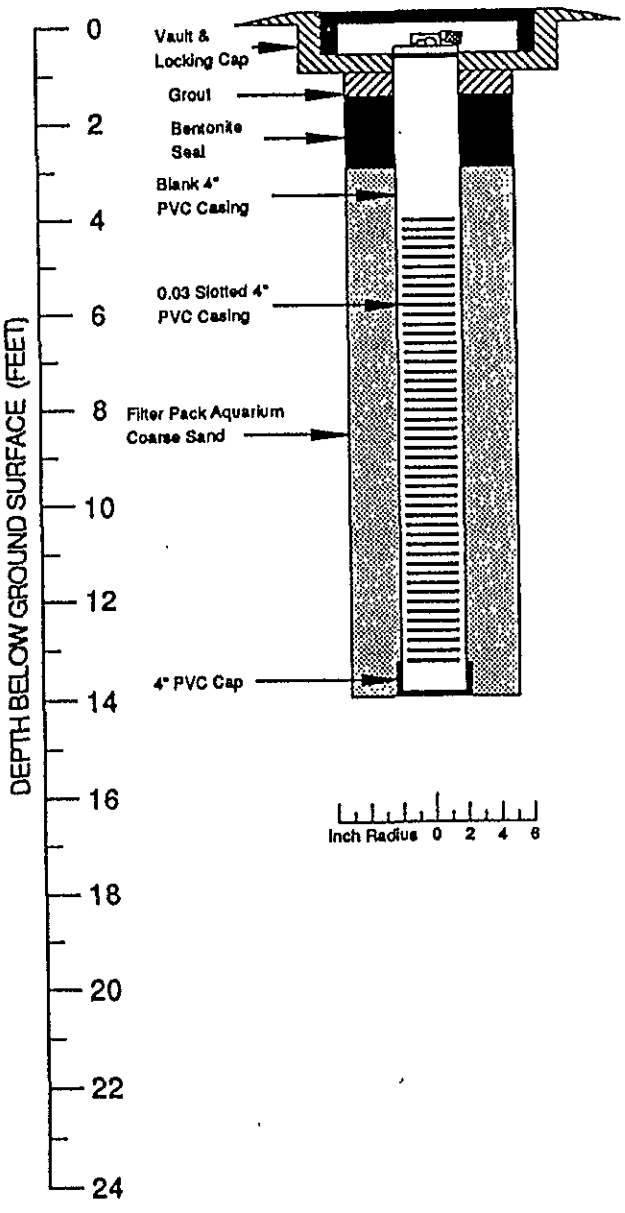
Drawn By:	D. Hada
Date:	September 13, 1994
Revised By:	
Date:	

Page: 1 of 1

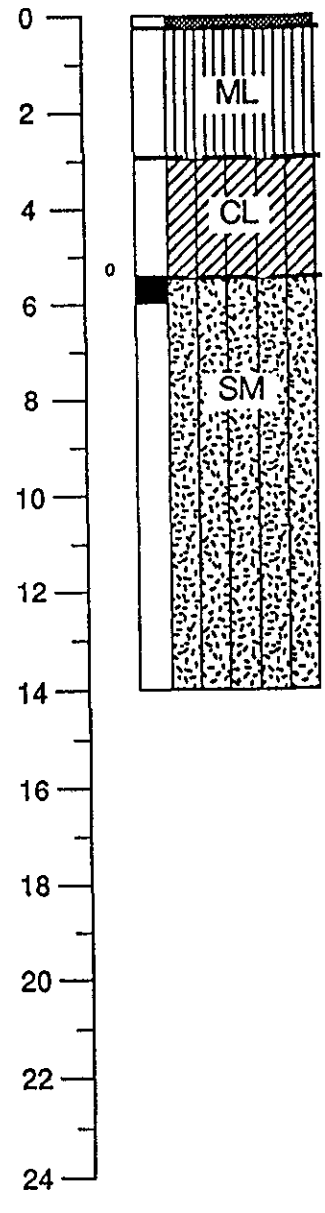
Well Number: MW-5

Job Number: 94-37-7623

WELL CONSTRUCTION DETAIL



GRAPHIC LOG



DESCRIPTION

Asphalt

Brown SILT, damp, no odor

Black silty CLAY, moist, slight odor

Grayish tan silty SAND, wet, no odor

Greenish brown silty SAND

Total depth = 14 feet

Logged by:	J. Ung	Drilling Company:	West Hazmat Drilling	Well Head Completion:	15:00 hrs
Project Mgr:	S. Boudreau	Drilling Method:	Hollow Stem Auger	Type of Sampler:	Split Spoon
Date Drilled:	September 12, 1994	Driller:	Scott & Rueben	TD (Total Depth):	14'

Explanation

- Water level in completed well
- First water found during drilling
- Location of recovered drill sample
- Location of sample sealed for chemical analysis
- Sieve sample
- Continuous Core

Contacts:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational
- est K — Estimated permeability (hydraulic conductivity) 1K= primary, 2K= secondary
- NR — No Recovery

Monitoring Well 6

Alameda Housing
1916 Webster Street
Alameda, CA

FUGRO

Drawn By: D. Hada
Date: September 13, 1994
Revised By:
Date:

Page: 1 of 1

Well Number: MW-6

Job Number: 94-37-7623