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

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-93

June 23, 2009

Mr. Dinesh Maniar
Diversified Investment and Management Corp.
400 Oyster Point Blvd., Suite 415
South San Francisco, CA 94080

Mr. Nelson Tsui
Oakland International Trade Center
633 Hegenberger Road
Oakland, CA 94621

Subject: Fuel Leak Case No. RO0000226 and Geotracker Global ID T0600100990, Oakland International Trade Center, 625 Hegenberger Road, Oakland, CA 94621 – Case Closure

Dear Mr. Maniar and Mr. Tsui:

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 Health (ACEH) 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. This case closure letter and the case closure summary can also be viewed on the State Water Resources Control Board's Geotracker website (http://geotracker.swrcb.ca.gov) and the Alameda County Environmental Health website (http://www.acgov.org/aceh/index.htm).

SITE INVESTIGATION AND CLEANUP SUMMARY

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

- Case closure for the fuel leak site is granted for commercial land use only. If a change in land use to residential or other conservative scenario occurs at this property, Alameda County Environmental Health must be notified and the case needs to be re-evaluated.
- Total petroleum hydrocarbons as gasoline remain in soil at concentrations up to 2,700 ppm.
- Lead is present in soil at concentrations up to 380 ppm.

If you have any questions, please call Jerry Wickham at (510) 567-6791. Thank you.

Sincerely,

Donna L. Drogos, P.E.
LOP and Toxics Program Manager

Enclosures:
1. Remedial Action Completion Certification
2. Case Closure Summary

cc:

Ms. Cherie McCaulou (w/enc)
SF- Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Closure Unit (w/enc)
State Water Resources Control Board
UST Cleanup Fund
P.O. Box 944212
Sacramento, CA 94244-2120

Mr. Leroy Griffin (w/enc)
City of Oakland Fire Department
250 Frank Ogawa Plaza
Suite 3341
Oakland, CA 94612

Mr. Rob Canepa (w/enc)
Diversified Investment & Management Corp.
400 Oyster Point Blvd., Suite 415
Emeryville, CA 94608
South San Francisco, CA 94080

Mr. Peter McIntyre (w/o enc)
AEI Consultants
2500 Camino Diablo, Suite 100
Walnut Creek, CA 94597

Jerry Wickham (w/orig enc), D. Drogos (w/enc), File (w/enc)

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

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

**REMEDIAL ACTION COMPLETION CERTIFICATION**

June 23, 2009

Mr. Dinesh Maniar
Diversified Investment and Management Corp.
400 Oyster Point Blvd., Suite 415
South San Francisco, CA 94080

Mr. Nelson Tsui
Oakland International Trade Center
633 Hegenberger Road
Oakland, CA 94621

Subject: Fuel Leak Case No. RO0000226 and Geotracker Global ID T0600100990, Oakland International Trade Center, 625 Hegenberger Road, Oakland, CA 94621 – Case Closure

Dear Mr. Maniar and Mr. Tsui:

This letter confirms the completion of a site investigation and remedial action for the underground storage tanks 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(s) 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, this agency finds that the site investigation and corrective action carried out at your underground storage tank(s) site is in compliance with the requirements of subdivisions (a) and (b) of Section 25296.10 of the Health and Safety Code and with corrective action regulations adopted pursuant to Section 25299.3 of the Health and Safety Code and that no further action related to the petroleum release(s) at the site is required.

This notice is issued pursuant to subdivision (h) of Section 25296.10 of the Health and Safety Code. Please contact our office if you have any questions regarding this matter.

Sincerely,

Ariu Levi
Director
Alameda County Environmental Health

**CASE CLOSURE SUMMARY**
**LEAKING UNDERGROUND FUEL STORAGE TANK - LOCAL OVERSIGHT PROGRAM**

## I. AGENCY INFORMATION

Date: July 31, 2008

| | |
|---|---|
| Agency Name: Alameda County Environmental Health | Address: 1131 Harbor Bay Parkway |
| City/State/Zip: Alameda, CA 94502-6577 | Phone: (510) 567-6791 |
| Responsible Staff Person: Jerry Wickham | Title: Senior Hazardous Materials Specialist |

## II. CASE INFORMATION

| | | |
|---|---|---|
| Site Facility Name: Oakland International Trade Center | | |
| Site Facility Address: 625 Hegenberger Road, Oakland, CA 94621 | | |
| RB Case No.: 01-1073 | Local Case No.: STID 568 | LOP Case No.: RO0000226 |
| URF Filing Date: --- | Geotracker ID: T0600100990 | APN: 42-4328-1-16 |

| Responsible Parties | Addresses | Phone Numbers |
|---|---|---|
| Nelson Tsui, Oakland International Trade Center | 1714 Franklin Street Oakland, CA 94612 | |
| Dinesh Maniar, Diversified Investment Management Group | 400 Oyster Point Boulevard San Francisco, CA | 415-266-8080 |
| | | |

| Tank I.D. No | Size in Gallons | Contents | Closed In Place/Removed? | Date |
|---|---|---|---|---|
| UST 1 | 12,000 | Gasoline | Removed | 10/21/93 |
| UST 2 | 12,000 | Gasoline | Removed | 10/21/93 |
| UST 3 | 12,000 | Gasoline | Removed | 10/21/93 |
| Sump | 260 | Waste oil | Removed | 10/22/93 |
| Piping | | | Removed | 10/20/93 |

## III. RELEASE AND SITE CHARACTERIZATION INFORMATION

| | |
|---|---|
| Cause and Type of Release: The most likely cause of the release was holes and corrosion that was observed in tanks and piping during tank removal. | |
| Site characterization complete? Yes | Date Approved By Oversight Agency: ----- |

| | | |
|---|---|---|
| Monitoring wells installed? Yes | Number: 6 | Proper screened interval? Yes |
| Highest GW Depth Below Ground Surface: 4.40 feet bgs (1/28/98) | Lowest Depth: 8.7 feet bgs (7/31/97) | Flow Direction: Northwest to southwest |
| Most Sensitive Current Use: Potential drinking water source | | |

Summary of Production Wells in Vicinity:

The nearest water supply well is an industrial water supply well at 7825 San Leandro Street that is approximately 1,250 feet northeast of the site. The industrial well is approximately 510 feet deep and is screened over an interval from 324 to 479 feet bgs. Based on the upgradient location, the well at 7825 San Leandro Street is not expected to be a receptor for the site. Two industrial wells are located at 550 85th Avenue approximately 1,850 feet southeast of the site. The wells are approximately 450 feet deep and are screened over an interval from 130 to 240 feet bgs. Based on the crossgradient locations and distance from the site, the industrial wells are not expected to be receptors for the site.

| | |
|---|---|
| Are drinking water wells affected? No | Aquifer Name: East Bay Plain |
| Is surface water affected? No | Nearest SW Name: A small tidal channel is approximately 200 feet south of the site |
| Off-Site Beneficial Use Impacts (Addresses/Locations): None | |
| Reports on file? Yes | Where are reports filed? Alameda County Environmental Health and City of Oakland Fire Department |

TREATMENT AND DISPOSAL OF AFFECTED MATERIAL

| Material | Amount (Include Units) | Action (Treatment or Disposal w/Destination) | Date |
|---|---|---|---|
| Tank | 3 – 12,000 gallon USTs and 260 gallon Sump | USTs and sump taken to H & H facility in San Francisco, CA for disposal | 10/21/93 |
| Piping | Approximately 85 feet of product piping | Piping taken to PRC Patterson, Inc in Patterson, CA for disposal | 10/20/93 |
| Free Product | 36,000 gallons from UST removal | Taken to H & H facility in San Francisco, CA | 10/21/93 |
| Soil | Approximately 13 tons | Soil taken to Remedial Environmental Marketing Co, Inc in Richmond , CA for treatment | 1/26/96 |
| | Approximately 1,600 cubic yards | Excavated soil was tilled and aerated in two batches between April 12, 1996 and September 5, 1995 | 10/12/1996 to 9/5/1996 |
| | Approximately 20 cubic yards | (7/26/96) Soil taken to Bay Area Soil Landfill in Richmond, CA | 7/26/96 |
| Groundwater | 5,200 gallons from UST removal | Taken to PRC Patterson, Inc in Patterson, CA for disposal | 10/22/93 |
| | 13,000 gallons extracted | 13,000 gallons reinjected onsite for bio-augmentation system | June 2001 – February 2002 |

MAXIMUM DOCUMENTED CONTAMINANT CONCENTRAT No information available from tank removals IONS BEFORE AND AFTER CLEANUP

(Please see Attachments 1 through 7 for additional information on contaminant locations and concentrations)

| Contaminant | Soil (ppm) | | Water (ppb) | |
|---|---|---|---|---|
| | Before | After | Before | After |
| TPH (Gas) | 5,600 | 2,700 | 150,000 | 2,600 |
| TPH (Diesel) | 6,400 | 55 | 3,700 | 2,700 |
| Oil and Grease | 100,000 | 2,500 | 1,100 | <250 |
| Benzene | 34 | 5.1 | 16,000 | 140 |
| Toluene | 190 | 38 | 15,000 | 14 |
| Ethylbenzene | 160 | 29 | 3,400 | 30 |
| Xylenes | 570 | 210 | 23,000 | 57 |
| Heavy Metals (Cd, Cr, Pb, Ni, Zn) | 380(1) | 380(1) | 210(2) | 210(2) |
| MTBE | Not Analyzed (3) | Not Analyzed (3) | 2,100(4) | 210(5) |
| Cyanide | 0.49 | 0.49 | Not Analyzed | Not Analyzed |
| Other (8260/8270) | Not detected at various reporting limits (6) | Not detected at various reporting limits (6) | Not Analyzed (7) | Not Analyzed (7) |

(1) Lead = 380 ppm; chromium = 40 ppm; cadmium = 2 ppm; nickel = 61 ppm; and zinc = 170 ppm in soil.
(2) Lead = 210 ppb; no other metals analyzed in groundwater.
(3) No analysis for MTBE, TBA, DIPE, ETBE, TAME, and EDC; EDB <0.1 ppm in soil.
(4) MTBE = 2,100 ppb; TBA = 98 ppb; DIPE, ETBE, TAME, EDB, and EDC <5 ppb in groundwater.
(5) MTBE = 210 ppb; TBA = 45 ppb; DIPE, ETBE, TAME, EDB, and EDC <5 ppb in groundwater
(6) No VOCs or SVOCs detected at various reporting limits in soil.
(7) VOCs and SVOCs not analyzed in groundwater.

Site History and Description of Corrective Actions:

The property is located at the corner of Collins Drive and Hegenberger Road in Oakland, California. The site was reportedly used as a gasoline service station from the mid 1960s until mid 1970s. Currently, the site is vacant but is planned for commercial development. Surrounding land use is commercial and light industrial.

A total of 23 soil borings were advanced at the site during two phases of investigation in 1988 and 1990. Five of the soil borings located around the former tank pit and dispenser island were converted into monitoring wells (MW-8, MW-10, MW-11, MW-12, and MW-16). TPH as gasoline, TPH as diesel, and total oil and grease were detected in soil samples from the soil borings at concentrations up to 5,600, 6,400, and 100,000 ppm, respectively. Approximately 1/4-inch of free product was observed in one of the soil borings adjacent to the USTs.

In October 1993, three 12,000-gallon steel underground storage tanks (USTs), one 260-gallon waste oil sump, and associated underground piping were removed. Approximately 250 cubic yards of soil was excavated during the tank removal. The north UST had a rusted dent and an approximately 3 by 6 inch hole in the underside of the tank. The middle tank had minor corrosion but no holes were observed during tank removal. The south UST had a dent and possible hole on the underside of the UST. Product piping was rusted and corroded and had small holes in some places. Analytical results from 17 soil samples and two groundwater samples confirmed that soil and groundwater in the area of the former tank pit was contaminated.

In January 1995, Levine Fricke advanced an additional 13 soil borings (LF24 through LF36) at the site, one of which was converted into a monitoring well (MW-24). TPHg and benzene were detected in soil samples from the 13 soil borings at concentrations up to 3,300 and 34 ppm, respectively. Grab groundwater sampling from the borings and groundwater monitoring of the resulting six well monitoring network on January 10, 1995 confirmed that a dissolved phase hydrocarbon plume extended westward from the tank. Quarterly monitoring of the wells was continued from January 1995 through March 1996. Well MW24 was destroyed in March 1996 in anticipation of excavation activities.

Beginning in April 1996, a total of approximately 1,600 cubic yards of impacted soil was excavated from the areas of the former tank pit and dispenser islands. The excavated soil was aerated in two batches. Bi-weekly tilling of the first aeration batch was performed between April 12, 1996 and June 19, 1996. Bi-weekly tilling of the second aeration batch was conducted between July 17, 2996 and September 5, 1996. Following aeration, 22 soil samples were collected from the treated soil. Based upon the aerated soil analytical results, the treated soil was used to backfill the excavation.

A 4-inch diameter groundwater extraction well (EW-01) was installed in the central portion of the plume on October 1, 1999. Two additional groundwater monitoring wells (MW-26 and MW-27) were installed on the western end of the site in June 2000. Subsequent sampling results from monitoring wells MW-26 and MW-27 indicated that the plume did not extend off-site in the downgradient (western) direction. One soil boring (AEI-B28) was advanced to a depth of 44.5 feet in June 2000 to determine the vertical extent of contamination. Three groundwater samples were collected from the boring at depths of 6, 20, and 27 feet bgs. The concentration of TPHg was highest in the shallow sample (150,000 ppb in DB-6') and lowest in the deep sample (1,700 ppb in DB-27'). Similarly, the concentration of benzene was highest in the shallow sample (13,000 ppb in DB-6') and lowest in the deep sample (29 ppb in DB-27').

In June 2001, a biological groundwater treatment program was initiated. The treatment system consisted of an extraction well (EW-01), batch treatment tank, batch injection network of 12 injection points, and air sparging system consisting of a compressor and 12 sparge points. The system was designed to supplement natural bacterial colonies present in the shallow water table aquifer with bacterial colonies cultures to metabolize aromatic hydrocarbons. The goal of the treatment program was to reduce dissolved phase hydrocarbon concentrations, specifically TPHg and BTEX, within the source area, thereby limiting the potential of future migration of the hydrocarbon plume from the site. The system operated from June 2001 through February 2002, during which time 27 batches were treated, totaling approximately 13, 000 gallons. The treated groundwater was reinjected to create an active culture in the aquifer. During sampling of extraction well EW-1 on August 9, 2000, the concentrations of TPHg and MTBE were 6,700 and 1,300 ppb, respectively. During the most recent sampling of well EW-1 on May 8, 2008, the concentrations of TPHg and MTBE were 190 and 210 ppb, respectively.

Nine soil vapor probes were installed and sampled in May 2008. The concentrations of petroleum hydrocarbons detected in the nine soil vapor samples were below Environmental Screening Levels (San Francisco Bay Regional Water Quality Control Board May 2008) for shallow soil gas for both residential and commercial land use scenarios. Groundwater monitoring was conducted at the site from May 1993 through August 2005. One additional groundwater sampling event was conducted at the site on May 8, 2008. During the most recent May 2008 groundwater monitoring event, the maximum reported concentrations of TPHg, benzene, and MTBE were 2,600, 140, and 170 ppb, respectively.

## IV. CLOSURE

| | | |
|---|---|---|
| Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? Yes | | |
| Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? Yes | | |
| Does corrective action protect public health for current land use? Alameda County Environmental Health staff does not make specific determinations concerning public health risk. However, based upon the information available in our files to date, it does not appear that the release would present a risk to human health based upon current land use and conditions. | | |
| Site Management Requirements: Case closure for the fuel leak site is granted for commercial land use only. If a change in land use to residential or other conservative scenario occurs at this property, Alameda County Environmental Health must be notified and the case needs to be re-evaluated. This site is to be entered into the City of Oakland Permit Tracking System due to the residual contamination. | | |
| Should corrective action be reviewed if land use changes? Yes | | |
| Was a deed restriction or deed notification filed? No | | Date Recorded: -- |
| Monitoring Wells Decommissioned: No | Number Decommissioned: 0 | Number Retained: 8 |
| List Enforcement Actions Taken: None | | |
| List Enforcement Actions Rescinded: -- | | |

## V. ADDITIONAL COMMENTS, DATA, ETC.

Considerations and/or Variances:

No chlorinated VOC analyses were conducted for groundwater. Based on the lack of detections of chlorinated VOCs in soil and soil gas samples, analyses for chlorinated VOCs in groundwater does not appear to be warranted.

Soil samples were composited for metals and SVOC analysis.

Conclusion:

Alameda County Environmental Health staff believe that the levels of residual contamination do not pose a significant threat to water resources, public health and safety, and the environment based upon the information available in our files to date. No further investigation or cleanup is necessary. ACEH staff recommend case closure for this site.

## VI. LOCAL AGENCY REPRESENTATIVE DATA

| | |
|---|---|
| Prepared by: Jerry Wickham | Title: Senior Hazardous Materials Specialist |
| Signature: Jerry Wickham | Date: 08/06/08 |
| Approved by: Donna L. Drogos, P.E. | Title: Supervising Hazardous Materials Specialist |
| Signature: Donna L. Drogos | Date: 08/06/08 |

This closure approval is based upon the available information and with the provision that the information provided to this agency was accurate and representative of site conditions.

## VII. REGIONAL BOARD NOTIFICATION

| | |
|---|---|
| Regional Board Staff Name: Cherie McCaulou | Title: Engineering Geologist |
| RB Response: Concur, based solely upon information contained in this case closure summary. | Date Submitted to RB: 8/6/08 |
| Signature: [signature] | Date: 8/12/08 |

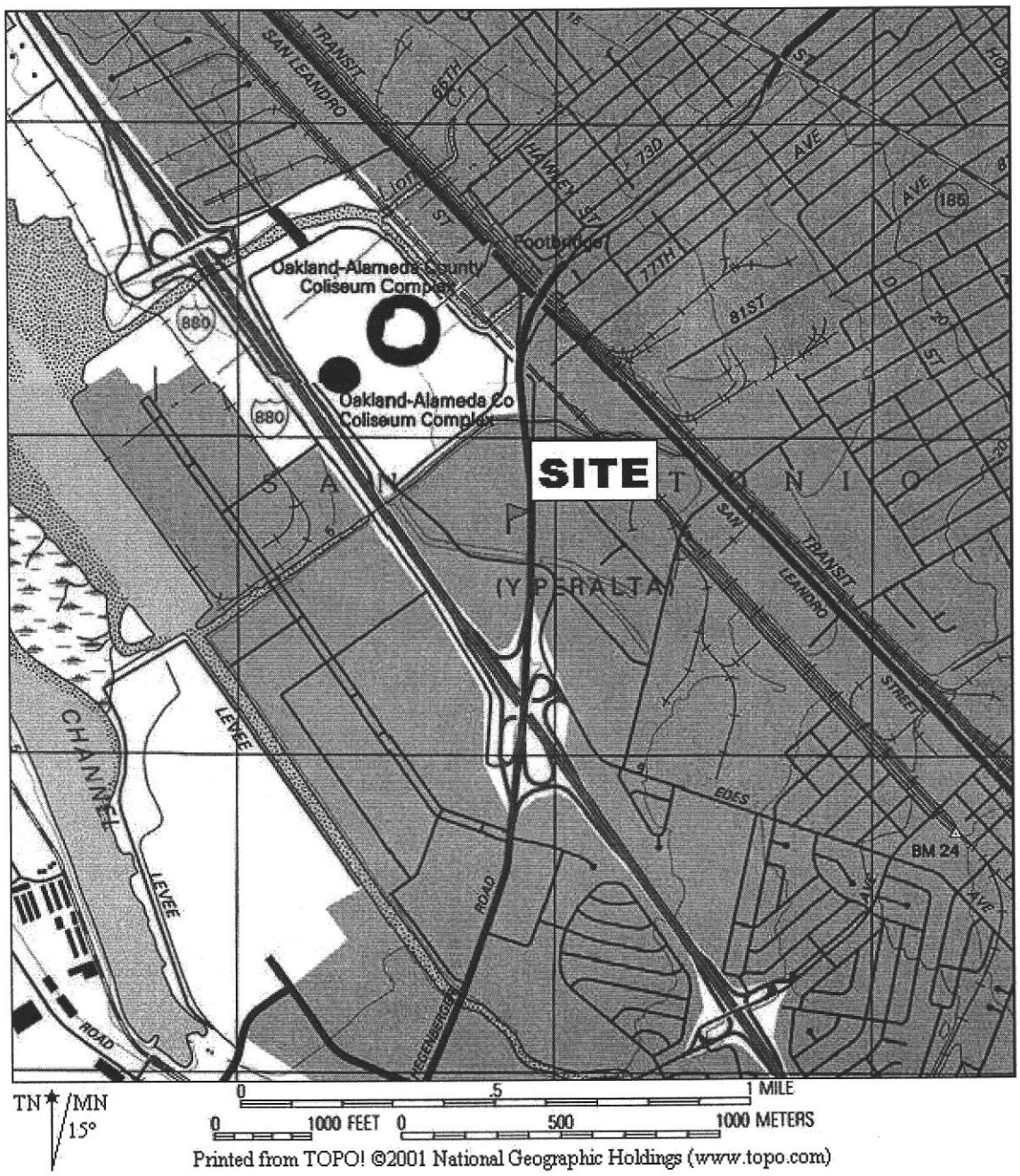
## VIII. MONITORING WELL DECOMMISSIONING

| | | |
|---|---|---|
| Date Requested by ACEH: 08/13/08 | Date of Well Decommissioning Report: 06/23/09 | |
| All Monitoring Wells Decommissioned: (Yes) No | Number Decommissioned: 7 | Number Retained: 0 |
| Reason Wells Retained: NA | | |
| Additional requirements for submittal of groundwater data from retained wells: NA | | |
| ACEH Concurrence - Signature: [signature] | | Date: 06/23/09 |

Attachments:

1. Site Location Map (1 page)
2. Water Table Contours (2 pages)
3. Site Plans (8 pages)
4. Maps Showing Extent of Contamination (5 pages)
5. Soil Analytical Data (18 pages)
6. Groundwater and Soil Vapor Analytical Data (8 pages)
7. Boring Logs (30 pages)

This document and the related CASE CLOSURE LETTER & REMEDIAL ACTION COMPLETION CERTIFICATE shall be retained by the lead agency as part of the official site file.



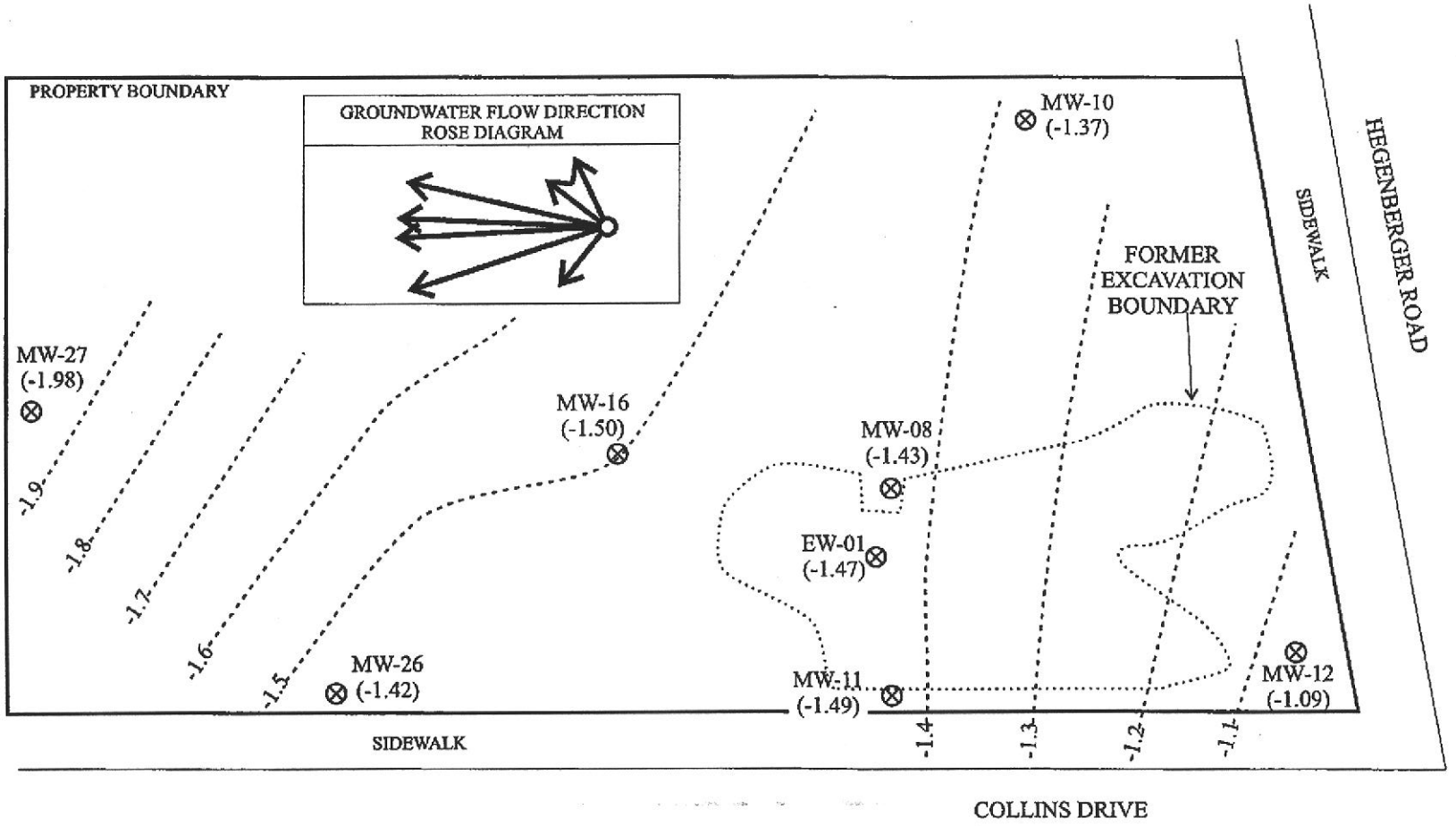

Printed from TOPO! ©2001 National Geographic Holdings (www.topo.com)

AEI CONSULTANTS
2500 CAMINO DIABLO, WALNUT CREEK, CA

**SITE LOCATION MAP**

625 HEC
OAKLA

ATTACHMENT 1




N

0' 25' 50'

SCALE: 1 in = 50 ft

**KEY**

⊗ Monitoring Well

Water Table contour in feet above mean sea level. Contour interval = 0.1 feet

ROSE DIAGRAM SCALE: ½ in = 1 episode

NOTE: Rose diagram does not include effects of MW-26 & MW-27

AEI CONSULTANTS

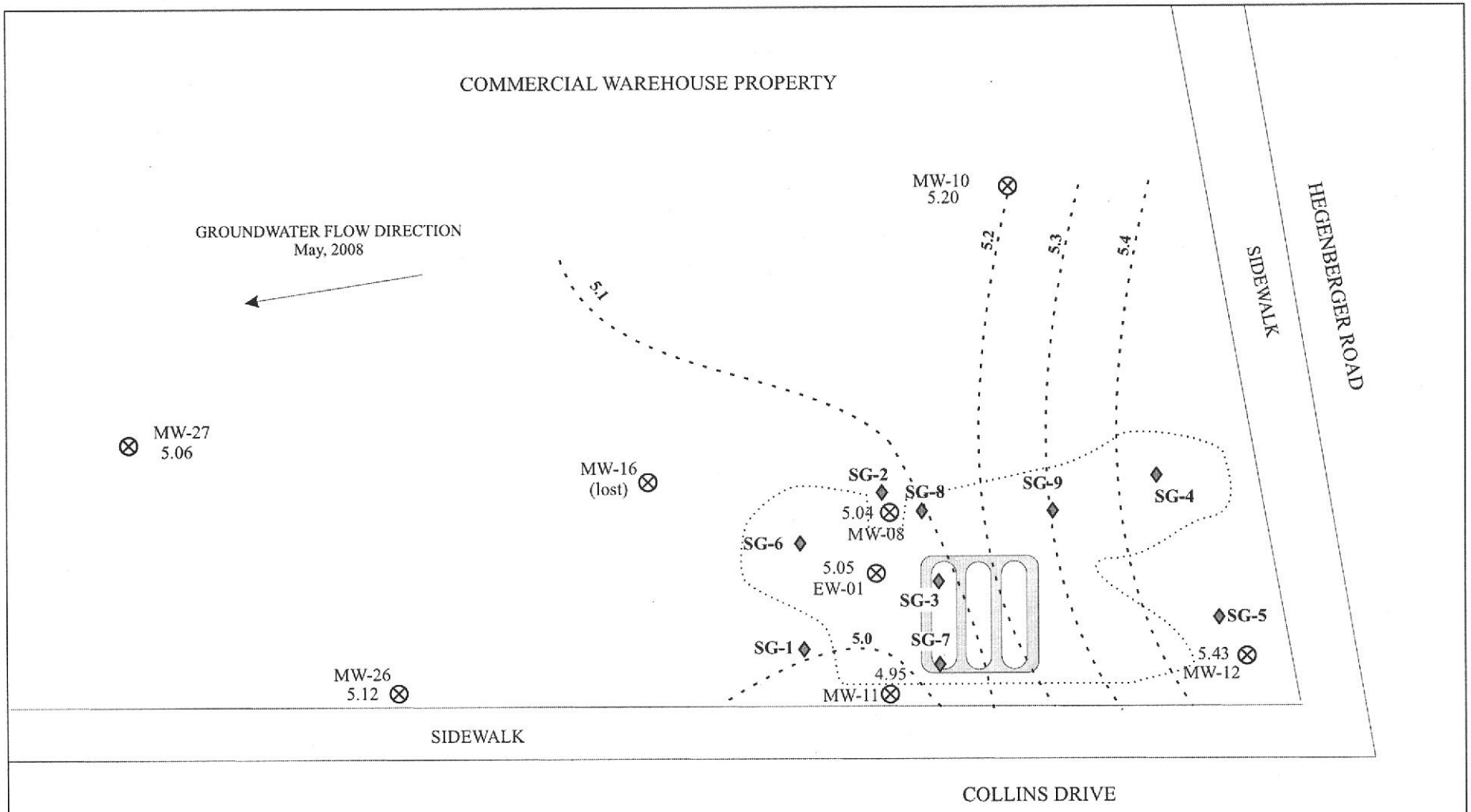
2500 CAMINO DIABLO, Ste. 200, WALNUT CREEK, CA

**WATER TABLE CONTOURS: 9/11/02**

625 HEGENBE

OAKLAND, C

ATTACHMENT 2




N

0' 25' 50'

SCALE: 1 in = 50 ft

**KEY**

- ⊗ Monitoring Well Locations
- ♦ Soil Vapor Sampling Location (5/14/08)
- Water Table contour in feet above mean sea level. Contour interval = 0.1 feet

# AEI CONSULTANTS

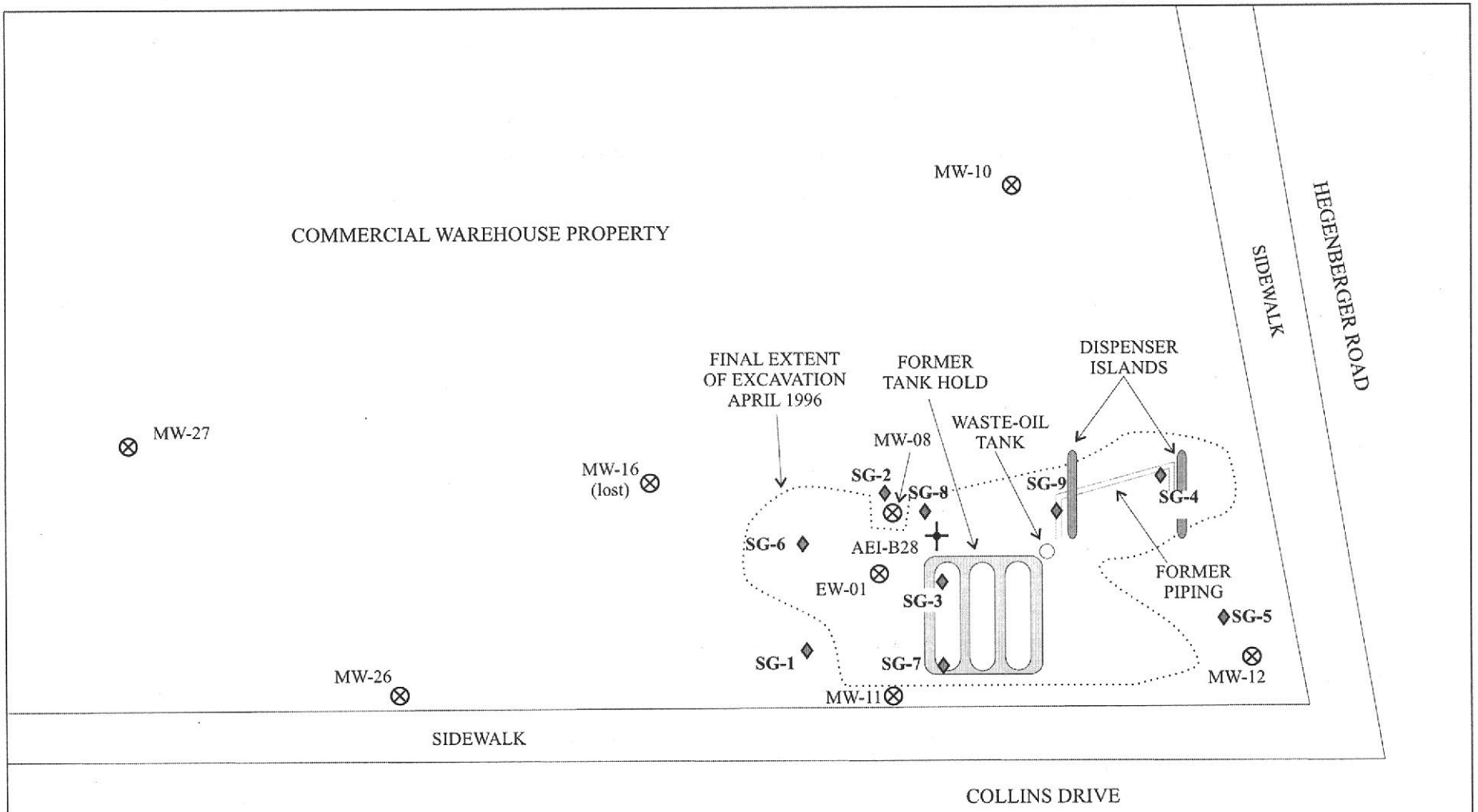
2500 CAMINO DIABLO, WALNUT CREEK, CA

## WATER TABLE CONTOURS: 5/08

**(Revised 6/25/08)**

625 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

**FIGURE 3**
AEI PROJECT NO 277254




N

0' 25' 50'

SCALE: 1 in = 50 ft

**KEY**

- ⊗ Monitoring Well Locations
- ✦ Soil Boring (June 2000)
- ♦ Soil Vapor Sampling Location (5/14/08)

# AEI CONSULTANTS

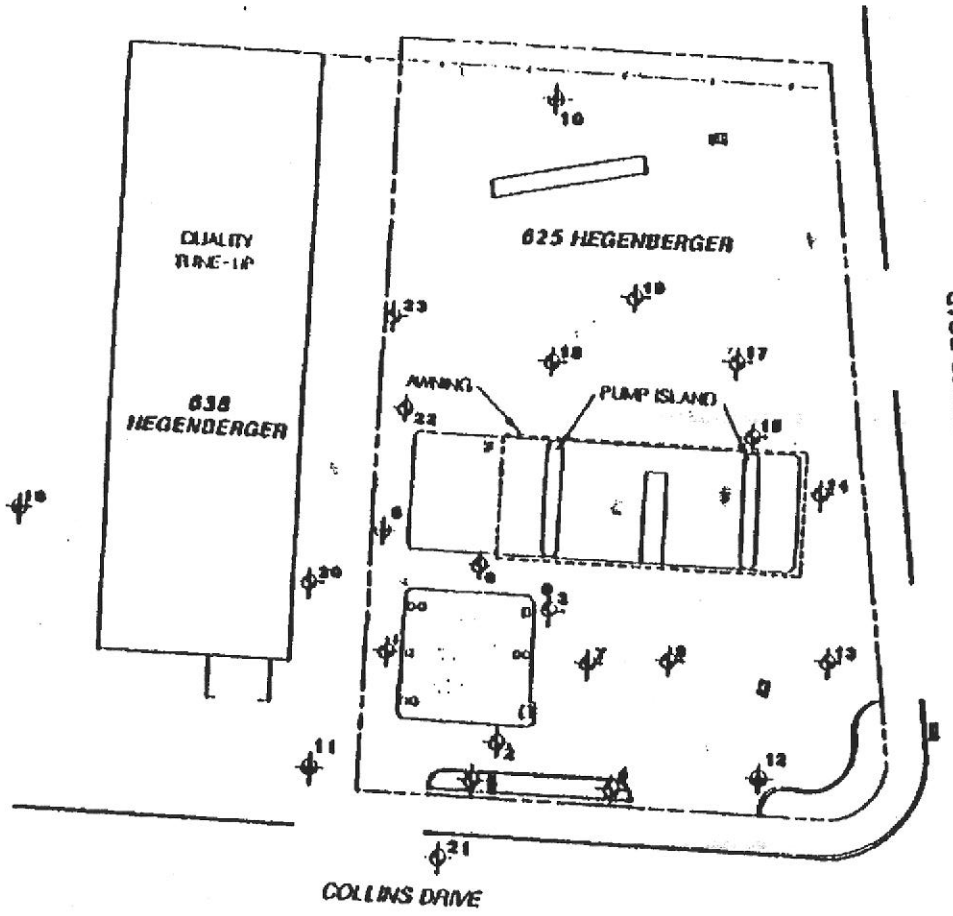
2500 CAMINO DIABLO, WALNUT CREEK, CA

## SITE PLAN

625 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

**FIGURE 2**
AEI PROJECT NO 277254

**ATTACHMENT 3**





VICINITY MAP

TEST BORING
MONITORING WELL
TANK AREA
TANK PUMP
FILL INLET
DRAIN INLET
SUMP

APPROXIMATE SCALE (feet)

SITE PLAN

Subsurface Consultants

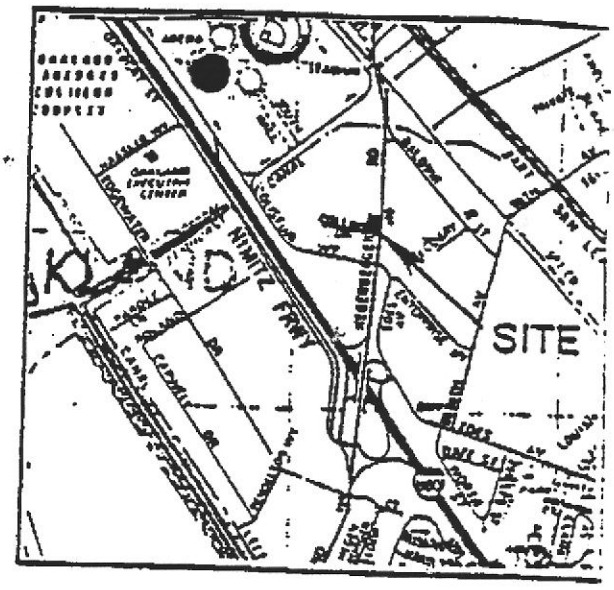
COLLINS & HEGENBERGER - OAKLAND, CA

JOB NUMBER 375003 DATE 5/9/90 APPROVED

DRAFT

TEST BORING

EXISTING STRUCTURE




VICINITY MAP

NOT TO SCALE

N

SERVICE ISLANDS

SUMP

TANKS

CONCRETE SLAB

1

2

3

4

DRIVEWAY

DRIVEWAY

HEGENBERGER ROAD

COLLINS STREET

RECEIVED
APR 28 1988
M.G.C. CO.

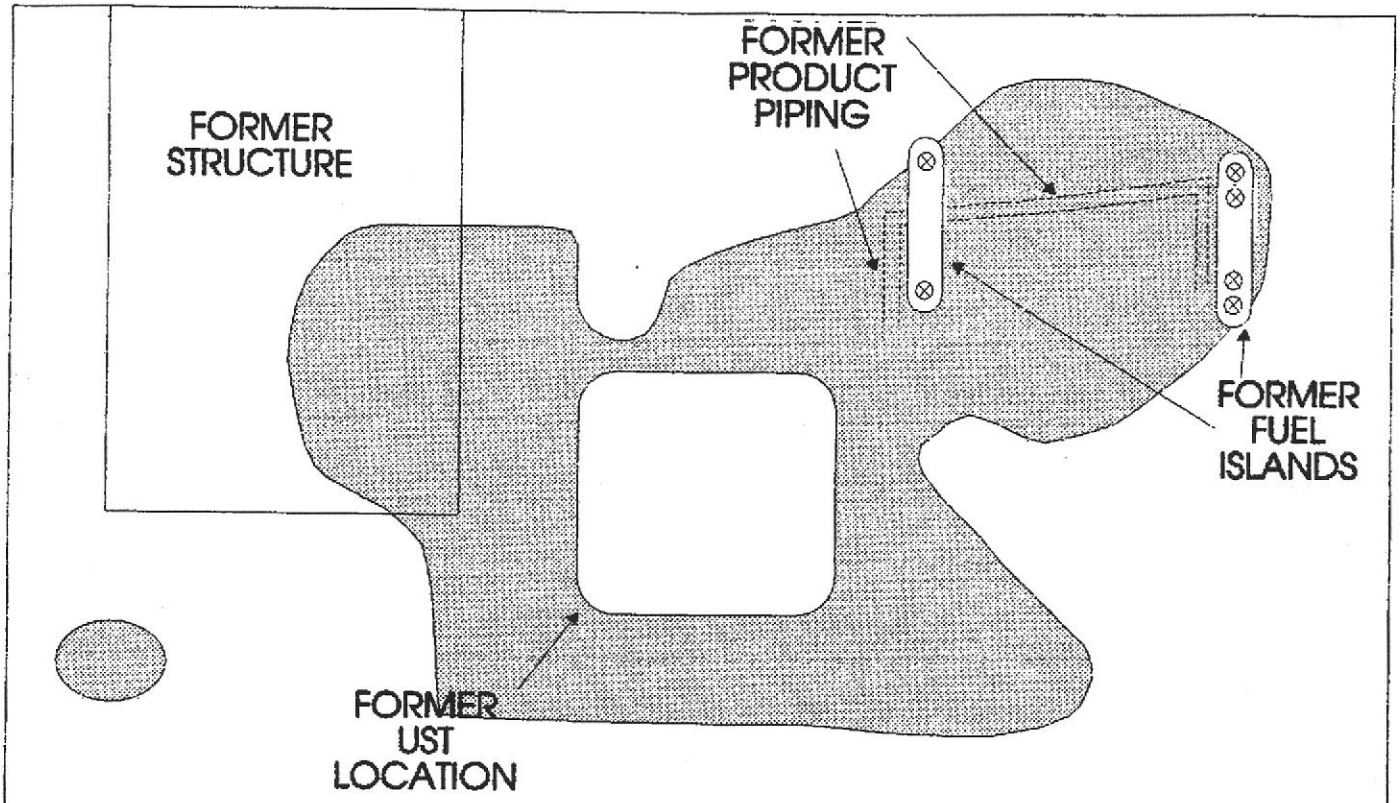
# SITE PLAN

Subsurface Consultants

COLLINS DRIVE TANKS - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED |
|---|---|---|
| 375.003 | 4/25/88 | |

PLATE 1




# COLLINS ROAD

0 20 40 FEET

APPROX. SCALE: 1" = 20'

Excavated Area

| ALL ENVIRONMENTAL, INC. 3364 Mt Diablo Blvd., Lafayette, CA | | |
|---|---|---|
| DRAWN BY: B. CAMPBELL | | REVISED BY: E. OCHSNER |
| DATE: MARCH 5, 1997 | | APPROVED BY: JPD |
| EXCAVATION LOCATION MAP | | |
| 625 Hegenberger Road, Oakland | | FIGURE 3 |

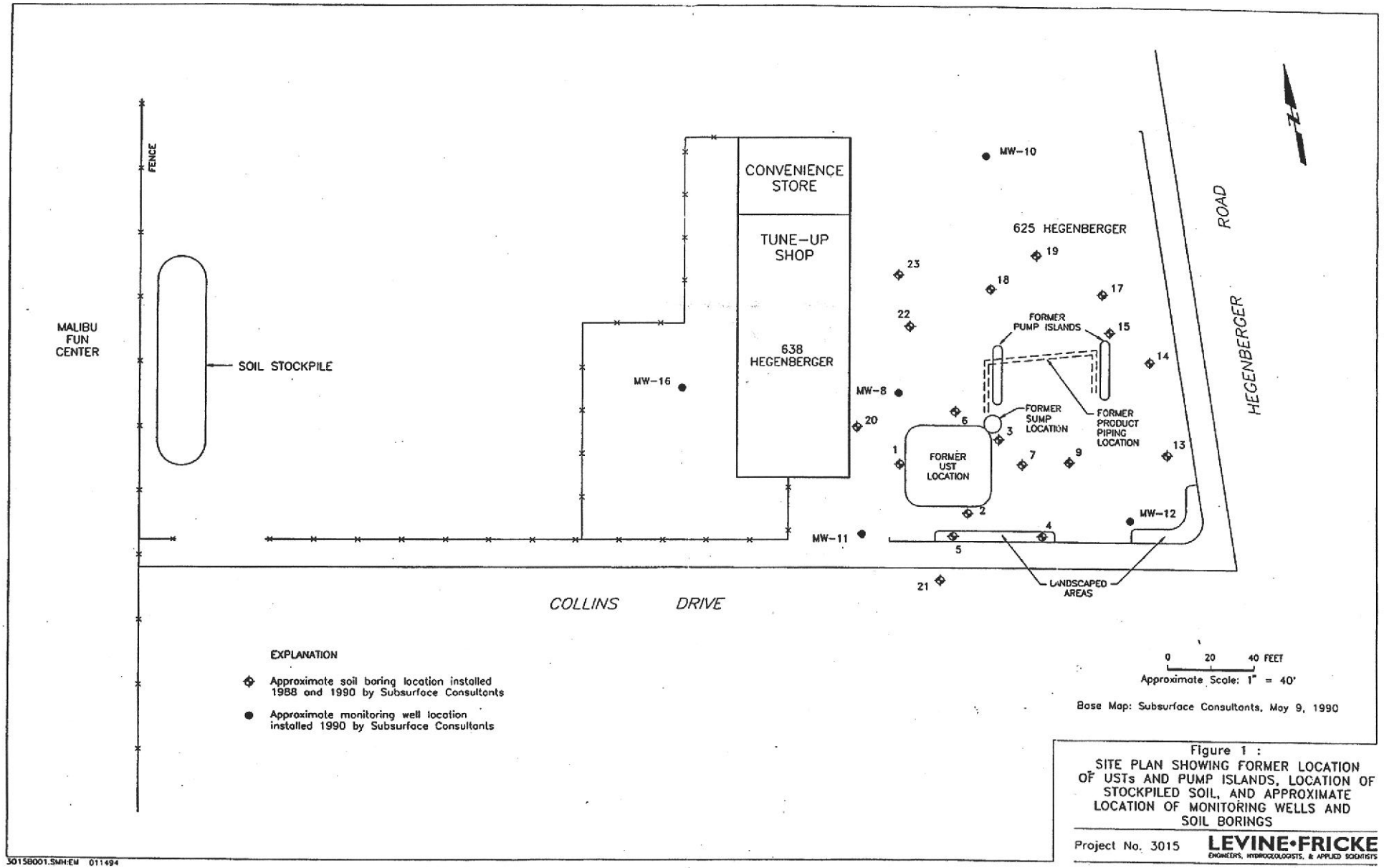
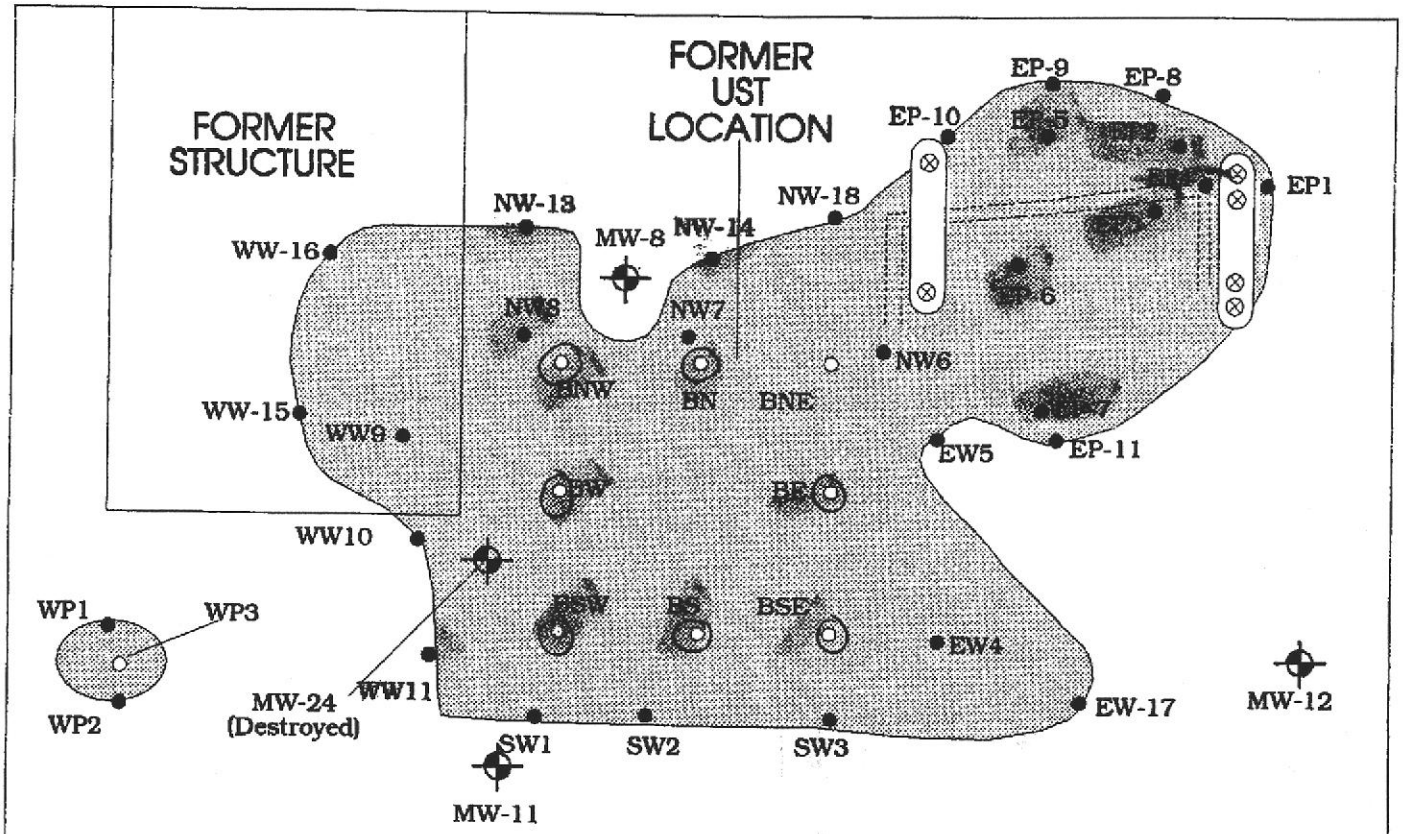



Figure 1 :
SITE PLAN SHOWING FORMER LOCATION OF USTs AND PUMP ISLANDS, LOCATION OF STOCKPILED SOIL, AND APPROXIMATE LOCATION OF MONITORING WELLS AND SOIL BORINGS

Project No. 3015

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS, & APPLIED SCIENTISTS

3015B001.SMH:EM 011494




# COLLINS ROAD

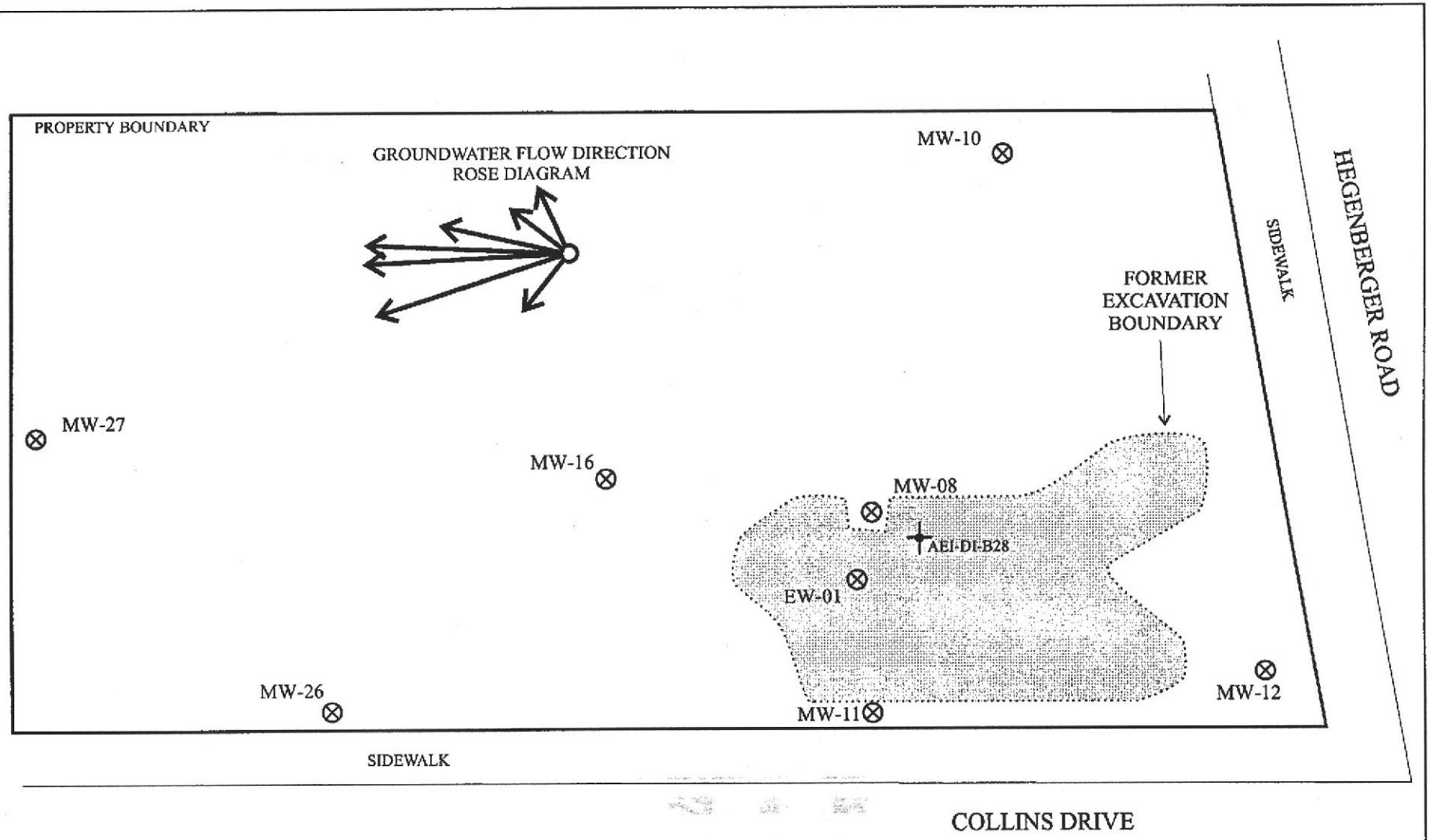
0 samples w/elevated benzene conc.

0 20 40 FEET

APPROX. SCALE: 1" = 20'

- ○ Bottom Sample
- • Sidewall Sample
- MW-8 ⊕ Monitoring Well

| ALL ENVIRONMENTAL, INC. 2641 CROW CANYON ROAD, SAN RAMON, CA | | |
|---|---|---|
| DRAWN BY: B. CAMPBELL | | REVISED BY: E. OCHSNER |
| DATE: MARCH 5, 1997 | | APPROVED BY: JPD |
| SAMPLE LOCATION MAP | | |
| 625 Hegenberger Road, Oakland | | FIGURE 4 |



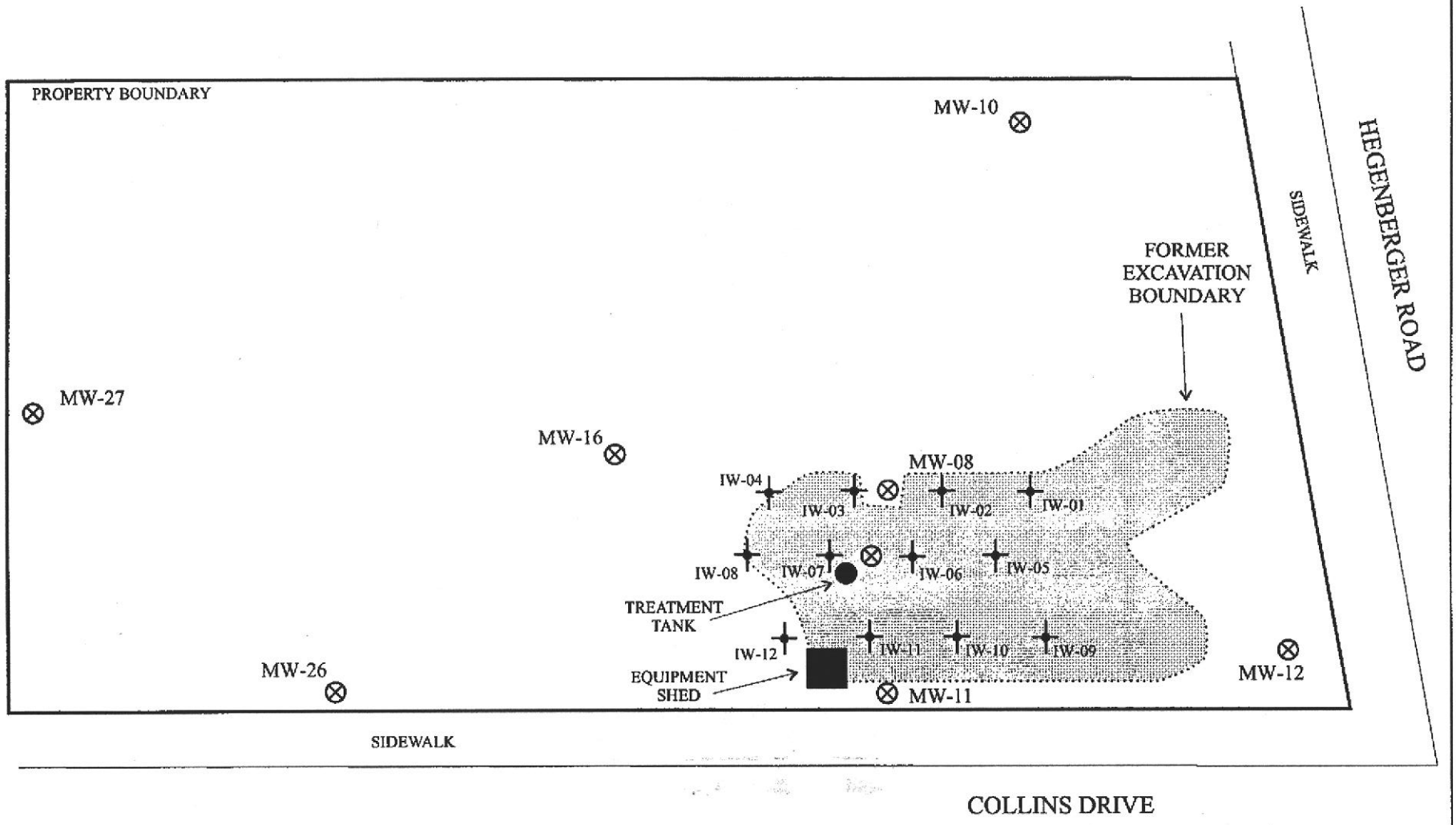

# AEI CONSULTANTS

3210 OLD TUNNEL ROAD, SUITE B, LAFAYETTE, CA

## SITE PLAN

625 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

**FIGURE 3**
AEI PROJECT NO 4342




N

⊗ MONITORING WELL LOCATIONS

✦ DUEL COMPLETION WELLS

SCALE: 1 in. = 45 ft.

# AEI CONSULTANTS

3210 OLD TUNNEL ROAD, SUITE B, LAFAYETTE, CA

## TREATMENT SYSTEM COMPONENT LOCATIONS

625 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

**FIGURE 7**
AEI PROJECT NO 4342

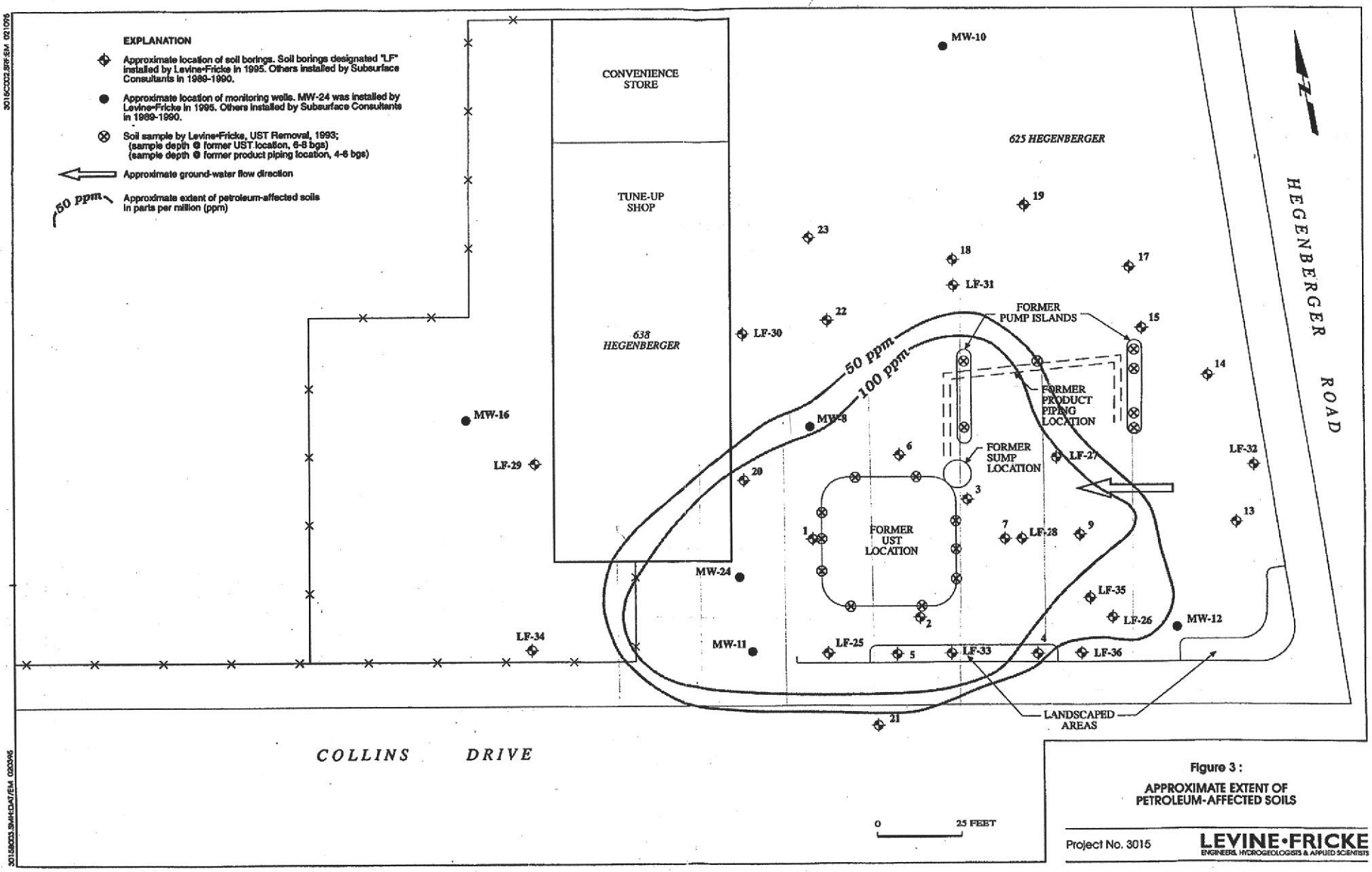


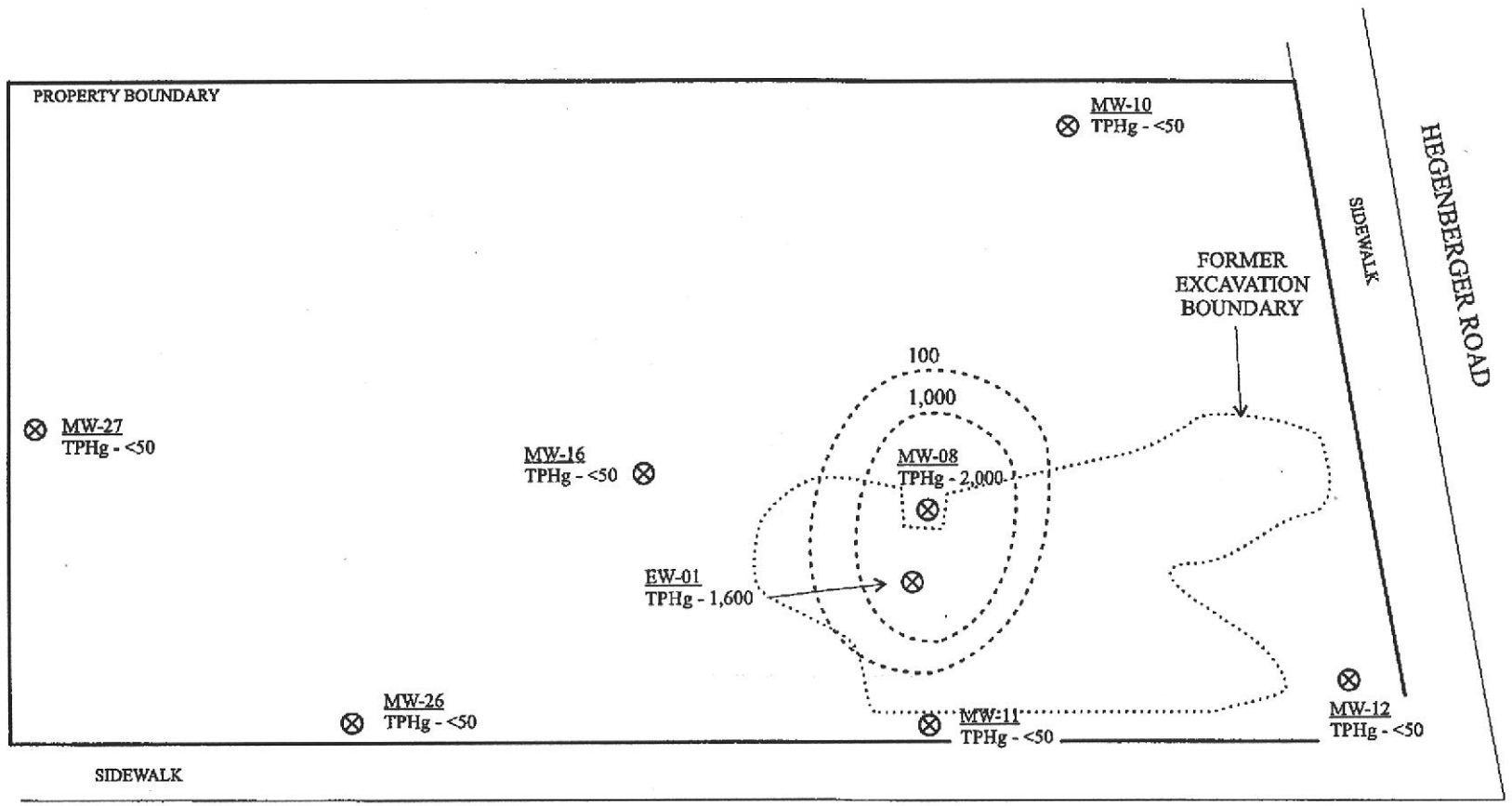

Figure 3 :

APPROXIMATE EXTENT OF PETROLEUM-AFFECTED SOILS

Project No. 3015

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

ATTACHMENT 4




N

0' 25' 50'

SCALE: 1 in = 50 ft

**KEY**

⊗ Well locations with dissolved TPHg concentrations in µg/l

10 TPHg iso-concentration contour. Data as of 9/11/02 Interval: factor of 10

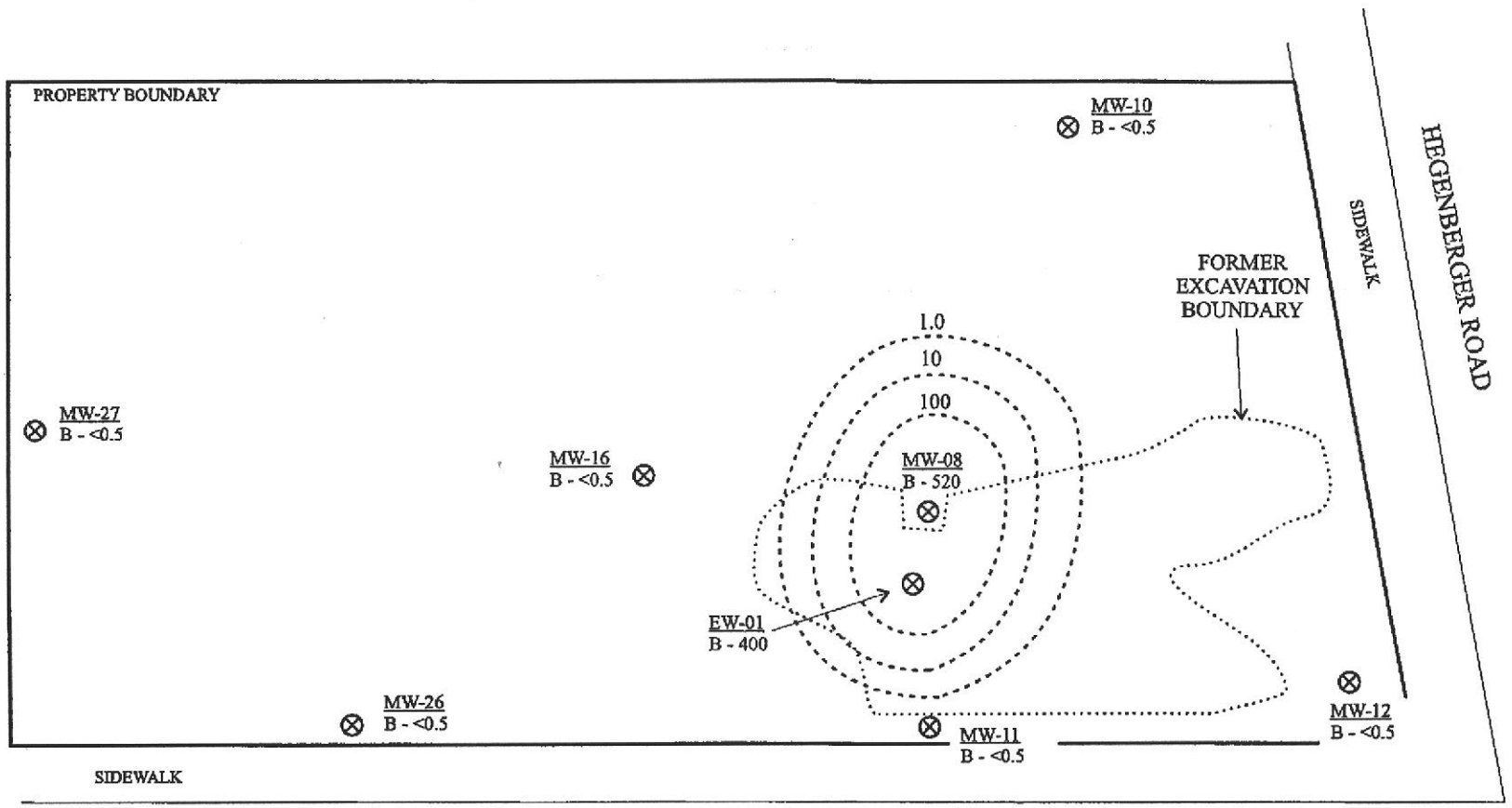
# AEI CONSULTANTS

2500 CAMINO DIABLO, Ste. 200, WALNUT CREEK, CA

## TPHg Concentration Contours

625 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

**FIGURE 6**
AEI PROJECT NO 6274




N

0' 25' 50'

SCALE: 1 in = 50 ft

**KEY**

⊗ Well locations with dissolved Benzene (B) concentrations in µg/l

10 Benzene iso-concentration contour. Data as of 9/11/02 Interval: factor of 10

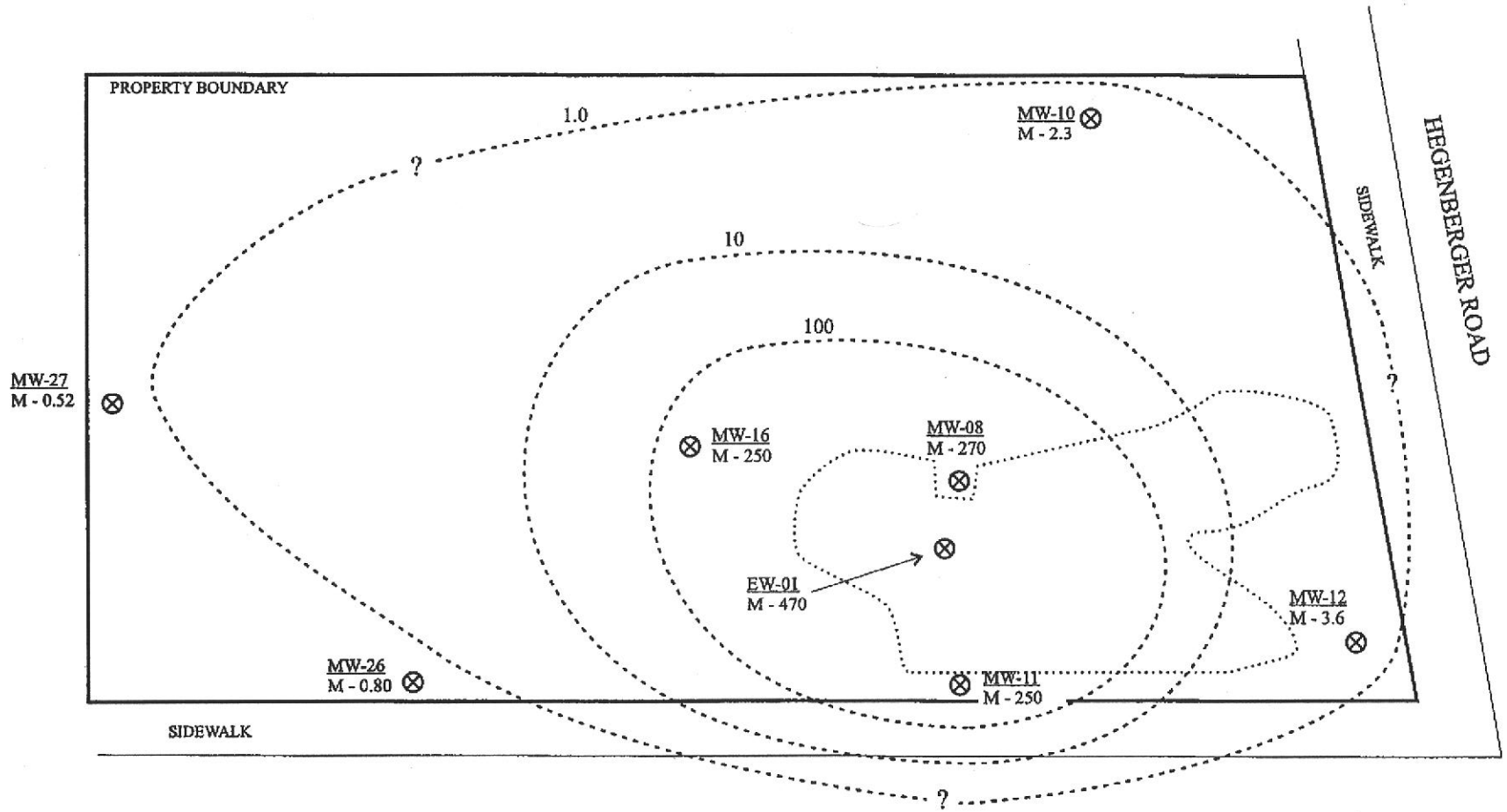
# AEI CONSULTANTS

2500 CAMINO DIABLO, Ste. 200, WALNUT CREEK, CA

**Benzene Concentration Contours**

625 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

**FIGURE 7**
AEI PROJECT NO 6274




N

0' 25' 50'

SCALE: 1 in = 50 ft

**KEY**

⊗ Well locations with dissolved MTVE (M) concentrations in µg/l

10 MTBE iso-concentration contour. Data as of 9/11/02 Interval: factor of 10

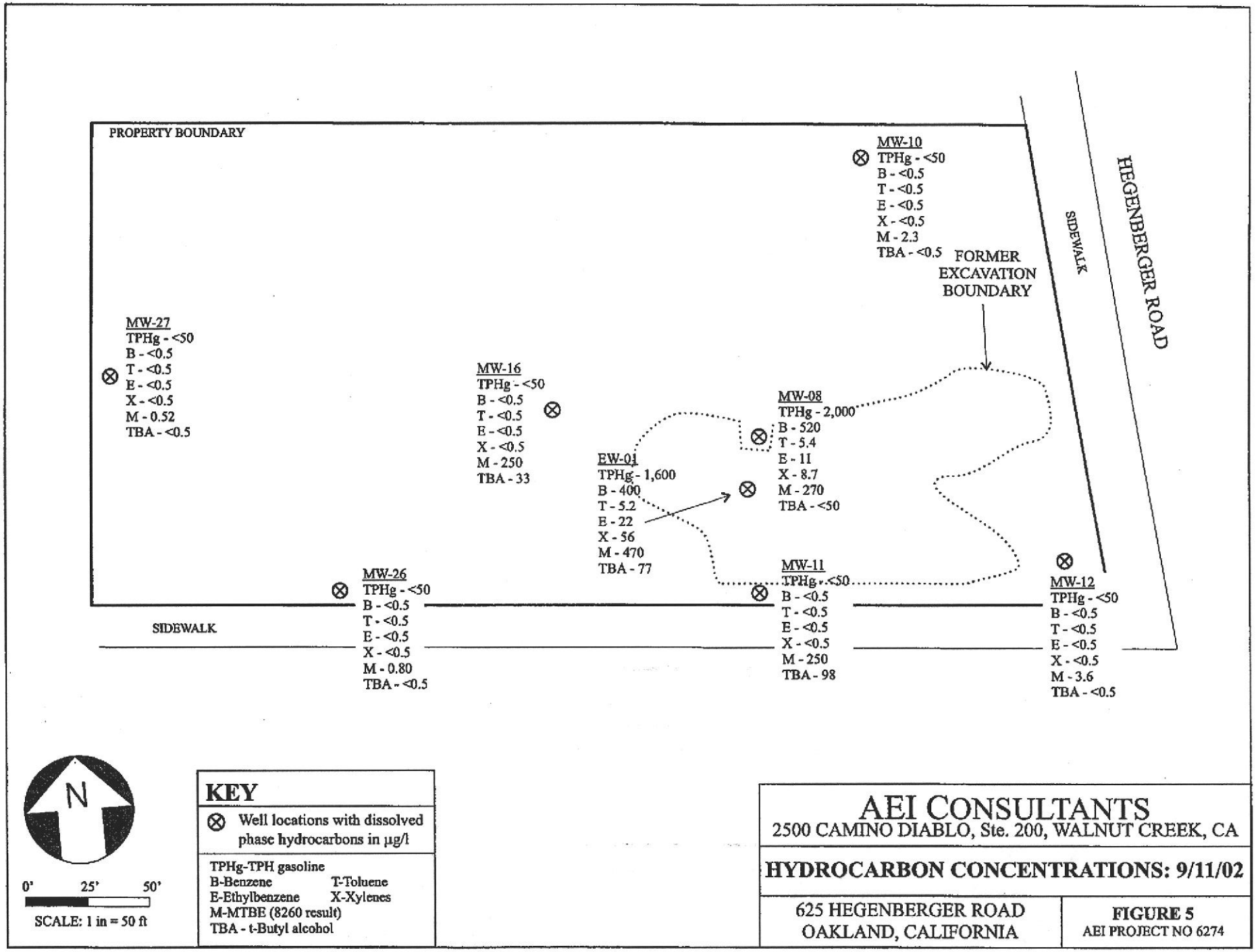
# AEI CONSULTANTS

2500 CAMINO DIABLO, Ste. 200, WALNUT CREEK, CA

## MTBE Concentration Contours

625 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

**FIGURE 8**
AEI PROJECT NO 6274




# AEI CONSULTANTS

2500 CAMINO DIABLO, Ste. 200, WALNUT CREEK, CA

## HYDROCARBON CONCENTRATIONS: 9/11/02

625 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

**FIGURE 5**
AEI PROJECT NO 6274

Curtis & Tompkins, Ltd., Analytical Laboratories. Since 1878
290 Division Street. San Francisco. CA 94103. Phone (415) 861-1863

LAB NUMBER: 14376
CLIENT: SUBSURFACE CONSULTANTS
PROJECT: COLLIN'S ST

DATE RECEIVED: 03-16-88
DATE ANALYZED: 03-18-88
DATE REPORTED: 03-29-88
PAGE 1 OF 3

Results of Analysis for Petroleum Hydrocarbons/Oil & Grease

Method References: O&G: Oil and Grease, SWWM 503 E
TPH: Total Petroleum Hydrocarbons, EPA 3550/8015

| C&T ID | CLIENT ID | GASOLINE (mg/Kg) | KEROSINE (mg/Kg) | DIESEL (mg/Kg) | O&G (mg/Kg) |
|---|---|---|---|---|---|
| 14376-1 | 1 @ 4.5 | 68 | ND(10) | ND(10) | ND(50) |
| 14376-2 | 1 @ 8.0 | 2,900 | ND(10) | ND(10) | NR |
| 14375-3 | 2 @ 9.5 | 200 | ND(10) | ND(10) | NR |
| 14376-4 | 3 @ 6.5 | 73 | ND(10) | ND(10) | 110 |

ND = Not Detected; Limit of detection indicated in parentheses.

NR = Not Requested.

QA/QC SUMMARY

| | TPH |
|---|---|
| Duplicate: Relative % Difference | 4 |
| Spike: % Recovery | 106 |

RECEIVED
APR 28 1988
M.G.C. CC



ATTACHMENT 5

Curtis & Tompkins

LABORATORY NUMBER: 14376-2
CLIENT: SUBSURFACE CONSULTANTS
CLIENT ID: 1 @ 8.0
PROJECT: COLLIN'S ST

DATE RECEIVED: 03-16-88
DATE ANALYZED: 03-25-88
DATE REPORTED: 03-29-88


EPA 8020: Volatile Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 5030 - Purge & Trap

| COMPOUND | Result ug/Kg | LOD ug/Kg |
|---|---|---|
| Benzene | 17,000 | 500 |
| Toluene | 64,000 | 2500 |
| Ethyl Benzene | 32,000 | 500 |
| Total Xylenes | 150,000 | 500 |
| Chlorobenzene | ND | 500 |
| 1,4-Dichlorobenzene | ND | 500 |
| 1,3-Dichlorobenzene | ND | 500 |
| 1,2-Dichlorobenzene | ND | 500 |

ND = None Detected. Limit of detection (LOD) in last column.

Curtis & Tompkins

LABORATORY NUMBER: 14376-4
CLIENT: SUBSURFACE CONSULTANTS
CLIENT ID: 3 @ 6.5
PROJECT: COLLIN'S ST

DATE RECIEVED: 03-16-88
DATE ANALYZED: 03-17-88
DATE REPORTED: 03-29-88


EPA 8010: Volatile Halocarbons in Soil & Wastes
Extraction Method: EPA 5030 - Purge & Trap

| Compound | Result ug/Kg | LOD ug/Kg |
|---|---|---|
| chloromethane | ND | 100 |
| bromomethane | ND | 100 |
| vinyl chloride | ND | 100 |
| chloroethane | ND | 100 |
| methylene chloride | ND | 100 |
| trichlorofluoromethane | ND | 100 |
| 1,1-dichloroethene | ND | 100 |
| 1,1-dichloroethane | ND | 100 |
| trans-1,2-dichloroethene | ND | 100 |
| chloroform | ND | 100 |
| freon 113 | ND | 100 |
| 1,2-dichloroethane | ND | 100 |
| 1,1,1-trichloroethane | ND | 100 |
| carbon tetrachloride | ND | 100 |
| bromodichloromethane | ND | 100 |
| 1,2-dichloropropane | ND | 100 |
| cis-1,3-dichloropropene | ND | 100 |
| trichloroethylene | ND | 100 |
| 1,1,2-trichloroethane | ND | 100 |
| trans-1,3-dichloropropene | ND | 100 |
| dibromochloromethane | ND | 100 |
| 2-chloroethylvinyl ether | ND | 100 |
| bromoform | ND | 100 |
| tetrachloroethene | ND | 100 |
| 1,1,2,2-tetrachloroethane | ND | 100 |
| chlorobenzene | ND | 100 |
| 1,3-dichlorobenzene | ND | 100 |
| 1,2-dichlorobenzene | ND | 100 |
| 1,4-dichlorobenzene | ND | 100 |

ND = None Detected. Limit of detection (LOD) in last column.

LABORATORY DIRECTOR

TABLE 1

SOIL SAMPLING RESULTS
SUPPLEMENTAL SITE INVESTIGATION
625 HEGENBERGER ROAD, OAKLAND, CALIFORNIA
(concentrations reported in milligrams per kilogram [mg/kg])

| Boring ID | Depth feet | Date | Benzene | Toluene | Ethyl-benzene | Total Xylenes | TPHg | TPHd | TPHo |
|---|---|---|---|---|---|---|---|---|---|
| LF24 | 3 - 3.5 | 05-Jan-95 | 1.1 | 0.130 | 0.160 | 0.730 | 8.8 | NA | NA |
| | 6 - 6.5 | 05-Jan-95 | 34 | 210 | 72 | 460 | 3,300 | <1 | 65 |
| | 9 - 9.5 | 05-Jan-95 | 5.1 | 38 | 29 | 210 | 1,400 | <1 | 96 |
| | 13.5 - 14 | 05-Jan-95 | 0.180 | 0.016 | 0.067 | 0.046 | 1 | NA | NA |
| LF25 | 6 - 6.5 | 05-Jan-95 | 0.920 | 0.470 | 1.5 | 6.4 | 120 | <1 | 77 |
| | 9 - 9.5 (1) | 05-Jan-95 | 3.3 | 11 | 16 | 77 | 630 | <1 | 40 |
| | 10.5 - 11 | 05-Jan-95 | 0.240 | 0.200 | 0.130 | 0.580 | 9.9 | NA | NA |
| LF26 | 6 - 6.5 | 05-Jan-95 | <0.1 | <0.1 | <0.1 | <0.1 | 69 | 9 | 740 |
| LF27 | 2 - 2.5 | 05-Jan-95 | 0.009 | <0.005 | <0.005 | <0.005 | 0.6 | NA | NA |
| | 6 - 6.5 | 05-Jan-95 | <0.005 | <0.005 | <0.005 | <0.005 | <0.2 | <5 | 450 |
| | 9 - 9.5 | 05-Jan-95 | <0.005 | <0.005 | <0.005 | <0.005 | <0.2 | NA | NA |
| LF28 | 6 - 6.5 | 05-Jan-95 | 0.100 | <0.030 | 0.110 | 0.082 | 1.4 | <1 | 30 |
| | 10.5 - 11 | 05-Jan-95 | <0.005 | <0.005 | <0.005 | <0.005 | <0.2 | <1 | <5 |
| LF29 | 6 - 6.5 | 05-Jan-95 | <0.030 | <0.030 | <0.030 | <0.030 | <1.0 | NA | NA |
| LF30 | 3.5 - 4 | 06-Jan-95 | <0.005 | <0.005 | <0.005 | <0.005 | <0.2 | NA | NA |
| | 7.5 - 8 | 06-Jan-95 | 0.018 | <0.005 | <0.005 | <0.005 | 0.5 | <10 | 100 |
| LF31 | 3 - 3.5 | 06-Jan-95 | <0.030 | <0.030 | <0.030 | <0.030 | <1.0 | NA | NA |
| | 7.5 - 8 | 06-Jan-95 | 0.027 | <0.005 | <0.005 | <0.005 | 0.5 | <1 | <5 |
| LF32 | 8 - 8.5 | 06-Jan-95 | <0.005 | <0.005 | <0.005 | <0.005 | <0.2 | <1 | <5 |
| LF33 | 8 - 8.5 | 06-Jan-95 | 1.7 | 0.420 | 4.8 | 5.3 | 180 | <5 | 65 |
| LF34 | 6 - 6.5 | 06-Jan-95 | <0.005 | <0.005 | <0.005 | <0.005 | <0.2 | <10 | 2,500 |
| LF35 | 8.5 - 9 | 06-Jan-95 | <0.005 | <0.005 | <0.005 | <0.005 | <0.2 | <1 | <5 |
| LF36 | 9 - 9.5 | 06-Jan-95 | <0.005 | <0.005 | <0.005 | <0.005 | <0.2 | <1 | 8 |

Data entered by KAC/26 Jan 95 Data proofed by SXS QA/QC by SXS 20 Jan 95.

TPHg - Total petroleum hydrocarbons as gasoline by EPA Method 5030. GCFID
TPHd - Total petroleum hydrocarbons as diesel by EPA Method 3550, GCFID
TPHo - Total petroleum hydrocarbons as oil by EPA Method 3550, GCFID
Benzene, toluene, ethylbenzene, and total xylenes by EPA Method 8020
NA - not analyzed
(1) The values for benzene, toluene, ethyl benzene, total xylenes, and TPHg represent estimated concentrations, as the percent of surrogate recovery for EPA method 8020 and 5030/GCFID analysis was outside the quality control limits.

Analyses performed by American Environmental Network, Pleasant Hill, California.

Table 1. Petroleum Hydrocarbon Concentrations in Soil



| Sample Designation | TVH[1] (ppm)[4] | TEH[2] (ppm) | TOC[3] (ppm) |
|---|---|---|---|
| 1 @ 4.5' | TNR[5] | 68[7] | ND |
| 1 @ 8.0' | TNR | 2900[7] | TNR |
| 2 @ 9.5' | TNR | 200[7] | TNR |
| 3 @ 6.5' | TNR | 73[7] | 110 |
| 4 @ 6.0' | ND | ND | ND |
| 4 @ 8.0' | 11 | ND | ND |
| 5 @ 4.0' | 28 | ND | 200 |
| 5 @ 5.0' | 9.5 | 610 | 69 |
| 5 @ 7.5' | 5.3 | ND | 7200 |
| 5 @ 8.0' | 200 | 290 | 50 |
| 6 @ 2.0' | 25 | 19 | 260 |
| 6 @ 6.0' | 5600 | 640 | 150 |
| 6 @ 7.5' | 2100 | ND | 50 |
| 6 @ 10.5' | 3500 | ND | ND |
| 7 @ 6.0' | 1500 | 6400 | 100,000 |
| 7 @ 7.5' | 2200 | 520 | 1800 |
| 7 @ 10.5' | ND | ND | ND |
| 8 @ 4.0' | 75 | 120 | 23,000 |
| 8 @ 6.5' | 4.1 | ND | ND |
| 9 @ 5.0' | 170 | 5000 | 40,000 |
| 9 @ 6.5' | 150 | 2100 | 190 |
| 9 @ 9.0' | ND | ND | ND |
| 10 @ 2.5 | TNR | TNR | ND |
| 11 @ 2.5' | TNR | TNR | 68 |
| 12 @ 2.5' | TNR | TNR | 5400 |
| 13 @ 1.5' | ND | ND | 390 |
| 13 @ 4.5' | ND | 26 | 1300 |
| 14 @ 5.5' | ND | ND | ND |
| 15 @ 1.5' | 590 | ND | 310 |
| 16 @ 8.0' | ND | ND | ND |

Table 1 (cont.)

| Sample Designation | TVH[1] (ppm)[4] | TEH[2] (ppm) | TOC[3] (ppm) |
|---|---|---|---|
| 17 @ 2.5' | ND | ND | 63 |
| 17 @ 11' | ND | ND | ND |
| 18 @ 4' | ND | 24 | 89 |
| 19 @ 1.5' | ND | 55 | 390 |
| 20 @ 5.5' | 100 | 29 | ND |
| 20 @ 11' | 250 | 15 | ND |
| 21 @ 3' | ND | ND | ND |
| 21 @ 10' | ND | ND | ND |
| 22 @ 8' | 1000 | ND | ND |
| 23 @ 2.5' | ND | 27 | ND |
| 23 @ 11' | ND | ND | ND |

---

1 As determined by EPA Method 8015 modified after purge and trap extraction (EPA 5030)

2 As determined by EPA Method 8015 modified after sonication extraction (EPA 3550)

3 As determined by SMWW17:5520F

4 ppm = parts per million = milligrams per kilogram = mg/kg

5 TNR = Test not requested

6 ND = None detected, chemicals not present at concentrations above detection limits presented on test reports

7 Quantified as gasoline by laboratory

Table 2. Organic Lead in Soil and Ethylene Dibromide Concentrations

| Sample Description | Organic[1] Lead (ppm)[3] | Ethylene[2] Dibromide (ppm) |
|---|---|---|
| 5 @ 5.0' | ND[4] | TNR[5] |
| 5 @ 7.5' | ND | ND |
| 6 @ 2.0' | ND | TNR |
| 6 @ 7.5' | 0.9 | ND |
| 7 @ 7.5' | ND | ND |
| 8 @ 4.0' | ND | ND |

DRAFT

---

1 As determined by DHS Method presented in LUFT Manual
2 As determined by EPA Method 8010
3 ppm = parts per million
4 ND = None detected, chemicals not present at concentrations above detection limits presented on test reports.
5 TNR = Test not requested

Table 3. Lead Concentrations in Soil

| Sample Designation | Lead[1] Concentration (ppm)[2] | Soluble Lead |
|---|---|---|
| 5 @ 5.0' | 29 | -- |
| 5 @ 7.5' | 12 | -- |
| 6 @ 2.0' | 99 | -- |
| 7 @ 7.5' | 12 | -- |
| 8 @ 4.0' | 380 | -- |
| 10 @ 2.5' | 120 | 6.2 |
| 11 @ 2.5' | 7.9 | -- |
| 12 @ 2.5' | 22 | -- |
| 13 @ 1.5' | 86 | 1.3 |
| 17 @ 7.5' | 94 | 14 |
| 19 @ 1.5' | 270 | 8.1 |
| 20 @ 5.5' | 95 | .54 |
| Regulatory Criteria | 1000 | 5 |

[1] As determined by EPA Method 7420

[2] ppm = parts per million = milligrams per kilogram = mg/kg

Table 4. Semi-volatile Organics and Cyanide Concentrations in Soil

| Sample Designation | Concentration (ppm)[1] |
|---|---|
| **5 @ 5.0'** | |
| Semi-volatile organics[2] | ND[3] |
| **Borings 13, 17 & 19 @ 1.5 to 2.5 feet** | |
| Semi-volatile organics | ND |
| Cyanide | 0.49 |
| **Borings 5, 9 & 20 at 2.0 yo 5.5 feet** | |
| Semi-volatile organics | ND |
| Cyanide | ND |

1 ppm = parts per million = milligrams per kilogram = mg/kg

2 As determined by EPA Method 8270 which includes the compounds listed on the test reports in the Appendix

3 ND = None detected, compounds not present at concentrations above detection limits

Table 5. Heavy Metal Concentrations in Soil Composites

| Total Metal | Composite Concentrations A[1] (ppm)[5] | Composite Concentrations B[2] (ppm) | Regulatory Criteria STLC[3] (ppm) | Regulatory Criteria TTLC[4] (ppm) |
|---|---|---|---|---|
| Antimony (Sb) | ND[6] | ND | 15 | 500 |
| Arsenic (As) | ND | ND | 5 | 500 |
| Barium (Ba) | 190 | 170 | 100[7] | 10,000[8] |
| Beryllium (Be) | ND | 0.5 | 0.75 | 75 |
| Cadmium (Cd) | 2.0 | 1.4 | 1.0 | 100 |
| Chromium (Cr)[9] | 31 | 30 | 560 | 2,500 |
| Cobalt (Co) | 11 | 13 | 80 | 8,000 |
| Copper (Cu) | 51 | 36 | 25 | 2,500 |
| Lead (Pb) | 170 | 99 | 5 | 1,000 |
| Mercury (Hg) | ND | 0.2 | 0.2 | 20 |
| Molybdenum (Mo) | ND | ND | 350 | 3,500 |
| Nickel (Ni) | 50 | 48 | 20 | 2,000 |
| Selenium (Se) | ND | ND | 1.0 | 1,000 |
| Silver (Ag) | ND | ND | 5 | 500 |
| Thallium (Tl) | ND | ND | 7.0 | 700 |
| Vanadium(V) | 23 | 20 | 24 | 2,400 |
| Zinc (Zn) | 170 | 120 | 250 | 5,000 |

1 Composite includes samples 13 @ 1.5', 17 @ 2.5' and 19 @ 1.5'
2 Composite includes samples 5 @ 2.0', 9 @ 3.5' and 20 @ 5.5'
3 Soluble Threshold Limit Concentration (22 CAC 66699). Provided for reference only and should not be compared to test results.
4 Total Threshold Limit Concentration (CAC 666999)
5 ppm = parts per million = milligrams per kilogram = mg/kg
6 ND = None detected
7 Excluding Barite
8 Excluding Barite and Barium Sulfate
9 Total Chromium compounds

Table 6. Petroleum Hydrocarbon, Lead and Ethylene Dibromide Concentrations in Groundwater

| Sample Description | TVH[1] (ppb)[7] | TEH[2] (ppm)[8] | TOG[3] (ppm) | Organic[4] Lead (ppm) | Total[5] Lead (ppm) | Ethylene[6] Dibromide (ppm) |
|---|---|---|---|---|---|---|
| MW 8 | 18000 | ND[9] | ND | ND | ND | ND |
| MW10 | ND | ND | ND | ND | ND | ND |
| MW11 | 240 | ND | ND | ND | 0.21 | ND |
| MW12 | ND | ND | ND | ND | ND | ND |
| MW16 | 380 | ND | ND | ND | ND | TNR[10] |

Table 7. BTXE Concentrations in Groundwater

| Sample Description | Benzene[11] (ppb) | Toluene[11] (ppb) | Xylene[11] (ppb) | Ethylbenzene[11] (ppb) |
|---|---|---|---|---|
| MW 8 | 3700 | ND | 690 | 290 |
| MW10 | 1.7 | ND | ND | ND |
| MW11 | 53 | ND | ND | ND |
| MW12 | ND | ND | ND | ND |
| MW16 | ND | ND | ND | ND |

1 As determined by EPA Method 8015 modified after purge and trap extraction (EPA 5030)
2 As determined by EPA Method 8015 modified after sonication extraction (EPA 3550)
3 As determined by SMWW17:5520F
4 As determined by EPA Method 7420
5 As determined by DHS Method presented in Luft Manual
6 As determined by EPA Method 504
7 ppb = parts per billion = micrograms per Liter = ug/L
8 ppm = parts per million = milligrams per Liter = mg/L
9 ND = None detected, chemicals not present at concentrations above detection limits presented on test reports
10 TNR = Test not requested
11

Table 4: Summary of Bottom Sample Results

| Sample Number | Sample Date | Depth ft bgs | TPHg mg/kg | Benz. mg/kg | Toluene mg/kg | Ethyl-benzene mg/kg | Xylenes mg/kg | TOG mg/kg |
|---|---|---|---|---|---|---|---|---|
| BN | 4/10/96 | 6 | 2700 | 7.1 | 23 | 34 | 170 | NA |
| BNW | 4/10/96 | 6 | 500 | 1.8 | 9.7 | 7.0 | 38 | NA |
| BW | 4/10/96 | 6 | 920 | 4.6 | 4.1 | 11 | 39 | NA |
| BSW | 4/10/96 | 6.5 | 550 | 16 | 1.2 | 6.9 | 5.0 | NA |
| BS | 4/10/96 | 6 | 1100 | 8.6 | 21 | 19 | 110 | NA |
| BSE | 4/10/96 | 6 | 6.2 | 0.69 | 0.005 | 0.1 | 0.085 | NA |
| BE | 4/10/96 | 6.5 | 130 | 1.4 | <0.05 | <0.5 | 6.3 | NA |
| BNE | 4/10/96 | 6.5 | <1 | <0.005 | <0.005 | <0.005 | <0.01 | NA |
| EP4 | 4/10/96 | 6.5 | 4.1 | 0.11 | 0.006 | 0.21 | 0.021 | NA |
| WP3 | 4/10/96 | 6 | NA | NA | NA | NA | NA | 18 |

mg/kg = ppm
NA = Not Analyzed
BN = Bottom North Sample

Bottom samples were strictly intended to document soil conditions in the vadous zone. AEI did not excavate any soil beyond the water table.

### *2.5 Soil Stockpiling*

All soil excavated was stockpiled around the tankhold. An effort was made to keep soil excavated from the same general location together. Furthermore, any soil excavated from an area known to be contaminated with waste oil or any soil exhibiting visual characteristics of waste oil contamination was stockpiled separately.

The soil was stockpiled on top of six mil plastic sheets and then covered with plastic to prevent uncontrolled vapor releases and stormwater runoff. Soil was stockpiled in a total of eight piles. Each pile was numbered and as is shown in Figure 5, stockpiles #1, #2, #3, #4, #6, and #7 were gasoline contaminated soil piles and stockpiles #5 and #8 were waste oil contaminated soil piles.

### *2.6 Baseline Soil Sampling and Analysis*

A total of sixteen composite soil samples were collected from 1,200 cy of soil excavated by AEI in April, 1996 and six composite soil samples were collected from the 300 cy of soil excavated in 1993 at the time of the tankpull. Each of the baseline soil samples was a

Table 2: Summary of Initial Sidewall Samples Results

| Sample Number | Sample Date | Depth ft bgs | TPHg mg/kg | Benz. mg/kg | Toluene mg/kg | Ethyl-benzene mg/kg | Xylenes mg/kg | TOG mg/kg |
|---|---|---|---|---|---|---|---|---|
| SW-1 | 4/9/96 | 5 | <1 | 0.028 | <0.005 | <0.005 | <0.01 | NA |
| SW-2 | 4/9/96 | 4.5 | 2.2 | 0.044 | 0.017 | 0.066 | 0.31 | NA |
| SW-3 | 4/9/96 | 5 | <1 | 0.025 | <0.005 | <0.005 | <0.01 | NA |
| EW-4 | 4/9/96 | 4 | <1 | 0.054 | <0.005 | 0.021 | 0.040 | NA |
| EW-5 | 4/9/96 | 4.5 | <1 | <0.005 | <0.005 | <0.005 | <0.01 | NA |
| NW-6 | 4/9/96 | 4 | <1 | 0.011 | <0.005 | <0.005 | <0.01 | NA |
| NW-7 | 4/9/96 | 4.5 | <1 | 0.049 | 0.061 | 0.032 | 0.19 | NA |
| NW-8 | 4/9/96 | 4.5 | <1 | 0.070 | <0.005 | 0.017 | 0.032 | NA |
| WW-9 | 4/9/96 | 4.5 | <1 | 0.035 | <0.005 | 0.006 | 0.030 | NA |
| WW-10 | 4/9/96 | 4 | <1 | <0.005 | <0.005 | <0.005 | <0.01 | NA |
| WW-11 | 4/9/96 | 5 | 1.6 | 0.23 | 0.062 | 0.032 | 0.12 | NA |
| EP1 | 4/10/96 | 4.5 | 1.9 | 0.005 | <0.005 | 0.007 | 0.011 | NA |
| EP2 | 4/10/96 | 4.5 | 1.1 | 0.20 | 0.011 | 0.006 | 0.014 | NA |
| EP3 | 4/10/96 | 4 | <1 | [illegible] | <0.005 | <0.005 | <0.01 | NA |
| WP1 | 4/10/96 | 5 | NA | NA | NA | NA | NA | 16 |
| WP2 | 4/10/96 | 5 | NA | NA | NA | NA | NA | 100 |

mg/kg = ppm
NA = Not Analyzed
SW-1 = South Wall Sample Number 1
Shaded samples are above the action level.

Samples EP1, NW8, and EW4 were considered above the action level. AEI returned on several occasions to excavate additional materials and collected more confirmation samples. AEI found significant contamination in the area of the former dispencer islands.

Table 3 shows the results of the additional sidewall samples and Figure 4 show the sample locations.

Table 3: Summary of Additional Sidewall Samples Results

| Sample Number | Sample Date | Depth ft bgs | TPHg mg/kg | Benz. mg/kg | Toluene mg/kg | Ethyl-benzene mg/kg | Xylenes mg/kg | TOG mg/kg |
|---|---|---|---|---|---|---|---|---|
| EP5 | 5/8/96 | 4.5 | <1 | 0.22 | 0.051 | 0.008 | 0.10 | NA |
| EP6 | 5/8/96 | 4.5 | <1 | 0.13 | 0.013 | 0.006 | 0.034 | NA |
| EP7 | 5/8/96 | 4.5 | 2.4 | 0.25 | 0.19 | 0.012 | 0.063 | NA |
| EW17 | 5/8/96 | 5 | <1 | <0.005 | <0.005 | <0.005 | <0.01 | NA |
| EP8 | 7/12/96 | 5 | <1 | <0.005 | <0.005 | <0.005 | <0.01 | NA |
| EP9 | 7/12/96 | 5 | <1 | <0.005 | <0.005 | <0.005 | <0.01 | NA |
| EP10 | 7/12/96 | 4.5 | <1 | <0.005 | <0.005 | <0.005 | <0.01 | NA |
| EP11 | 7/12/96 | 4.5 | <1 | 0.005 | <0.005 | <0.005 | <0.01 | NA |
| NW18 | 7/12/96 | 5 | <1 | 0.005 | <0.005 | <0.005 | <0.01 | NA |
| EW12 | 4/12/96 | 5 | 38 | 0.060 | 0.43 | 0.28 | 2.0 | NA |
| NW13 | 4/12/96 | 4.5 | <1 | 0.018 | <0.005 | <0.005 | <0.01 | NA |
| NW14 | 4/12/96 | 4.5 | 25 | 0.21 | 1.0 | 0.14 | 1.0 | NA |
| WW15 | 4/12/96 | 5 | <1 | <0.005 | <0.005 | <0.005 | <0.01 | NA |
| WW16 | 4/12/96 | 5 | <1 | <0.005 | <0.005 | <0.005 | <0.01 | NA |

mg/kg = ppm
NA = Not Analyzed
SW-1 = South Wall Sample Number 1
Shaded samples are above the action level.

Eventually, a clean ring of perimeter soil samples was established with no more than 20' between any given sample along the perimeter.

An additional, ten soil samples were collected from the excavation floor within 6 inches of the water table. The analytical results for the bottom samples and the side wall samples are as follows.

## *2.7 Soil Profiling*

As soil piles # 5 and # 8 were contaminated with non-volatile waste oil and were treated and recycled off-site, more detailed soil analysis was necessary for this soil. As per the requirements of Remedial Environmental Marketing Co., a soil recycling firm in Richmond, California, profiling of the soil consisted of the following analyses: Reactivity, Corrosively, and Ignitablity, the LUFT 5 Metals. Table 5 shows that laboratory data for this one composite soil sample, which was collected from piles #5 and #8.

Table 6 Soil Profiling

| Analyses | Sample--Comp 5 |
|---|---|
| Reactivity Cyanide | <0.1 mg/Kg |
| Reactivity Sulfide | <0.1 mg/Kg |
| Corrosively | 7.5 pH |
| Ignitabiltiy | < 200 deg F |
| Lead | <1 mg/Kg |
| Cadmium | <1 mg/Kg |
| Chromium | 40 mg/Kg |
| Nickel | 61 mg/Kg |
| Zinc | 110 mg/Kg |

The analyses revealed no signs of hazardous components in the waste oil contaminated soil. These analyses showed the soil was eligible for treatment at Remedial Environmental Marketing Co..

## Table 5: Baseline Soil Sample Results

| Sample Number | Pile | Sample Date | TPHg mg/kg | Benz. mg/kg | Toluene mg/kg | Ethyl-benzene mg/kg | Xylenes mg/kg |
|---|---|---|---|---|---|---|---|
| OSP-1 | #3 | 4/9/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| OSP-2 | #3 | 4/9/96 | 1.9 | 0.050 | 0.12 | 0.062 | 0.34 |
| OSP-3 | #3 | 4/9/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| OSP-4 | #3 | 4/9/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| OSP-5 | #3 | 4/9/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| OSP-6 | #3 | 4/9/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| COMP P2C1 | #2 | 4/22/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| COMP P2C2 | #2 | 4/22/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| COMP P2C3 | #2 | 4/22/96 | <1 | <0.005 | <0.005 | <0.005 | 0.020 |
| COMP P2C4 | #2 | 4/22/96 | 8.0 | 0.012 | 0.018 | 0.028 | 0.17 |
| COMP P2C5 | #2 | 4/22/96 | <1 | 0.012 | <0.005 | <0.005 | <0.01 |
| COMP P2C6 | #2 | 4/22/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| COMP P2C7 | #2 | 4/22/96 | <1 | <0.005 | <0.005 | <0.005 | 0.016 |
| COMP P4C8 | #4 | 4/22/96 | 9.4 | 0.033 | 0.009 | 0.047 | 0.22 |
| COMP P4C9 | #4 | 4/22/96 | 230 | <0.05 | 0.76 | 1.7 | 7.7 |
| COMP P4C10 | #4 | 4/22/96 | 3.4 | 0.012 | 0.030 | 0.042 | 0.42 |
| COMP P4C11 | #4 | 4/22/96 | 1.1 | <0.005 | 0.005 | 0.007 | 0.11 |
| COMP P4C12 | #4 | 4/22/96 | 3.2 | 0.006 | 0.017 | 0.039 | 0.55 |
| COMP P4C13 | #4 | 4/22/96 | 3.9 | 0.055 | 0.028 | 0.14 | 0.69 |
| COMP P4C14 | #4 | 4/22/96 | 4.0 | 0.014 | 0.096 | 0.046 | 0.57 |
| Comp P6-C14 | #6 | 5/8/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| Comp P6-C15 | #6 | 5/8/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| Comp P6-C16 | #6 | 5/8/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| Comp P6-C17 | #6 | 5/8/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| Comp P6-C18 | #6 | 5/8/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| Comp P7-S1 | #7 | 7/16/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| Comp P7-S2 | #7 | 7/16/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |

mg/kg = milligrams per kilogram
NA = Not Analyzed
OSP-1=Sample #1 from previous excavation
COMP P6C14 = Composite sample from Pile #6, Cell #14

samples were analyzed for Total Petroleum Hydrocarbons-Gasoline (TPH-Gas) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8020/8015.

The soil sample locations were selected from random locations throughout the cell. All soil samples were collected from soil six inches below ground surface or deeper, as the soil on the surface would more likely be free of contamination.

The twelve soil samples collected on June 19, 1996 from the first batch of aerated soil was found to have the following contaminant concentrations.

Table 7 Confirmation Soil Sample Analysis--Batch #A

| Sample Number | Sample Date | TPHg mg/kg | Benz. mg/kg | Toluene mg/kg | Ethyl-benzene mg/kg | Xylenes mg/kg |
|---|---|---|---|---|---|---|
| AR1 | 6/19/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| AR2 | 6/19/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| AR3 | 6/19/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| AR4 | 6/19/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| AR5 | 6/19/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| AR6 | 6/19/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| AR7 | 6/19/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| AR8 | 6/19/96 | <1 | 0.007 | 0.011 | <0.005 | <0.01 |
| AR9 | 6/19/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| AR10 | 6/19/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| AR11 | 6/19/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| AR12 | 6/19/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |

mg/kg = ppm
AR1 = Sample #1 of Random Sampling--Batch A

As only one sample (AR8) of the twelve soil samples collected contained detectable concentrations of the chemicals analyzed, the soil was considered to have satisfied the action level and was eligible for backfilling. EPA SW846 normally requires statistical analysis of analytical data to determine if the appropriate confidence interval has been reached; however, as 11 of 12 soil samples had results below the detection limit, statistical analysis was not necessary.

Similarly, on September 9, 1996 a total of 10 soil samples were collected and analyzed from random locations within the second batch of aerating soil and the results are as follows.

Table 8 Confirmation Soil Sample Analysis--Batch #2

| Sample Number | Sample Date | TPHg mg/kg | Benz. mg/kg | Toluene mg/kg | Ethyl-benzene mg/kg | Xylenes mg/kg |
|---|---|---|---|---|---|---|
| B1 | 9/5/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| B2 | 9/5/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| B3 | 9/5/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| B4 | 9/5/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| B5 | 9/5/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| B6 | 9/5/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| B7 | 9/5/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| B8 | 9/5/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |
| B9 | 9/5/96 | <1 | <0.005 | <0.005 | <0.005 | 0.010 |
| B10 | 9/5/96 | <1 | <0.005 | <0.005 | <0.005 | <0.01 |

mg/kg = ppm
1 = Sample #1 of Random Sampling--Batch B.

As only one sample (B9) of the ten soil samples collected contained detectable concentrations of the chemicals analyzed, the soil samples were considered to have satisfied the action level and was eligible for backfilling. EPA SW846 normally requires statistical analysis of analytical data to determine if the appropriate confidence interval has been reached; however, as 9 of 10 soil samples had results below the detection limit, statistical analysis was not necessary.

In general, twenty two soil samples were collected from approximately 1,480 cy of soil and no significant hydrocarbon concentrations were detected. ACHCSA was provided these soil sample results in letters dated July 10, 1996 and September 17, 1996 and Mr. Barney Chan verbally approved of AEI's decision to backfill each batch of soil.

### *3.4 Off-Site Soil Recycling*

The fifteen cubic yards of soil contaminated with waste oil was profiled as discussed in Section 2.7 and then shipped to Remedial Environmental Marketing Co. Inc. in Richmond, California under proper waste manifests (see Appendix D). The materials were manifested non-hazardous and hauled by Barr's Bobcat. Remedial Environmental Marketing Co. treated the soil using low temperature thermal desorbtion and recycled the material as asphalt aggregate.

TABLE 1
SOIL SAMPLING ANALYSIS RESULTS FOR STOCKPILED SOILS
UST REMOVAL
625 HEGENBERGER ROAD, OAKLAND, CALIFORNIA
(concentrations reported in milligrams per kilogram [mg/kg])

| Sample ID | Date | Benzene | Toluene | Ethyl-benzene | Total Xylenes | TPHg | TPHd | TPHo | Oil & Grease | Organic Lead | Total Lead |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SP1 | 21-Oct-93 | <0.20 | 2.0 | 2.8 | 76 | 1,100 | 140 | 900 | 1,400 | 1.6 | 29 |
| SP2 | 21-Oct-93 | 0.40 | 6.2 | 7.4 | 65 | 990 | <20 | 11,000 | 5,700 | 9.1 | 48 |
| SP3 | 21-Oct-93 | 0.41 | 4.3 | 4.2 | 120 | 1,400 | <20 | 2,900 | 2,700 | 4.5 | 49 |
| SP4 | 21-Oct-93 | 0.44 | 4.4 | 1.6 | 92 | 1,000 | 40 | 1,300 | 1,700 | 2.1 | 30 |
| SP5 | 21-Oct-93 | 0.45 | 11.0 | 12.0 | 180 | 1,900 | 34 | 510 | 1,200 | 0.7 | 27 |
| SP6 | 21-Oct-93 | <0.20 | 3.0 | 1.5 | 49 | 780 | 17 | 380 | 730 | 2.2 | 13 |
| TTLC | | --- | --- | --- | --- | --- | --- | --- | --- | 13 | 1,000 |

Data entered by MEK/12 Nov 93 Data proofed by SWH QA/QC by SWH

TPHg - Total petroleum hydrocarbons as gasoline by EPA Method 5030, GCFID
TPHd - Total petroleum hydrocarbons as diesel by EPA Method 3350, GCFID
TPHo - Total petroleum hydrocarbons as oil by EPA Method 3550, GCFID
Oil and grease by Standard Method 5520 F
Benzene, toluene, ethylbenzene, and total xylenes by EPA Method 8020
Organic lead by DHS Method
Total lead by EPA Method 7420

TTLC - State of California total threshold limit concentration (Source: California Code of Regulations, Title 22)

Analyses performed by American Environmental Network, Pleasant Hill, California.

## Table 2
## Groundwater Sample Analytical Data

| | Date | TPH-g µg/L | TPH-d µg/L | TPH-o µg/L | Benzene µg/L | Toluene µg/L | Ethyl-benzene µg/L | Xylenes µg/L | MTBE µg/L | MTBE µg/L | DIPE µg/L | ETBE µg/L | TAME µg/L | TBA µg/L | EBD µg/L | 1,2-DCA µg/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPA method 8015M | | | EPA method 8020 | | | | | EPA method 8260B * | | | | | | |
| **MW-8** | 5/28/1993 | 19000 | 1000 | - | 6400 | 28 | 160 | 36 | - | - | - | - | - | - | - | - |
| | 12/22/1993 | 56000 | 300 | <200 | 16000 | 5999.3 | 650 | 2700 | - | - | - | - | - | - | - | - |
| | 6/30/1994 | 41000 | <500 | 500 | 11000 | 4800 | 2200 | 8200 | - | - | - | - | - | - | - | - |
| | 9/27/1994 | 28000 | 620 | <200 | 8500 | 260 | 1600 | 5300 | - | - | - | - | - | - | - | - |
| | 1/10/1995 | 58000 | 70 | <200 | 10000 | 11000 | 2400 | 12000 | - | - | - | - | - | - | - | - |
| | 10/2/1995 | 28000 | <50 | <500 | 51 | 16 | 54 | 80 | - | - | - | - | - | - | - | - |
| | 1/8/1996 | 72000 | 3700 | <250 | 8600 | 13000 | 2200 | 12000 | - | - | - | - | - | - | - | - |
| | 1/8/1996 | 62000 | - | - | 7200 | 9500 | 1600 | 8000 | - | - | - | - | - | - | - | - |
| | 4/25/1996 | 33000 | 3100 | - | 7600 | 2300 | 1500 | 4800 | - | - | - | - | - | - | - | - |
| | 3/25/1997 | 23000 | 1900 | - | 8300 | 80 | 350 | 380 | 1500 | - | - | - | - | - | - | - |
| | 7/3/1997 | 14000 | 1400 | - | 6600 | 32 | 190 | 100 | 1300 | - | - | - | - | - | - | - |
| | 7/3/1997 | 15000 | 1400 | - | 7300 | 34 | 160 | 110 | 1700 | - | - | - | - | - | - | - |
| | 10/2/1997 | 7600 | 810 | - | 3500 | 14 | 37 | 21 | 890 | - | - | - | - | - | - | - |
| | 1/28/1998 | 21000 | 2700 | - | 5500 | 270 | 730 | 780 | 900 | - | - | - | - | - | - | - |
| | 9/9/1999 | 2500 | - | - | 790 | 2.8 | 4.7 | 8 | 380 | - | - | - | - | - | - | - |
| | 2/9/2000 | 39000 | - | - | 6400 | 4300 | 950 | 390 | 460 | - | - | - | - | - | - | - |
| | 8/9/2000 | 5500 | - | - | 1700 | 15 | 130 | 370 | 540 | - | - | - | - | - | - | - |
| | 5/31/2001 | 14,000 | - | - | 2,800 | 63 | 610 | 540 | 370 | - | - | - | - | - | - | - |
| | 8/10/2001 | 4,400 | - | - | 1,200 | 41 | 160 | 170 | 380 | - | - | - | - | - | - | - |
| | 9/25/2001 | 2,100 | - | - | 470 | 7.2 | 6.5 | 7.1 | 210 | - | - | - | - | - | - | - |
| | 12/14/2001 | 1800 | - | - | 230 | 34 | 67 | 150 | 26 | - | - | - | - | - | - | - |
| | 4/8/2002 | 32000 | - | - | 2000 | 820 | 1100 | 2300 | 62 | - | - | - | - | - | - | - |
| | 7/29/2002 | 4300 | - | - | 1200 | 21 | 58 | 69 | 280 | - | - | - | - | - | - | - |
| | 9/11/2002 | 2000 | - | - | 520 | 5.4 | 11 | 8.7 | 430 | 270 | <5.0 | <5.0 | <5.0 | <50 | <5.0 | <5.0 |
| | 8/18/2005 | 3600 | - | - | 390 | 16 | 59 | 57 | <90 | 72 | <2.5 | <2.5 | <2.5 | <25 | <2.5 | <2.5 |
| | **5/8/2008** | **2600** | - | - | **140** | **14** | **30** | **57** | **<25** | **18** | - | - | - | **<5.0** | **<5.0** | **<5.0** |
| **MW-10** | 5/28/1993 | <50 | 54 | - | <0.3 | <0.3 | <0.3 | <0.9 | - | - | - | - | - | - | - | - |
| | 12/22/1993 | <50 | 580 | <200 | <0.5 | <0.7 | <0.5 | <0.2 | - | - | - | - | - | - | - | - |
| | 6/30/1994 | <50 | <50 | 600 | <0.5 | <0.5 | <0.5 | <0.2 | - | - | - | - | - | - | - | - |
| | 9/27/1994 | <50 | 610 | <200 | <0.5 | <0.5 | <0.5 | <0.2 | - | - | - | - | - | - | - | - |
| | 1/10/1995 | <50 | 600 | <200 | <0.5 | <0.5 | <0.5 | <0.2 | - | - | - | - | - | - | - | - |
| | 10/2/1995 | 350 | <50 | <500 | 4.4 | 2.6 | 2.3 | 6.4 | - | - | - | - | - | - | - | - |
| | 1/8/1996 | 50 | <50 | <250 | 5.8 | 7.1 | 1.2 | 6.4 | - | - | - | - | - | - | - | - |
| | 4/25/1996 | <50 | <50 | - | <0.5 | <0.5 | <0.5 | <0.5 | - | - | - | - | - | - | - | - |
| | 3/25/1997 | <50 | <50 | - | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | - | - | - | - | - | - | - |
| | 7/3/1997 | <50 | <50 | - | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | - | - | - | - | - | - | - |
| | 10/2/1997 | <50 | 110 | - | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | - | - | - | - | - | - | - |
| | 1/28/1998 | <50 | <50 | - | 5.7 | <0.5 | <0.5 | <0.5 | <5.0 | - | - | - | - | - | - | - |
| | 8/19/1999 | <50 | - | - | 5.7 | <0.5 | <0.5 | <0.5 | <5.0 | - | - | - | - | - | - | - |
| | 2/9/2000 | <50 | - | - | 5.7 | <0.5 | <0.5 | <0.5 | <5.0 | - | - | - | - | - | - | - |
| | 8/9/2000 | <50 | - | - | 5.7 | <0.5 | <0.5 | <0.5 | <5.0 | - | - | - | - | - | - | - |
| | 5/31/2001 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | - | - | - | - | - | - | - |
| | 8/10/2001 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | - | - | - | - | - | - | - |
| | 9/25/2001 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12/14/2001 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/8/2002 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | - | - | - | - | - | - | - |
| | 9/11/2002 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | 2.3 | <0.5 | <0.5 | <0.5 | <5.0 | <0.5 | <0.5 |
| | 8/18/2005 | <50 | - | - | 1.5 | 3.4 | <0.5 | 2.6 | <5.0 | 2.3 | <0.5 | <0.5 | <0.5 | <5.0 | <0.5 | <0.5 |
| | **5/8/2008** | **<50** | - | - | **<0.5** | **<0.5** | **<0.5** | **<0.5** | **<5.0** | **2.0** | - | - | - | **<5.0** | **<0.5** | **<0.5** |

ATTACHMENT 6

## Table 2: Continued

| | Date | TPH-g µg/L | TPH-d µg/L | TPH-o µg/L | Benzene µg/L | Toluene µg/L | Ethyl-benzene µg/L | Xylenes µg/L | MTBE µg/L | MTBE µg/L | DIPE µg/L | ETBE µg/L | TAME µg/L | TBA µg/L | EBD µg/L | 1,2-DCA µg/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPA method 8015M | | | EPA method 8020 | | | | | EPA method 8260B | | | | | | |
| **MW-11** | 5/28/1993 | 1200 | <50 | - | 450 | 17 | 1.5 | 2.1 | - | - | - | - | - | - | - | - |
| | 12/22/1993 | 9200 | 530 | <200 | 4500 | 38.3 | 12 | 43 | - | - | - | - | - | - | - | - |
| | 6/30/1994 | 8800 | <50 | 1100 | 1500 | 13 | 690 | 1200 | - | - | - | - | - | - | - | - |
| | 6/30/1994 | 9700 | - | - | 1700 | 14 | 730 | 1300 | - | - | - | - | - | - | - | - |
| | 9/27/1994 | 15000 | 910 | <200 | 6500 | 26 | 870 | 590 | - | - | - | - | - | - | - | - |
| | 1/10/1995 | 14000 | 1100 | <200 | 890 | 220 | 840 | 2400 | - | - | - | - | - | - | - | - |
| | 10/2/1995 | 7100 | <50 | <500 | 47 | 5.7 | 11 | 36 | - | - | - | - | - | - | - | - |
| | 1/8/1996 | 12000 | 2000 | <250 | 1200 | 99 | 790 | 1400 | - | - | - | - | - | - | - | - |
| | 4/25/1996 | 5800 | 1400 | - | 230 | 59 | 200 | 770 | - | - | - | - | - | - | - | - |
| | 3/25/1997 | 760 | 490 | - | 130 | 49 | 2.9 | 1 | 130 | - | - | - | - | - | - | - |
| | 7/3/1997 | 290 | <50 | - | <0.5 | <0.5 | 600 | <0.5 | 380 | - | - | - | - | - | - | - |
| | 10/2/1997 | 220 | 220 | - | 8.8 | 0.73 | <0.5 | 0.67 | 720 | - | - | - | - | - | - | - |
| | 1/28/1998 | 540 | 160 | - | 140 | 0.81 | <0.5 | <0.5 | 360 | - | - | - | - | - | - | - |
| | 8/19/1999 | 590 | - | - | 180 | 3.2 | <0.5 | <0.5 | 720 | - | - | - | - | - | - | - |
| | 2/9/2000 | 680 | - | - | 100 | 3.1 | <0.5 | 2.9 | 280 | - | - | - | - | - | - | - |
| | 8/9/2000 | 350 | - | - | 1.7 | 2.6 | <0.5 | 0.84 | 410 | - | - | - | - | - | - | - |
| | 5/31/2001 | 280 | - | - | 1.1 | 1.6 | 0.25 | 0.25 | 430 | - | - | - | - | - | - | - |
| | 8/10/2001 | 300 | - | - | 0.95 | 1.6 | 0.25 | 0.66 | 340 | - | - | - | - | - | - | - |
| | 9/25/2001 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12/14/2001 | 250 | - | - | 2.8 | 1.7 | 0.25 | 0.9 | 300 | - | - | - | - | - | - | - |
| | 4/8/2002 | 86 | - | - | 0.7 | 0.77 | <0.5 | <0.5 | 300 | | | | | | | |
| | 9/11/2002 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | 320 | 250 | <2.5 | <2.5 | <2.5 | 98 | <2.5 | <2.5 |
| | 8/18/2005 | 56 | - | - | 1.2 | 2.9 | 0.54 | 2.5 | 150 | 160 | <2.5 | <2.5 | <2.5 | 83 | <2.5 | <2.5 |
| | **5/14/2008** | **360** | **-** | **-** | **4.2** | **1.2** | **<0.5** | **0.51** | **150** | **170** | **-** | **-** | **<5.0** | **45** | **<5.0** | **<5.0** |
| **MW-12** | 5/28/1993 | <50 | <50 | - | <0.3 | <0.3 | <0.3 | <0.9 | - | - | - | - | - | - | - | - |
| | 12/22/1993 | 50 | 300 | <200 | <0.5 | <0.7 | <0.5 | <0.2 | - | - | - | - | - | - | - | - |
| | 6/30/1994 | <50 | <50 | 400 | <0.5 | <0.5 | <0.5 | <0.2 | - | - | - | - | - | - | - | - |
| | 9/27/1994 | <50 | 400 | <200 | <0.5 | <0.5 | <0.5 | <0.2 | - | - | - | - | - | - | - | - |
| | 9/27/1994 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.2 | - | - | - | - | - | - | - | - |
| | 1/10/1995 | <50 | 300 | <200 | <0.5 | <0.5 | <0.5 | <0.2 | - | - | - | - | - | - | - | - |
| | 10/2/1995 | <50 | <50 | <500 | <0.5 | <0.5 | <0.5 | <0.5 | - | - | - | - | - | - | - | - |
| | 1/8/1996 | <50 | <50 | <250 | 2.4 | 2.7 | 0.54 | 2.8 | - | - | - | - | - | - | - | - |
| | 4/25/1996 | <50 | <50 | - | <0.5 | <0.5 | <0.5 | <0.5 | - | - | - | - | - | - | - | - |
| | 3/25/1997 | <50 | <50 | - | <0.5 | <0.5 | <0.5 | <0.5 | 16 | - | - | - | - | - | - | - |
| | 7/3/1997 | <50 | <50 | - | <0.5 | <0.5 | <0.5 | <0.5 | 16 | - | - | - | - | - | - | - |
| | 10/2/1997 | <50 | 120 | - | <0.5 | <0.5 | <0.5 | <0.5 | 17 | - | - | - | - | - | - | - |
| | 1/28/1998 | <50 | <50 | - | 1.3 | <0.5 | <0.5 | <0.5 | 13 | - | - | - | - | - | - | - |
| | 8/19/1999 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | 9.1 | - | - | - | - | - | - | - |
| | 2/9/2000 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | 6.2 | - | - | - | - | - | - | - |
| | 8/9/2000 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | 6.4 | - | - | - | - | - | - | - |
| | 5/31/2001 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | 6.5 | - | - | - | - | - | - | - |
| | 8/10/2001 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | 5.3 | - | - | - | - | - | - | - |
| | 9/25/2001 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12/14/2001 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/8/2002 | 51 | - | - | 3.1 | 0.98 | 1.2 | 2 | <5.0 | - | - | - | - | - | - | - |
| | 9/11/2002 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | 6.2 | 3.6 | <0.5 | <0.5 | <0.5 | <5.0 | <0.5 | <0.5 |
| | 8/18/2005 | <50 | - | - | 1.1 | 3.1 | <0.5 | 2.5 | <5.0 | 3.6 | <0.5 | <0.5 | <0.5 | <5.0 | <0.5 | <0.5 |
| | **5/8/2008** | **<50** | **-** | **-** | **<0.5** | **<0.5** | **<0.5** | **<0.5** | **<5.0** | **2.5** | **-** | **-** | **-** | **<0.5** | **<0.5** | **<0.5** |

## Table 2: Continued

| | Date | TPH-g µg/L | TPH-d µg/L | TPH-o µg/L | Benzene µg/L | Toluene µg/L | Ethyl-benzene µg/L | Xylenes µg/L | MTBE µg/L | MTBE µg/L | DIPE µg/L | ETBE µg/L | TAME µg/L | TBA µg/L | EBD µg/L | 1,2-DCA µg/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPA method 8015M | | | EPA method 8020 | | | | | EPA method 8260B | | | | | | |
| **MW-16** | 5/28/1993 | <50 | <50 | - | 2.8 | 0.3 | <0.7 | <0.9 | - | - | - | - | - | - | - | - |
| | 12/22/1993 | 2200 | 520 | <200 | <0.5 | <0.7 | <0.5 | <0.2 | - | - | - | - | - | - | - | - |
| | 6/30/1994 | <50 | <50 | 900 | 8 | <0.5 | <0.5 | <0.2 | - | - | - | - | - | - | - | - |
| | 9/27/1994 | 70 | 590 | <200 | 17 | <0.5 | <0.5 | <0.2 | - | - | - | - | - | - | - | - |
| | 1/10/1995 | 300 | 700 | <200 | 190 | <0.5 | <0.5 | <0.2 | - | - | - | - | - | - | - | - |
| | 10/2/1995 | 550 | <50 | <500 | 7.7 | 0.7 | 3.5 | 13 | - | - | - | - | - | - | - | - |
| | 1/8/1996 | 360 | 140 | <250 | <0.5 | <0.5 | 4 | 9.7 | - | - | - | - | - | - | - | - |
| | 4/25/1996 | 1100 | 330 | - | 390 | 3.7 | 3.2 | 14 | - | - | - | - | - | - | - | - |
| | 3/25/1997 | 310 | 120 | - | <0.5 | <0.5 | <0.5 | 1.4 | 2100 | - | - | - | - | - | - | - |
| | 7/3/1997 | 250 | 130 | - | <0.5 | <0.5 | <0.5 | <0.5 | 1900 | - | - | - | - | - | - | - |
| | 10/2/1997 | 290 | 180 | - | <0.5 | <0.5 | <0.5 | <0.5 | 2000 | - | - | - | - | - | - | - |
| | 1/28/1998 | 150 | 130 | - | <0.5 | <0.5 | <0.5 | <0.5 | 1900 | - | - | - | - | - | - | - |
| | 9/9/1999 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | 880 | - | - | - | - | - | - | - |
| | 2/9/2000 | <50 | - | - | <0.5 | 0.6 | <0.5 | 8.7 | 88 | - | - | - | - | - | - | - |
| | 8/9/2000 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | 800 | - | - | - | - | - | - | - |
| | 5/31/2001 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | 69 | - | - | - | - | - | - | - |
| | 8/10/2001 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | 300 | - | - | - | - | - | - | - |
| | 9/25/2001 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12/14/2001 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/8/2002 | <50 | - | - | 1.7 | 0.61 | 0.78 | 1.4 | 45 | - | - | - | - | - | - | - |
| | 9/11/2002 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | 280 | 250 | <2.5 | <2.5 | <2.5 | 33 | <2.5 | <2.5 |
| | **8/18/2005** | **Well covered / lost** | | | | | | | | | | | | | | |
| **EW-01** | 2/9/2000 | 2600 | - | - | 800 | 48 | 21 | 91 | 750 | - | - | - | - | - | - | - |
| | 8/9/2000 | 6700 | - | - | 2700 | 19 | 120 | 31 | 1300 | - | - | - | - | - | - | - |
| | 5/31/2001 | 3,100 | - | - | 580 | 24 | 36 | 32 | 850 | - | - | - | - | - | - | - |
| | 8/10/2001 | 210 | - | - | 14 | 2.2 | 1.0 | 1.1 | 620 | - | - | - | - | - | - | - |
| | 9/25/2001 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12/14/2001 | 2,400 | - | - | 320 | 57 | 23 | 70 | 510 | - | - | - | - | - | - | - |
| | 4/8/2002 | 230 | - | - | 37 | 3.1 | 1.5 | 1 | 190 | - | - | - | - | - | - | - |
| | 9/11/2002 | 1600 | - | - | 400 | 5.2 | 22 | 56 | 630 | 470 | <5.0 | <5.0 | <5.0 | 77 | <5.0 | <5.0 |
| | 8/18/2005 | 2900 | - | - | 520 | 15 | 8.7 | 150 | <500 | 220 | <2.5 | <2.5 | <2.5 | 26 | <2.5 | <2.5 |
| | **5/8/2008** | **190** | **-** | **-** | **14** | **3.4** | **<0.5** | **2.6** | **190** | **210** | **-** | **-** | **-** | **25** | **<5.0** | **<5.0** |

## Table 2: Continued

| | Date | TPH-g µg/L | TPH-d µg/L | TPH-o µg/L | Benzene µg/L | Toluene µg/L | Ethyl-benzene µg/L | Xylenes µg/L | MTBE µg/L | MTBE µg/L | DIPE µg/L | ETBE µg/L | TAME µg/L | TBA µg/L | EBD µg/L | 1,2-DCA µg/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EPA method 8015M | | | EPA method 8020 | | | | | EPA method 8260B | | | | | | |
| **MW-26** | 8/9/2000 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | - | - | - | - | - | - | - |
| | 5/31/2001 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | 8.3 | - | - | - | - | - | - | - |
| | 8/10/2001 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 9/25/2001 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12/14/2001 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/8/2002 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | - | - | - | - | - | - | - |
| | 9/11/2002 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | 0.80 | <0.5 | <0.5 | <0.5 | <5.0 | <0.5 | <0.5 |
| | 8/18/2005 | <50 | - | - | <0.5 | 1.2 | <0.5 | 0.62 | <5.0 | 0.84 | <0.5 | <0.5 | <0.5 | <5.0 | <0.5 | <0.5 |
| | **5/8/2008** | **<50** | **-** | **-** | **<0.5** | **<0.5** | **<0.5** | **<0.5** | **<5.0** | **0.57** | **-** | **-** | **-** | | | |
| **MW-27** | 8/9/2000 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | - | - | - | - | - | - | - |
| | 5/31/2001 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | - | - | - | - | - | - | - |
| | 8/10/2001 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 9/25/2001 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12/14/2001 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/8/2002 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | - | - | - | - | - | - | - |
| | 9/11/2002 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | 0.52 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| | 8/18/2005 | <50 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | 0.52 | <0.5 | <0.5 | <0.5 | <5.0 | <0.5 | <0.5 |
| | **5/8/2008** | **<50** | **-** | **-** | **<0.5** | **<0.5** | **<0.5** | **<0.5** | **<5.0** | **<0.5** | **-** | **-** | **-** | **3.3** | **<0.5** | **<0.5** |

TPH-g = TPH as gasoline
TPH-d = TPH as diesel
TPH-o = TPH as motor oil
* Analyses for May 2008 included halogenated VOCs by EPA method 8260; no other detections than those noted below

## Table 6
## Groundwater Sample Analytical Data: AEI-B28
*June 8, 2000*

| Sample ID | TPH as gasoline µg/L | MTBE µg/L | Benzene µg/L | Toluene µg/L | Ethyl-benzene µg/L | Xylenes µg/L |
|---|---|---|---|---|---|---|
| DB-6' | 150,000 | <3,300 | 13,000 | 15,000 | 3,400 | 23,000 |
| DB-20' | 80,000 | <600 | 3,500 | 8,900 | 1,800 | 13,000 |
| DB-27' | 1,700 | <5 | 29 | 82 | 28 | 220 |
| MDL | 50 | 5 | 0.5 | 0.5 | 0.5 | 0.5 |

MDL = Method Detection Limit

ND = Not detected above the Method Detection Limit (unless otherwise noted)

µg/L = micrograms per liter (ppb)

TABLE 2

GRAB GROUND WATER SAMPLING RESULTS
SUPPLEMENTAL SITE INVESTIGATION
625 HEGENBERGER ROAD, OAKLAND, CALIFORNIA
(concentrations reported in milligrams per liter [mg/l])

| Sample ID | Date | Benzene | Toluene | Ethyl-benzene | Total Xylenes | TPHg | TPHd | TPHo |
|---|---|---|---|---|---|---|---|---|
| GG-25 | 05-Jan-95 | 7.3 | 2.4 | 1.5 | 3.8 | 29 | NA | NA |
| GG-30 | 06-Jan-95 | 12 | 0.044 | 0.480 | 0.990 | 26 | 0.5 | 0.4 |
| GG-33 | 06-Jan-95 | 10 | 1.2 | 0.950 | 2.1 | 30 | 0.5 | <0.2 |
| GG-34 | 06-Jan-95 | 0.700 | 0.002 | 0.003 | 0.004 | 2.9 | 0.3 | 0.5 |
| Trip Blank | 06-Jan-95 | <0.005 | <0.005 | <0.005 | <0.002 | <0.05 | NA | NA |

Data entered by KAC/20 Jan 95 Data proofed by SXS QA/QC by SXS 20 Jan 95.

TPHg - Total petroleum hydrocarbons as gasoline by EPA Method 5030. GCFID
TPHd - Total petroleum hydrocarbons as diesel by EPA Method 3510, GCFID
TPHo - Total petroleum hydrocarbons as oil by EPA Method 3510, GCFID
Benzene, toluene, ethylbenzene, and total xylenes by EPA Method 8020
NA - not analyzed

Analyses performed by American Environmental Network, Pleasant Hill, California.

## Table 3
## Soil Vapor Sample Analytical Data

| Sample ID | Depth ft | Date | TPH-g µg/m³ *EPA Method TO-15* | Benzene µg/m³ | Toluene µg/m³ | Ethylbenzene µg/m³ | Xylenes µg/m³ *EPA Method TO-15* | MTBE µg/m³ | All other VOCs µg/m³ |
|---|---|---|---|---|---|---|---|---|---|
| SG-1 | 1 | 5/14/08 | <1,800 | **9.5** | **9.6** | <8.8 | <27 | <7.3 | <RL |
| SG-2 | 2.5 | 5/14/08 | <1,800 | <6.5 | <7.7 | <8.8 | <27 | <7.3 | <RL |
| SG-3 | 2.5 | 5/14/08 | <1,800 | **9.6** | **16** | <8.8 | **36** | <7.3 | <RL |
| SG-4 | 2.5 | 5/14/08 | <1,800 | <6.5 | <7.7 | <8.8 | <27 | <7.3 | <RL |
| SG-5 | 1.5 | 5/14/08 | <1,800 | **7.1** | <7.7 | <8.8 | <27 | <7.3 | <RL |
| SG-6 | 2 | 5/14/08 | <1,800 | <6.5 | <7.7 | <8.8 | <27 | <7.3 | <RL |
| SG-7 | 2.5 | 5/14/08 | <1,800 | **27** | **13** | <8.8 | <27 | <7.3 | <RL |
| SG-8 | 2.5 | 5/14/08 | <1,800 | <6.5 | <7.7 | <8.8 | <27 | <7.3 | <RL |
| SG-9 | 2.5 | 5/14/08 | <1,800 | <6.5 | <7.7 | <8.8 | <27 | <7.3 | <RL |
| ESL-R | - | - | 10,000 | 84 | 63,000 | 980 | 21,000 | 9,400 | NA |
| ESL-CI | - | - | 29,000 | 280 | 180,000 | 3,300 | 58,000 | 31,000 | NA |

ESL-R= environmental screening level (RWQCB, May 2008) for residential land use
ESL-CI= environmental screening level (RWQCB, May 2008) for commercial/industrial land use
µg/m³= micrograms per meter cubed
SG= Soil Gas (Soil Vapor)
RL = laboratory reporting limit

ND= not detectable above the reporting limit
NA= not applicable
TPH-g = total petroleum hydrocarbon as gasoline
MTBE = methyl tertiary-butyl ether
Other VOCs from TO-15 analyses include TAME, TBA, DIPE, and ETBE

**Project No:** 20826

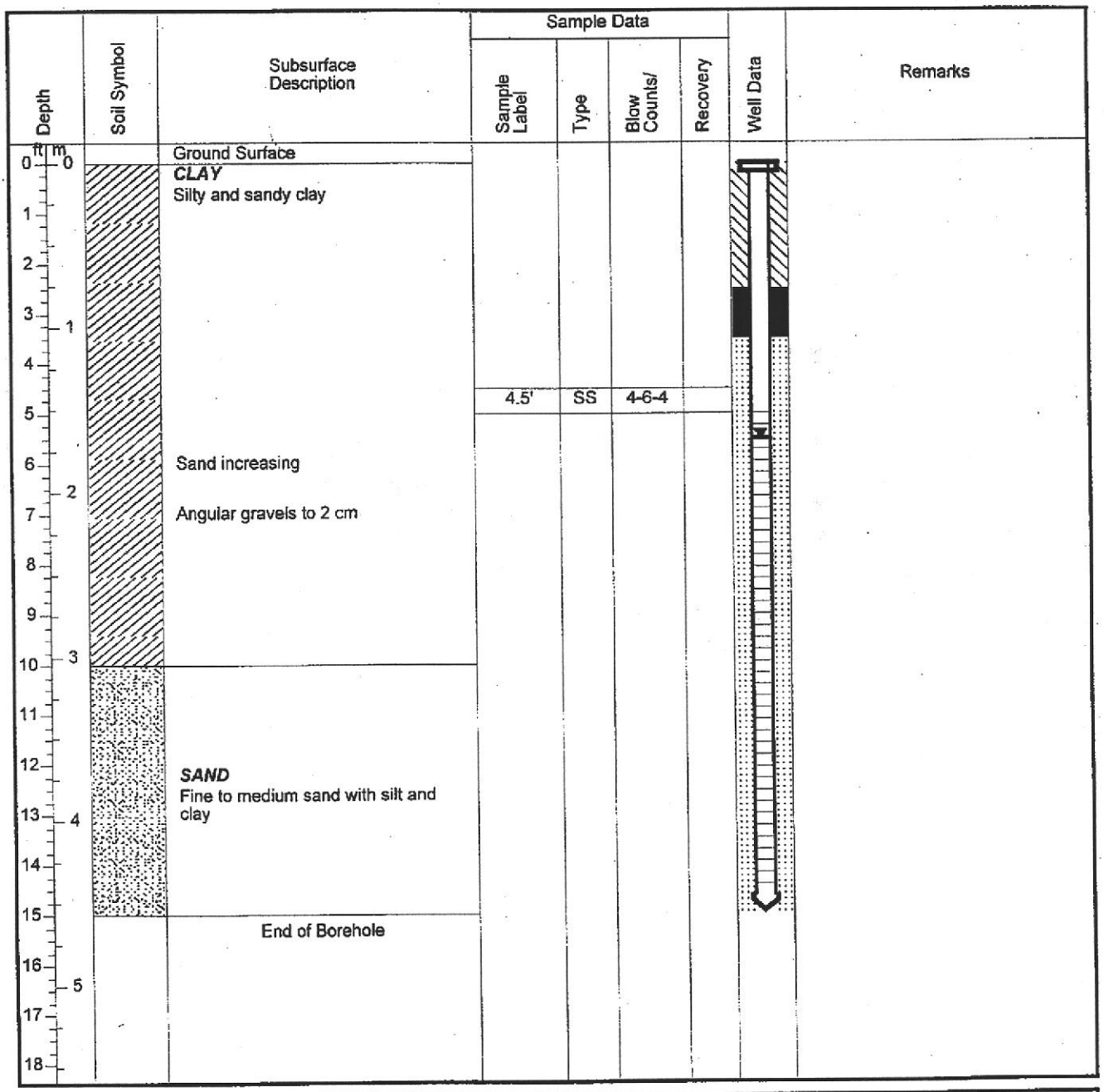
**Project Name:** Hegenberger

**Client:** Diversified

**Location:**

**Sheet:** 1 of 1

## *Log of Borehole: MW-26*




Drill Date 6/1/00

Drill Method: HOLLOW AUGER

Total Depth: 15

Depth to Water: 5.5

Reviewed by: JPD

Logged by: PJM

AEI Consultants
3210 Old Tunnel Road, Suite B
Lafayette, CA 94549
(925) 283-6000

ATTACHMENT 7

**Project No:** 20826

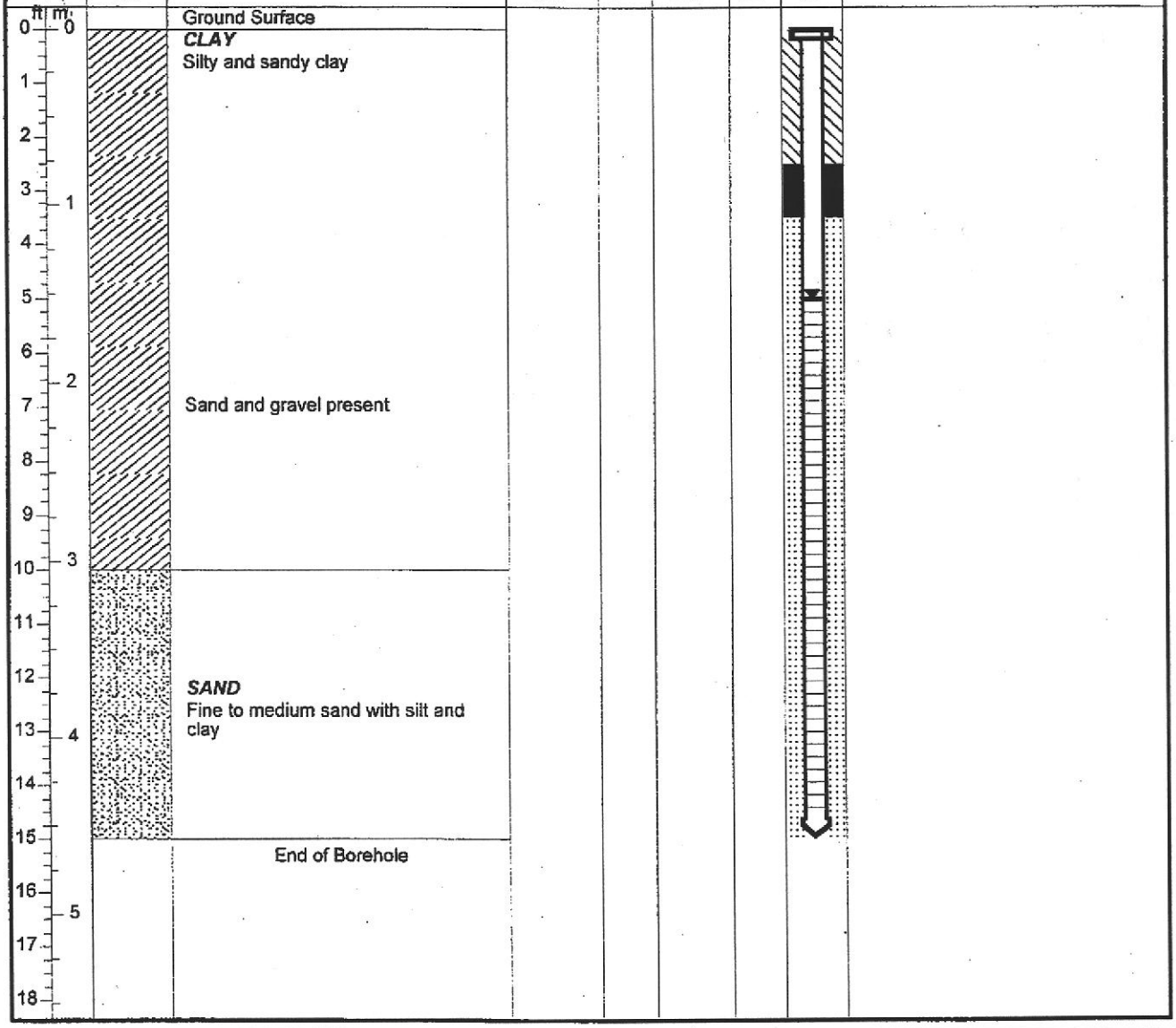
**Project Name:** Hegenberger

**Client:** Diversified

**Location:**

**Sheet:** 1 of 1

## *Log of Borehole: MW-27*




Drill Date 6/1/00

Drill Method: HOLLOW AUGER

Total Depth: 15

Depth to Water: 5.0

Reviewed by: JPD

Logged by: PJM

AEI Consultants
3210 Old Tunnel Road, Suite B
Lafayette, CA 94549
(925) 283-6000

**Project No:** 20826

**Project Name:** Hegenberger

**Client:** Diversified

**Location:**

**Sheet:** 1 of 2

## *Log of Borehole: AEI B-28*

| Depth (ft / m) | Soil Symbol | Subsurface Description | Sample Data: Sample Label | Sample Data: Type | Sample Data: Blow Counts/ | Sample Data: Recovery | Well Data | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 / 0 | | Ground Surface | | | | | | |
| 0–10 / 0–3 | | ***CLAY*** Sandy clay with pea gravel (fill material) | DB-6 | GW | | | | Strong Hydrocarbon (HC) odor |
| 10–17 / 3–5 | | ***SAND*** Medium to coarse sand with anglar gravel (up to 30%) to .5 cm | | | | | | HC Product observed on soil |
| 17–25 / 5–7+ | | ***CLAY*** Silty clay with sand and minor gravel | DB-20 | GW | | | | No HC odor |
| | | Sand and coarse gravel present | | | | | | |

Drill Date 6/8/00

Drill Method: DIRECT PUSH

Total Depth: 44.5

Depth to Water: 6.2 feet

Reviewed by: JPD

Logged by: PJM

AEI Consultants
3210 Old Tunnel Road, Suite B
Lafayette, CA 94549
(925) 283-6000

**Project No:** 20826

**Sheet:** 2 of 2

**Project Name:** Hegenberger

**Client:** Diversified

**Location:**

## *Log of Borehole: AEI B-28*

| Depth | Soil Symbol | Subsurface Description | Sample Data: Sample Label | Sample Data: Type | Sample Data: Blow Counts/ | Sample Data: Recovery | Well Data | Remarks |
|---|---|---|---|---|---|---|---|---|
| 26–50 | | ***SAND*** Medium to coarse sand, clean with gravel to 1 cm | DB-27 | GW | | | | |
| | | ***CLAY*** Stiff clay | | | | | | |
| | | End of Borehole | | | | | | |

Drill Date 6/8/00

Drill Method: DIRECT PUSH

Total Depth: 44.5

Depth to Water: 6.2 feet

Reviewed by: JPD

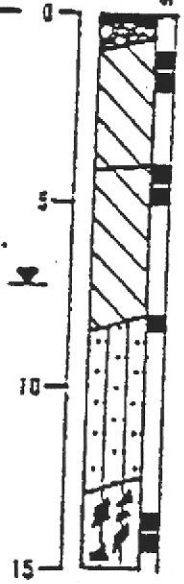
Logged by: PJM

AEI Consultants
3210 Old Tunnel Road, Suite B
Lafayette, CA 94549
(925) 283-6000

# LOG OF TEST BORING 1

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 3/15/88
ELEVATION 5.1 feet*

LABORATORY TESTS | MOISTURE CONTENT % | DRY DENSITY (PCF) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT




ASPHALTIC CONCRETE - 2" thick
BASE ROCK
GRAY SANDY CLAY (CL)
medium stiff, moist, with some gravel, petroleum odor (fill)
DARK GRAY SILTY CLAY (CL)
medium stiff, moist, petroleum odor
GROUNDWATER LEVEL 3/16/88
GRAY SILTY SAND (SM)
loose, wet, petroleum odor

DARK GRAY SANDY GRAVEL (GM)
medium dense, wet

*Elevations based on an A.L.T.A. survey performed by Majors Engineering, Inc. dated August 1988. Reference datum is City of Oakland datum which is 3.0 feet below USGS sealevel

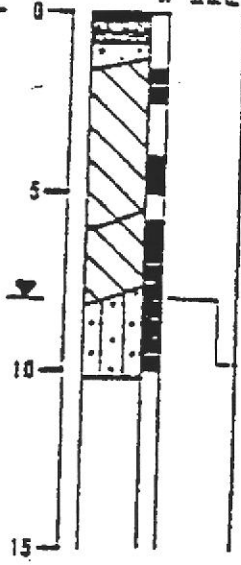
SAMPLER TYPE:
CALIFORNIA DRIVE
O.D.: 2.5 inches
I.D.: 2.0 inches

HAMMER WEIGHT: 140 pounds
HAMMER DROP: 30 inches

# LOG OF TEST BORING 2

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 3/15/88
ELEVATION 5.0 feet

LABORATORY TESTS | MOISTURE CONTENT % | DRY DENSITY (PCF) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT




ASPHALTIC CONCRETE - 2" thick
BASE ROCK*
BROWN GRAVELLY SAND (SW)
medium dense, moist, petroleum odor (fill)
DARK GRAY SANDY CLAY (CL)
medium stiff, moist, with some gravel, petroleum odor
DARK GRAY SILTY CLAY (CL)
medium stiff, moist, petroleum odor
GROUNDWATER LEVEL 3/16/88
GRAY SILTY SAND (SM)
medium dense, wet

| Subsurface Consultants | COLLINS & HEGENBERGER - OAKLAND, CA | PLATE |
|---|---|---|
| | JOB NUMBER 375.003 DATE 4/25/88 APPROVED: | |

# LOG OF TEST BORING 3

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 3/15/88
ELEVATION 4.9 feet

| LABORATORY TESTS | MOISTURE CONTENT % | DRY DENSITY (PCF) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|
| | | | 0 | | | ASPHALTIC CONCRETE - 2" thick |
| | | | | | | BASE ROCK |
| | | | | | | DARK BROWN SANDY CLAYEY SILT (ML) medium stiff, moist (fill) |
| | | | | | | GROUNDWATER LEVEL AFTER DRILLING |
| | | | 5 | | | DARK GRAY SANDY CLAY (CL) medium stiff, moist (fill) |
| | | | | | | DARK GRAY SANDY SILT (ML) medium stiff, moist, fine grained sand |
| | | | 10 | | | boring backfilled before a stabilized groundwater level was recorded |
| | | | 15 | | | |

DRAFT

Subsurface Consultants

COLLINS & HEGENBERGER - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED | PLATE |
|---|---|---|---|
| 375.003 | 4/25/88 | | |

# LOG OF TEST BORING 4

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 5/10/90
ELEVATION 5.0 feet

| LABORATORY TESTS | MOISTURE CONTENT % | DRY DENSITY (PCF) | OVM (ppm) | DEPTH (ft) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|---|
| | | | 0 | 0 | | | MOTTLED BROWN SANDY CLAY (CL) medium stiff to stiff, moist (fill) |
| | | | 0 | | | 21 | |
| | | | 0 | | | 14 | metal fragments at 4 feet |
| | | | 50 | 5 | | 10 | DARK GRAY SILTY CLAY (CH) medium stiff, moist, slight petroleum odor |
| | | | 19 | | | 5 | GROUNDWATER LEVEL DURING DRILLING |
| | | | | 10 | | 6 | DARK GRAY SANDY SILT (ML) soft, moist |
| | | | | | | 3 | DARK GRAY SILTY CLAY (CH) soft, moist |
| | | | 0 | 15 | | 5 | GRAY CLAYEY SAND (SC) loose, wet |
| | | | 0 | 20 | | 4 | |
| | | | | | | 1 | |
| | | | 0 | 25 | | 36 | MOTTLED GRAY GRAVELLY SAND (SW) medium dense to dense, wet, with minor silt content |
| | | | 0 | 30 | | 37 | |
| | | | | 35 | | | boring backfilled with cement grout before a stabilized groundwater level was recorded |
| | | | | 40 | | | |

Subsurface Consultants

COLLINS & HEGENBERGER - OAKLAND, CA

JOB NUMBER 375.003 | DATE 5/18/90 | APPROVED | PLATE

# LOG OF TEST BORING 5

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 5/10/90
ELEVATION 5.0 feet

| LABORATORY TESTS | MOISTURE CONTENT % | DRY DENSITY (PCF) | OVM (ppm) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|---|
| | | | 0 | 0 | | 14 | MOTTLED BROWN SANDY CLAY (CL) medium stiff to stiff, moist, with some gravel (fill) |
| | | | 20 | | | 15 | DARK GRAY SILTY CLAY (CL) medium stiff to stiff, moist, minor gravel content, slight petroleum odor (fill) |
| | | | 270 | 5 | | 13 | |
| | | | 769 | | | 6 | layer of black tarry/oily substance at 5.5 feet |
| | | | | | | 6 | GROUNDWATER LEVEL DURING DRILLING |
| | | | | 10 | | | DARK GRAY CLAYEY SILT (ML) medium stiff, moist, with organic matter, strong petroleum odor |
| | | | | | | | OLIVE GRAY SANDY SILT (ML) loose, moist, with petroleum odor boring backfilled with cement grout before a stabilized groundwater level was recorded |
| | | | | 15 | | | |

# LOG OF TEST BORING 6

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 5/11/90
ELEVATION 5.0 feet

| LABORATORY TESTS | MOISTURE CONTENT % | DRY DENSITY (PCF) | OVM (ppm) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|---|
| | | | 600 | 0 | | 14 | ASPHALTIC CONCRETE 2" thick BASE ROCK MOTTLED BROWN SANDY CLAY (CL) |
| | | | 500 | | | 11 | medium stiff, moist, with some gravel (fill) |
| | | | | 5 | | | DARK GRAY SILTY CLAY (CL) |
| | | | 700 | | | 8 | stiff, moist, with some sand, petroleum odor (fill) |
| | | | | | | 9 | DARK GRAY SILTY CLAY (CL) |
| | | | | | | 10 | medium stiff, moist |
| | | | 800 | 10 | | 10 | GROUNDWATER LEVEL AFTER DRILLING slight sheen on water surface |
| | | | | | | | GRAY GRAVELLY SAND (SW) loose to medium dense, wet, strong petroleum odor, slight sheen |
| | | | | | | | boring backfilled with cement grout before a stabilized groundwater level was recorded |
| | | | | 15 | | | |

Subsurface Consultants

COLLINS & HEGENBERGER OAKLAND, CA

JOB NUMBER 375.003 DATE 5/18/90 APPROVED

PLATE

# LOG OF TEST BORING 7

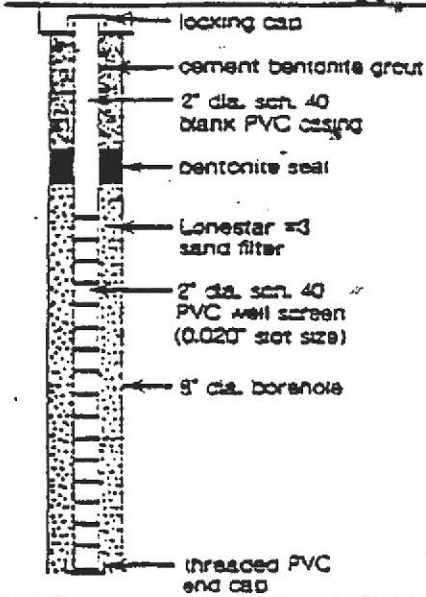
EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 5/11/90
ELEVATION --

| LABORATORY TESTS | MOISTURE CONTENT % | DRY DENSITY (PCF) | OVM (ppm) | DEPTH (ft) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|---|
| | | | | 0 | | | ASPHALTIC CONCRETE - 2" thick |
| | | | | | | | BASE ROCK |
| | | | 32 | | | 16 | MOTTLED BROWN SANDY CLAY (CL) medium stiff to stiff, moist, with some gravel (fill) |
| | | | 20 | | | 9 | |
| | | | 930 | 5 | | 5 | OLIVE GRAY CLAYEY SILT (ML) soft, moist, strong petroleum odor |
| | | | 1600 | | | 6 | GROUNDWATER LEVEL DURING DRILLING |
| | | | 83 | | | 3 | black tar like substance at 7 feet |
| | | | | 10 | | 12 | GRAY SAND (SP) loose to medium dense, moist to wet, slight petroleum odor |
| | | | | | | 5 | |
| | | | | 15 | | | boring backfilled with cement grout before a stabilized groundwater level was recorded |

*TOC = Top of casing

# LOG OF TEST BORING 8

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 5/11/90
ELEVATION TOC 4.88' *




| MOISTURE CONTENT % | DRY DENSITY (PCF) | OVM (ppm) | DEPTH (ft) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|
| | | | 0 | | | ASPHALTIC CONCRETE - 2" thick |
| | | | | | | BASE ROCK |
| | | 180 | | | 10 | GRAY SILTY SAND (SM) loose to medium dense, moist (fill) |
| | | 420 | | | 8 | |
| | | 220 | 5 | | 6 | DARK GRAY SILTY CLAY (CL) medium stiff, moist, with some gravel, strong petroleum odor (fill) |
| | | | | | 8 | |
| | | | | | 7 | DARK GRAY SILTY CLAY (CL) medium stiff, moist, petroleum odor |
| | | 90 | 10 | | 14 | GROUNDWATER LEVEL DURING DRILLING |
| | | | | | | MOTTLED TAN AND GRAY CLAYEY SILT (ML) medium stiff, moist, petroleum odor |
| | | | 15 | | | GRAY GRAVELLY SAND (SW) medium dense, wet |

Subsurface Consultants

COLLINS & HEGENBERGER - OAKLAND, CA

JOB NUMBER 375.003 | DATE 5/13/90 | APPROVED | PLATE

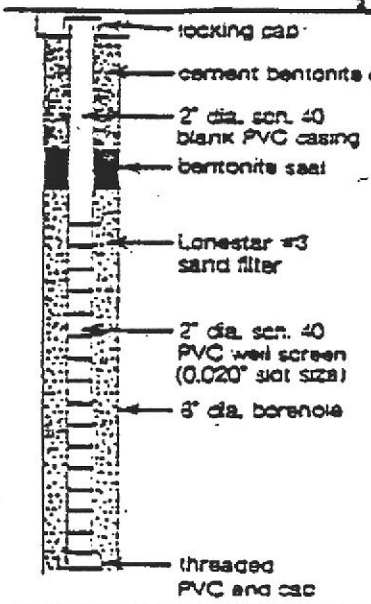
# LOG OF TEST BORING 9

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 5/11/90
ELEVATION 4.6 feet

| LABORATORY TESTS | MOISTURE CONTENT % | DRY DENSITY (PCF) | OVM (ppm) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|---|
| | | | | 0 | | | ASPHALTIC CONCRETE - 2" thick |
| | | | | | | | BASE ROCK |
| | | | 6 | | | 20 | BLACK SILTY CLAY (CL) stiff, moist, with some gravel (fill) |
| | | | 51 | 5 | | 10 | MOTTLED GRAY GRAVELLY SAND (SW) |
| | | | | | | 10/3" | loose, moist (fill) |
| | | | | | | 4 | BLACK SILTY CLAY (CL) |
| | | | 59 | | | 2 | medium stiff to stiff, moist, with concrete fragments, strong petroleum odor (fill) |
| | | | | 10 | | | GRAY CLAYEY SILT (MH) |
| | | | | | | | soft, moist |
| | | | | | | | boring backfilled with cement grout before a stabilized groundwater level was recorded |
| | | | | 15 | | | |

# LOG OF TEST BORING 10

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 5/9/90
ELEVATION TOC 4.21'




| MOISTURE CONTENT % | DRY DENSITY (PCF) | OVM (ppm) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|
| | | | 0 | | | ASPHALTIC CONCRETE - 2" thick |
| | | | | | 5/6" | BASE ROCK - 8" thick |
| | | 0 | | | 17 | BLACK SILTY CLAY (CL) medium stiff, moist, with abundant gravel, concrete fragments (fill) |
| | | | 5 | | 8 | MOTTLED GRAY BROWN SILTY CLAY (CL) |
| | | 0 | | | 7 | medium stiff, moist |
| | | | | | | GROUNDWATER LEVEL DURING DRILLING |
| | | 0 | | | 5 | GRAY CLAYEY SILT (MH) |
| | | | 10 | | | soft to medium stiff, moist |
| | | | | | | DARK GRAY SILTY SAND (SM) |
| | | | | | | loose, wet, with some gravel |
| | | | | | | increase in gravel content below 12 feet |
| | | 0 | | | 21 | |
| | | | 15 | | 2 | GRAY CLAYEY SILT (MH) |
| | | | | | | soft, wet |

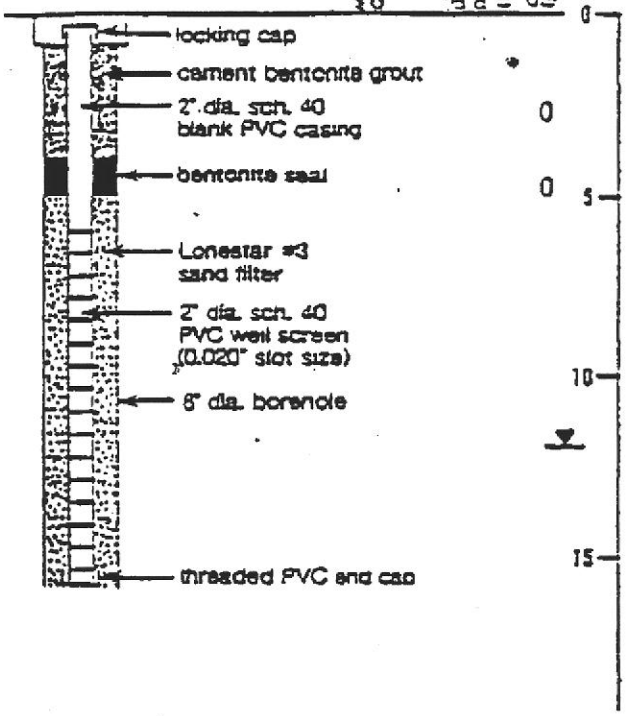
Subsurface Consultants

COLLINS & HEBENBERGER - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED | PLATE |
|---|---|---|---|
| 375.003 | 5/18/90 | | |

# LOG OF TEST BORING 11

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 5/9/90
ELEVATION TOC 5.04'

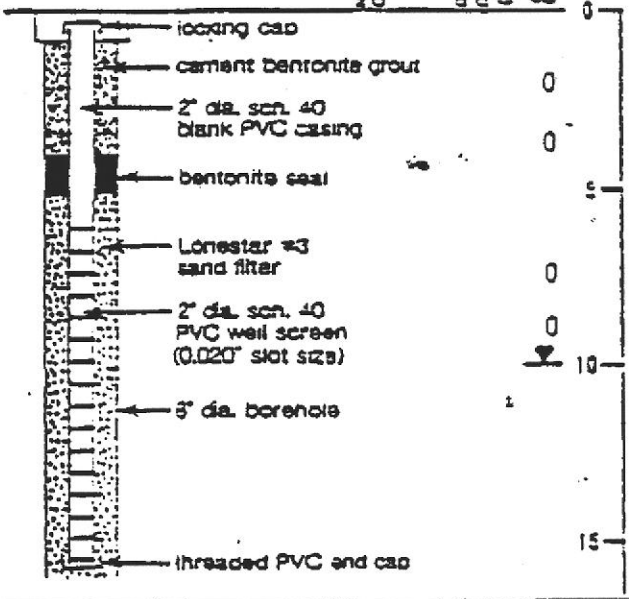



ASPHALTIC CONCRETE - 2" thick
BASE ROCK
DARK BROWN SILTY CLAY (CL)
medium stiff to stiff, moist, with abundant rock and concrete fragments (fill)
DARK GRAY SANDY CLAY (CL)
medium stiff, moist, minor sand content
GRAY CLAYEY SILT (MH)
soft, moist
GRAY BROWN SILTY SAND (SM)
loose, moist
GROUNDWATER LEVEL DURING DRILLING

BLACK SAND (SW)
medium dense, wet, coarse grained

# LOG OF TEST BORING 12

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 5/9/90
ELEVATION TOC 4.58'




ASPHALTIC CONCRETE - 2" thick
BASE ROCK - 6" thick
GRAY SILTY CLAY (CL)
medium stiff, moist, with some sand (fill)

MOTTLED GRAY SILTY CLAY (CL-CH)
soft, moist, with some organic matter and sand

GROUNDWATER LEVEL DURING DRILLING
GRAY SILTY SAND (SM)
loose, moist, with some gravel

MOTTLED OLIVE GRAY SILTY CLAY (CH)
soft, moist, with some organic matter

Subsurface Consultants

COLLINS & HEGENBERGER - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED | PLATE |
|---|---|---|---|
| 375.003 | 5/18/90 | | |

# LOG OF TEST BORING 13

EQUIPMENT 6" Hollow Stem Auger
DATE DRILLED 6/27/90
ELEVATION --

| LABORATORY TESTS | MOISTURE CONTENT % | DRY DENSITY (PCF) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|
| | 0 | | 0 | | 12 | ASPHALT CONCRETE - 2" thick<br>BASE ROCK - 6" thick<br>DARK GRAY SILTY CLAY (CL)<br>medium stiff, moist, with some sand and gravel (fill) |
| | 0 | | | | 15 | |
| | 0 | | 5 | | 14 | GROUNDWATER LEVEL AFTER DRILLING<br>grass fragments at 3 feet<br>BROWN SANDY CLAY (CL)<br>medium stiff, moist, with some rocks (fill) |
| | 0 | | | | 2 | |
| | | | 10 | | | DARK GRAY CLAYEY SILT (MH)<br>soft, moist |
| | 22 | | 15 | | 2 | increase in sand content and minor peat content at 13 feet.<br>Boring backfilled with cement grout before a stabilized groundwater level was recorded |

# LOG OF TEST BORING 14

EQUIPMENT 6" Hollow Stem Auger
DATE DRILLED 6/27/90
ELEVATION --

| LABORATORY TESTS | MOISTURE CONTENT % | DRY DENSITY (PCF) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|
| | 32 | | 0 | | 14 | ASPHALT CONCRETE - 2" thick<br>BASE ROCK - 6" thick<br>BLACK SILTY CLAY (CL)<br>medium stiff, moist, with some sand and gravel (fill) |
| | 48 | | | | 15 | |
| | 47 | | 5 | | 11 | BROWN SILTY CLAY (CL)<br>medium stiff, moist, with some gravel (fill)<br>GROUNDWATER LEVEL AFTER DRILLING |
| | 29 | | 10 | | 3 | DARK GRAY CLAYEY SILT (MH)<br>soft, moist, with some sand layers |
| | 19 | | 15 | | 4 | Boring backfilled with cement grout before a stabilized groundwater level was recorded |

Subsurface Consultants

COLLINS & HEGENBERGER - OAKLAND, CA

JOB NUMBER 375.003 | DATE 7/16/90 | APPROVED | PLATE

# LOG OF TEST BORING 15

EQUIPMENT 6" Hollow Stem Auger
DATE DRILLED 6/27/90
ELEVATION --

| LABORATORY TESTS | MOISTURE CONTENT % | DRY DENSITY (PCF) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|
| TOG 310 TVH 680 TEH ND | | 5100 | 0 | | 15 | ASPHALT CONCRETE - 2" thick<br>BASE ROCK - 6" thick<br>BLACK SILTY CLAY (CL)<br>medium stiff, moist, with some gravel and rock fragments, sand and wood fragments (fill) |
| | | 700 | | | 13 | |
| | | 230 | 5 | | 15 | |
| | | 1300 | | | 3 | BROWN CLAYEY SAND (SC)<br>medium dense, moist<br>GROUNDWATER LEVEL AFTER DRILLING<br>-DARK GRAY CLAYEY SILT (MH)<br>soft, moist, interbedded with some fine grained sand |
| | | | 10 | | | |
| | | | 18 15 | | 7 | Boring backfilled with cement grout before a stabilized groundwater level was recorded |

# LOG OF TEST BORING 16

EQUIPMENT 6" Hollow Stem Auger
DATE DRILLED 6/27/90
ELEVATION --

| | MOISTURE CONTENT % | DRY DENSITY (PCF) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|
| locking cap | | | 0 | | 15 | ASPHALT CONCRETE - 2" thick<br>BASE ROCK - 6" thick<br>BLACK SILTY CLAY (CL)<br>medium stiff, moist, with some gravel and rock fragments, nails, brick fragments (fill) |
| cement bentonite grout | | 0 | | | 12 | |
| 2" dia. sch. 40 blank PVC casing | | 0 | | | 12 | |
| bentonite seal | | 17 | 5 | | | |
| Lonestar #3 sand filter | | | | | | |
| TOG ND TVH ND TEH ND | | 28 | | | 14 | GROUNDWATER LEVEL AFTER DRILLING<br>DARK GRAY CLAYEY SANDY SILT (ML)<br>medium stiff, moist |
| 2" dia. sch. 40 PVC well screen (0.020" slot size) | | | 10 | | | |
| 5" dia. borehole | | | | | | GRAY GRAVELLY SAND (SW)<br>dense, wet |
| threaded PVC end cap | | 0 | 15 | | 11 | |

Subsurface Consultants

COLLINS & HEGENBERGER - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED | PLATE |
|---|---|---|---|
| 375.003 | 7/16/90 | | |

# LOG OF TEST BORING 17

EQUIPMENT 6" Hollow Stem Auger
DATE DRILLED 6/28/90
ELEVATION --

| LABORATORY TESTS | MOISTURE CONTENT % | DRY DENSITY (PCF) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|
| | | | 0 | | | ASPHALT CONCRETE - 2" thick<br>BASE ROCK - 6" thick |
| | 84 | | | | 15 | MOTTLED GRAY BLACK SILTY CLAY (CL)<br>medium stiff, moist, with some rocks, brick, sand and organic matter (fill) |
| | 45 | | | | 17 | |
| | 94 | | 5 | | 10 | thin gravel and sand layer at 5' |
| | | | | | | GRAY BROWN SILTY CLAY (CL)<br>medium stiff, moist |
| | 15 | | ▼ | | 3 | GROUNDWATER LEVEL AFTER DRILLING |
| | | | | | | DARK GRAY CLAYEY SILT (MH)<br>soft, moist, with organic matter and thin sand layers |
| | 14 | | 10 | | 2 | |
| | | | | | | Boring backfilled with cement grout before a stabilized groundwater level was recorded |
| | | | 15 | | | |

# LOG OF TEST BORING 18

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 6/28/90
ELEVATION --

| LABORATORY TESTS | MOISTURE CONTENT % | DRY DENSITY (PCF) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|
| | | | 0 | | | ASPHALT CONCRETE - 2" thick<br>BASE ROCK - 6" thick |
| | 100 | | | | 15 | BLACK SILTY CLAY (CL)<br>medium stiff, moist, with some sand and rock fragments (fill) |
| | 131 | | | | 15 | |
| | 75 | | 5 | | 14 | color change to gray brown |
| | | | ▼ | | | GROUNDWATER LEVEL AFTER DRILLING |
| | 27 | | | | 2 | DARK GRAY SANDY CLAYEY SILT (ML)<br>soft, moist |
| | | | 10 | | | decrease in sand content below 10' |
| | 4 | | | | 3 | Boring backfilled with cement grout before a stabilized groundwater level was recorded |
| | | | 15 | | | |

Subsurface Consultants

COLLINS & HEGENBERGER - OAKLAND, CA

JOB NUMBER 375.003 | DATE 7/16/90 | APPROVED | PLATE

# LOG OF TEST BORING 19

EQUIPMENT 6" Hollow Stem Auger
DATE DRILLED 6/28/90
ELEVATION --

| LABORATORY TESTS | MOISTURE CONTENT % | DRY DENSITY (PCF) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|
| | | | 0 | | | ASPHALT CONCRETE - 2" thick |
| | | | | | | BASE ROCK - 6" thick |
| | | 68 | | | 22 | BLACK SILTY CLAY (CL) |
| | | 35 | | | 14 | medium stiff, moist, with some gravel and sand (fill) |
| | | 12 | 5 | | 24 | BROWN CLAYEY SAND (SC) |
| | | | | | | dense, moist with some gravel (fill) |
| | | | | | | GROUNDWATER LEVEL AFTER DRILLING |
| | | 42 | | | 4 | DARK GRAY CLAYEY SILT (MH) |
| | | | 10 | | | soft, moist, with some organic matter and thin sand layers |
| | | 0 | | | 10 | GRAY CLAYEY SAND (SC) |
| | | | | | | medium dense, wet |
| | | | | | | Boring backfilled with cement grout before a stabilized groundwater level was recorded |
| | | | 15 | | | |

# LOG OF TEST BORING 20

EQUIPMENT 6" Hollow Stem Auger
DATE DRILLED 6/28/90
ELEVATION --

| LABORATORY TESTS | MOISTURE CONTENT % | DRY DENSITY (PCF) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|
| | | | 0 | | | ASPHALT CONCRETE - 2" thick |
| | | | | | | BASE ROCK - 6" thick |
| | | 500 | | | 17 | BLACK SILTY CLAY (CL) |
| | | 80 | | | 18 | medium stiff, moist, with some gravel and rock fragments (fill) |
| | | 3000 | 5 | | 17 | |
| | | | | | | DARK GRAY CLAYEY SILT (ML) |
| | | | | | | medium stiff, moist |
| | | 3700 | | | 6 | GROUNDWATER LEVEL AFTER DRILLING |
| | | | 10 | | | GRAY SILTY SAND (SM) |
| | | 5000 | | | 7 | medium dense, wet, fine grained |
| | | | | | | becomes medium grained |
| | | | | | | Boirng backfilled with cement grout before a stabilized groundwater level was recorded |
| | | 0 | 15 | | 9 | |

Subsurface Consultants

COLLINS & HEGENBERGER - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED | PLATE |
|---|---|---|---|
| 375.003 | 7/16/90 | | |

# LOG OF TEST BORING 21

EQUIPMENT 6" Hollow Stem Auger
DATE DRILLED 6/28/90
ELEVATION ---

| LABORATORY TESTS | MOISTURE CONTENT % | DRY DENSITY (PCF) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|
| | | | 0 | | | ASPHALT CONCRETE - 3" thick |
| | | | | | | BASE ROCK - 6" thick |
| | | 0 | | | 33 | GRAY BROWN CLAYEY SAND (SC) dense, moist (fill) |
| | | 175 | | | 16 | |
| | | 185 | 5 | | 5 | MOTTLED GRAY AND BLACK SILTY CLAY (CL) medium stiff, moist, with gravel and rock fragments (fill) |
| | | 80 ▼ | | | 5 | DARK GRAY CLAYEY SANDY SILT (ML) soft, moist |
| | | | | | | GROUNDWATER LEVEL AFTER DRILLING |
| | | 80 | 10 | | 5 | DARK GRAY SAND (SW) medium dense, wet |
| | | | | | | Boring backfilled with cement grout before a stabilized groundwater level was recorded |
| | | | 15 | | | |

# LOG OF TEST BORING 22

EQUIPMENT 6" Hollow Stem Auger
DATE DRILLED 6/28/90
ELEVATION ---

| LABORATORY TESTS | MOISTURE CONTENT % | DRY DENSITY (PCF) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|
| | | | 0 | | | ASPHALT CONCRETE - 2" thick |
| | | | | | | BASE ROCK - 6" thick |
| | | 300 | | | 13 | BLACK SILTY CLAY (CL) medium stiff, moist, with some sand and rock fragments (fill) |
| | | 420 | | | 17 | |
| | | 235 | 5 | | 13 | GRAY BROWN SILTY SANDY CLAY (CL) medium stiff, moist, with rock fragments (fill) |
| | | 3400 ▼ | | | 9 | DARK GRAY CLAYEY SILT (ML) soft, moist |
| | | | | | | GROUNDWATER LEVEL AFTER DRILLING |
| | | 2075 | 10 | | 18 | GRAY GRAVELLY SAND (SW) dense, wet |
| | | | | | | Boring backfilled with cement grout before a stabilized groundwater level was recorded |
| | | 466 | 15 | | 7 | |

Subsurface Consultants

COLLINS & HEGENBERGER - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED | PLATE |
|---|---|---|---|
| 375.003 | 7/16/90 | | |

# LOG OF TEST BORING 23

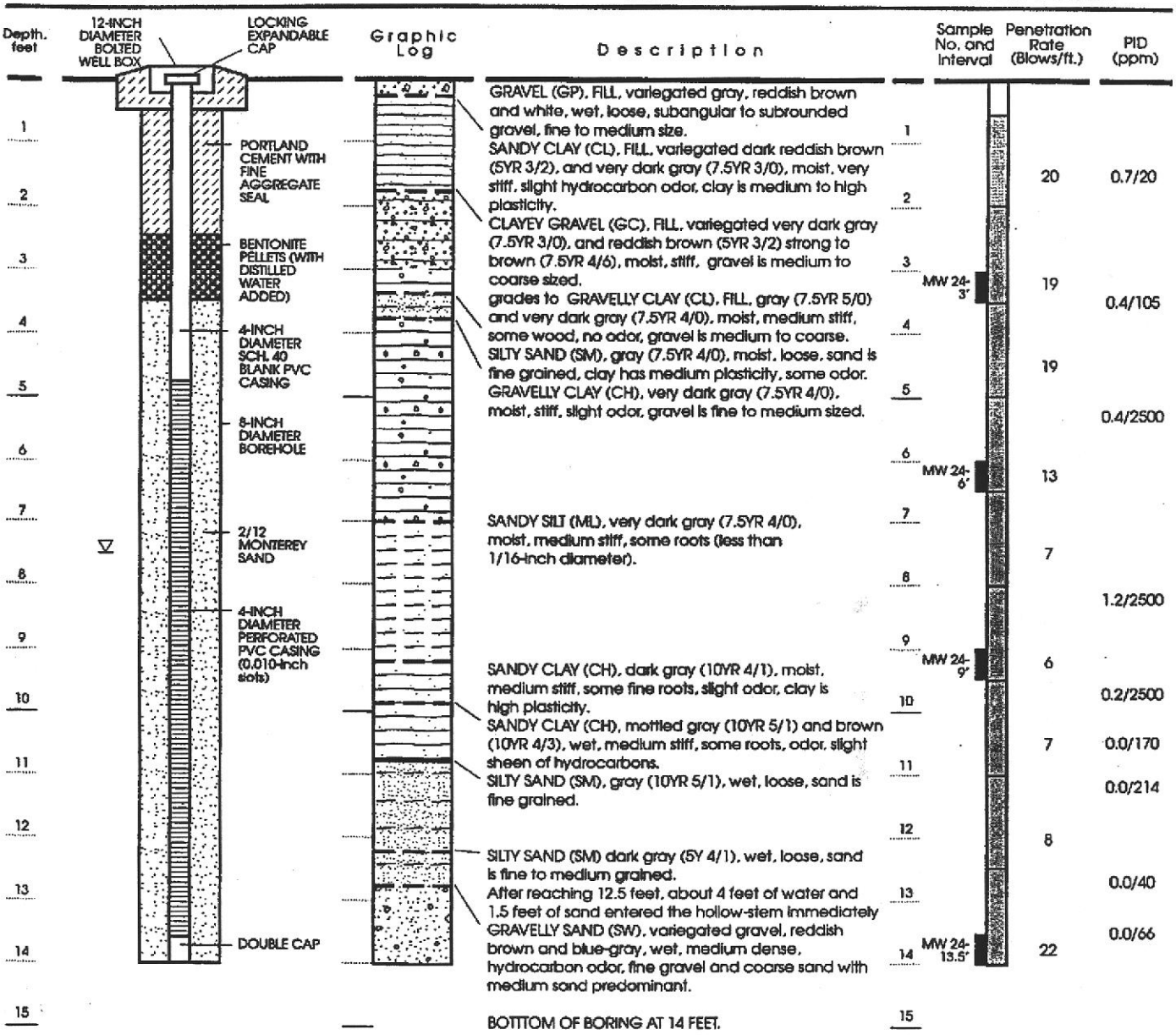
EQUIPMENT 6" Hollow Stem Auger
DATE DRILLED 6/28/90
ELEVATION --

| LABORATORY TESTS | MOISTURE CONTENT % | DRY DENSITY (PCF) | DEPTH (FT) | SAMPLE | BLOWS PER FOOT | |
|---|---|---|---|---|---|---|
| | | | 0 | | | ASPHALT CONCRETE - 2" thick<br>BASE ROCK - 6" thick |
| | 120 | | | | 11 | GRAY BROWN SILTY CLAY (CL)<br>medium stiff, moist, with some sand and rock fragments |
| | 60 | | | | 15 | |
| | 53 | | 5 | | 8 | color change to black below 4' |
| | 81 | | | | 4 | GRAY SILTY SAND (SM)<br>loose, moist, minor clay, very fine grained |
| | | | 10 | | | GROUNDWATER LEVEL AFTER DRILLING |
| | 245 | | | | 6 | becomes medium grained |
| | | | | | | DARK GRAY CLAYEY SILT (MH)<br>soft, moist |
| | 60 | | 15 | | 6 | Boring backfilled with cement grout before a stabilized groundwater level was recorded |

Subsurface Consultants

COLLINS & HEGENBERGER - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED | PLATE |
|---|---|---|---|
| 375.003 | 7/16/90 | | |




Well Permit No.: 94822
Date well drilled: January 5, 1995
Drilling company: Gregg Drilling
Driller: Chris St. Pierre
Sampling Method: Modified California Sampler
Hammer weight and drop: 140 lbs./30 inches
LF Engineer/Geologist: John Sturman/Bryan Croll

Approved by: John Sturman R.G. 5714

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Interval sampled using Modified California Sampler
- Sample retained for chemical analysis
- ▽ Water level at time of drilling
- PID (ppm) Photoionization Detector reading (background value/sample value) in parts per million

**Figure : WELL CONSTRUCTION AND LITHOLOGY FOR WELL MW-24**

Project No. 3015

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

3015L001.JOS:MPM/RYL 030795

| Depth, feet | Graphic Log | Description | Sample No. and Interval | Penetration Rate (Blows/ft.) | PID (ppm) |
|---|---|---|---|---|---|
| | | **LITHOLOGY** | | **SAMPLE DATA** | |
| 1 | | GRAVEL (GP), FILL, variegated gray, white and blue, moist, loose. | | | |
| 2 | | GRAVELLY SAND (SW), FILL, brown (7.5YR 5/3), moist, medium dense, gravel up to 1-inch diameter. | | 20 | 0.0/22 |
| 3 | | GRAVELLY CLAY (CL), FILL, greenish gray (5G 5/1), moist, very stiff, some gravel-medium size, no odor. | | | |
| 4 | | SILTY CLAY (CH), variegated very dark gray (7.5YR 3/0) and dark gray (5Y 4/1), moist, stiff, high plasticity, some hydrocarbon odor, slight sheen. | | | |
| 5 | | | | | |
| 6 | | | LF 25-6.5' | 15 | 0.0/1315 |
| 7 | | SILTY CLAY (CH), dark gray (7.5YR 4/0), moist, soft, hydrocarbon odor and sheen, decaying root observed. | | | |
| 8 | | | | | |
| 9 | ▽ | CLAYEY SAND (SC) to SANDY CLAY (CH), dark greenish gray (5G 4/1), wet, loose (medium stiff), hydrocarbon odor. | LF 25-9.5' | 9 | 0.0/739 |
| 10 | | | | | |
| 11 | | GRAVELLY CLAYEY SAND (SW), dark greenish gray (5G 4/1), wet, loose, gravel is fine grained, slight odor. | LF 25-11' | 11 | 0.0/39 |
| 12 | | BOTTOM OF BORING AT 11 FEET. | | | |

EXPLANATION

- Clay
- Silt
- Sand
- Gravel

Interval sampled using Modified California Sampler

Sample retained for analysis

▽ Water level at time of drilling

PID (ppm) Photoionization Detector reading (background value/sample value) in parts per million

Well Permit No.: 94822
Date boring drilled: January 5, 1995
Drilling Company: Gregg Drilling
Drilling method: Modified California Sampler
Hammer weight and drop: 140 lbs./30 inches
LF Engineer/Geologist: John Sturman/Bryan Croll

Approved by: John Sturman R.G. 5714

**LITHOLOGY AND SAMPLE DATA FOR SOIL BORING LF-25** *(page 1 of 1)*

Project No. 3015.94

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

3015L002:JOS:JSM/RYL 030795

| LITHOLOGY | | | SAMPLE DATA | | |
|---|---|---|---|---|---|
| Depth, feet | Graphic Log | Description | Sample No. and Interval | Penetration Rate (Blows/ft.) | PID (ppm) |
| 1 | | ASPHALT CONCRETE PAVING SURFACE. | | | |
| 1 | | GRAVELLY SAND (SW), FILL, variegated reddish brown (5YR 4/3) and light gray (5Y 6/1), moist, medium dense. | | | |
| 2 | | SANDY GRAVELLY CLAY (CH), FILL, very dark gray (2.5Y 3/0), light olive brown (2.5Y 5/3), moist, very stiff, gravel 0.5-inch diameter. | | | |
| 3 | | dark greenish gray (5G 4/1) discoloration, no odor. | | 20 | 0.0/2.5 |
| 4 | | SANDY CLAY (CH), very dark gray (2.5Y 3/0), moist, medium stiff, sand is fine to medium grained, visible hydrocarbon-appearing liquid. | | | |
| 5 | | | | | |
| 6 | | | LF 26-5' | 5 | 0.0/12 |
| 7 | | | | | |
| 8 | | No sample recovery (Bay Mud?). | | | |
| 9 | ▽ | No sample recovery at 9.5 feet, but about 1 foot of water with a dark viscous hydrocarbon liquid on the water entered the boring. | | 5 | |
| 10 | | BOTTOM OF BORING AT 9.5 FEET. | | | |

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Interval sampled using Modified California Sampler
- Sample retained for analysis
- ▽ Water level at time of drilling
- PID (ppm) Photolonization detector reading (background value/sample value) in parts per million

Well Permit No.: 4822
Date boring drilled: January 5, 1995
Drilling Company: Gregg Drilling
Drilling method: Modified California Sampler
Hammer weight and drop: 140 lbs./30 inches
LF Engineer/Geologist: John Sturman/Bryan Croll

Approved by: John Sturman R.G. 5714

**LITHOLOGY AND SAMPLE DATA FOR SOIL BORING LF-26** *(page 1 of 1)*

| LITHOLOGY | | | SAMPLE DATA | | |
|---|---|---|---|---|---|
| Depth, feet | Graphic Log | Description | Sample No. and Interval | Penetration Rate (Blows/ft.) | PID (ppm) |
| 1 | | GRAVELLY SAND (GP). Fill, variegated red/brown, dark gray, moist, soft, fine grained sand, fine and coarse gravel, bound with asphaltic-like material at 1 to 1.5 feet. | | | |
| 2 | | SILTY CLAY (CH), FILL, very dark gray (2.5Y 4/0), grading to very dark grayish brown (2.5Y 4/2), moist, stiff, high plasticity odor. | LF 27-2.5' | 19 | |
| 3 | | | | | 0.6/5.0 |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | SILTY CLAY (CH-OH), black (2.5Y 2/0), moist, high plasticity, stiff, abundant organic material-root hairs, hydrogen sulfide odor, appears to be Bay Mud. | LF 27-6.5' | 10 | 2.8/3.1 |
| 7 | | | | | |
| 8 | | SANDY CLAY (CH), dark gray (5Y 4/1), medium stiff, medium plasticity, sand is fine-grained, no odor. | | | |
| 9 | | | LF 27-9.5' | 7 | 2.8/4.0 |
| 10 | | BOTTOM OF BORING AT 9.5 FEET.<br>No free water encountered. | | | |

EXPLANATION

- Clay
- Silt
- Sand
- Gravel

Interval sampled using Modified California Sampler

Sample retained for analysis

PID (ppm) Photoionization detector reading (background value/sample value) in parts per million

Well Permit No.: 4822
Date boring drilled: January 5, 1995
Drilling Company: Gregg Drilling
Drilling method: Modified California Sampler
Hammer weight and drop: 140 lbs./30 inches
LF Engineer/Geologist: John Sturman/Bryan Croll

Approved by: John Sturman R.G. 5714

**LITHOLOGY AND SAMPLE DATA FOR SOIL BORING LF-27** *(page 1 of 1)*

Project No. 3015.94

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

3015L004:JOS:JSM/RYL 030795

| LITHOLOGY | | | SAMPLE DATA | | |
|---|---|---|---|---|---|
| Depth, feet | Graphic Log | Description | Sample No. and Interval | Penetration Rate (Blows/ft.) | PID (ppm) |
| 1 | | SANDY GRAVEL (GW), FILL, variegated brown, moist, medium dense. | | | |
| 2 | | SANDY CLAY (CH), FILL, very dark gray, moist, very stiff, some fine-grained gravel. | | 25 | 4.5/5.8 |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | CLAY (OH), very dark gray with brown wood and roots, moist, medium stiff, strong organic odor, some wood decaying. | LF 28-6.5' | 7 | 0.0/1315 |
| 7 | | | | | |
| 8 | | Minimal recovery—Silty Sand. | | | |
| ▽ | | SILTY CLAYEY SAND (SC), variegated gray (2.5Y N 5/0), wet, loose, clay is medium to high plasticity, gravel is fine-grained. | | | |
| 9 | | | | 5 | |
| 10 | | | | | |
| 11 | | | LF 28-11' | 10 | |
| | | BOTTOM OF BORING AT 11 FEET. | | | |

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Interval sampled using Modified California Sampler
- Sample retained for analysis
- ▽ Water level at time of drilling
- PID (ppm) Photolonization detector reading (background value/sample value) in parts per million

Well Permit No.: 4822
Date boring drilled: January 5, 1995
Drilling Company: Gregg Drilling
Drilling method: Modified California Sampler
Hammer weight and drop: 140 lbs./30 inches
LF Engineer/Geologist: John Sturman/Bryan Croll

Approved by: John Sturman R.G. 5714

**LITHOLOGY AND SAMPLE DATA FOR SOIL BORING LF-28** *(page 1 of 1)*

Project No. 3015.94

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

3015L005:JOS:JSM/RYL 030795

| Depth, feet | Graphic Log | Description | Sample No. and Interval | Penetration Rate (Blows/ft.) | PID (ppm) |
|---|---|---|---|---|---|
| | | **LITHOLOGY** | | **SAMPLE DATA** | |
| 1 | | CONCRETE.<br>SANDY GRAVEL (GW), FILL, variegated gray (10YR 5/0) with some red and white and grayish brown (10YR 5.2), moist, medium dense, gravel is 1/2 to 1-inch diameter and angular. | | | |
| 2 | | SANDY CLAY (CL), FILL, very dark gray (2.5Y 4/0), moist, medium stiff, some fine gravel. | | 23 | |
| 3 | | GRAVELLY CLAY (CL), FILL, very dark gray (2.5Y 4/0), moist to dry, very stiff, gravel is 1/4-inch to 1-inch diameter size and angular, some brick fragments observed. | | | 4.4/4.7 |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | LF 29-6.5' | 6 | 4.4/5.1 |
| 7 | | SILTY CLAY (CL), very dark gray (2.5Y 3/0), moist, medium stiff, organic odor, some roots, showing reddish brown color in decay. | | | |
| 8 | | | | | |
| 9 | | | | 5 | |
| 10 | | CLAYEY SILTY SAND (SM) to SANDY SILT (ML), dark gray (2.5Y 4/0), moist, loose, some organic odor. | | | 4.5/5.8 |
| 11 | ▽ | | LF 29-11' | 10 | 4.5/6.5 |
| | | BOTTOM OF BORING AT 11 FEET. | | | |

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Interval sampled using Modified California Sampler
- Sample retained for analysis
- ▽ Water level at time of drilling
- PID (ppm) Photoionization detector reading (background value/sample value) in parts per million

Well Permit No.: 4822
Date boring drilled: January 5, 1995
Drilling Company: Gregg Drilling
Drilling method: Modified California Sampler
Hammer weight and drop: 140 lbs./30 inches
LF Engineer/Geologist: John Sturman/Bryan Croll

Approved by: John Sturman R.G. 5714

**LITHOLOGY AND SAMPLE DATA FOR SOIL BORING LF-29** *(page 1 of 1)*

Project No. 3015.94

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

3015L006:JOS:JSM/RYL 030795

| Depth, feet | Graphic Log | Description | | Sample No. and Interval | Penetration Rate (Blows/ft.) | PID (ppm) |
|---|---|---|---|---|---|---|
| | | **LITHOLOGY** | | **SAMPLE DATA** | | |
| 1 | | CONCRETE PAVING SURFACE.<br>SANDY GRAVEL (GW), FILL, grayish brown (10YR 5/2), moist, dense. | 1 | | | |
| 2 | | GRAVELLY CLAY (CH), FILL, grayish brown (10YR 5/2), moist, medium stiff, gravel is 1/2 to 1 1/2-inch diameter, some glass shards observed. | 2 | | | |
| 3 | | | 3 | | | |
| 4 | | | 4 | LF 30-4' | 7 | 0.1/5.4 |
| 5 | | SANDY GRAVELLY CLAY (CH), dark grayish brown (10YR 4/2), slight greenish gray mottling (5GY 5/1), moist, medium stiff, no odor. | 5 | | | |
| 6 | | | 6 | | | |
| 7 | | | 7 | | | |
| 8 | | Slight hydrocarbon odor at 7.5 feet.<br>SANDY CLAY (CH), greenish gray (5GY 5/1), moist, medium stiff, slight hydrocarbon odor, a few fine gravel pieces observed. | 8 | LF 30-11' | 7 | 0.2/13.1 |
| 9 | | | 9 | | | |
| 10 | | | 10 | | | |
| 11 | | | 11 | | | |
| 12 | | | 12 | | | |
| 13 | | Based on cuttings and drill rig pressure, a sand layer is suspected at 12 feet.<br>BOTTOM OF BORING AT 13 FEET.<br>No free water encountered. | 13 | | | |

EXPLANATION

- Clay
- Silt
- Sand
- Gravel

Interval sampled using Modified California Sampler

Sample retained for analysis

PID (ppm) Photoionization detector reading (background value/sample value) in parts per million

Well Permit No.: 4822
Date boring drilled: January 6, 1995
Drilling Company: Gregg Drilling
Drilling method: Modified California Sampler
Hammer weight and drop: 140 lbs./30 inches
LF Engineer/Geologist: John Sturman/Bryan Croll

Approved by: John Sturman R.G. 5714

**LITHOLOGY AND SAMPLE DATA FOR SOIL BORING LF-30** *(page 1 of 1)*

Project No. 3015.94

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

3015L007:JOS:JSM/RYL 030795

| Depth, feet | Graphic Log | Description | Sample No. and Interval | Penetration Rate (Blows/ft.) | PID (ppm) |
|---|---|---|---|---|---|
| 1 | | ASPHALT CONCRETE PAVING SURFACE.<br>SANDY GRAVEL (GW). FILL, variegated gray and light brown, moist, dense. | | | |
| 2 | | GRAVELLY CLAY (CH). FILL, very dark gray, moist, stiff, gravel is 1/4 to 1 1/2-inch diameter and angular; no odor, a piece of broken concrete observed. | | | |
| 3 | | | | | |
| 4 | | Some greenish gray (5GY 6/1) mottling, slight odor at 3.5 feet. | LF 31-3.5' | 13 | 0.2/11.4 |
| 5 | | | | | |
| 6 | | SILTY CLAY (CH). dark gray (N 4/), moist, medium stiff, minor sand, high plasticity, minor dark organic material in decay. | | | |
| 7 | | | | | |
| 8 | | | LF 31-8' | 9 | 0.5/3.5 |
| 9 | | BOTTOM OF BORING AT 8.5 FEET.<br>No free water encountered. | | | |

EXPLANATION

- Clay
- Silt
- Sand
- Gravel

Interval sampled using Modified California Sampler

Sample retained for analysis

PID (ppm) Photoionization detector reading (background value/sample value) in parts per million

Well Permit No.: 4822
Date boring drilled: January 6, 1995
Drilling Company: Gregg Drilling
Drilling method: Modified California Sampler
Hammer weight and drop: 140 lbs./30 inches
LF Engineer/Geologist: John Sturman/Bryan Croll

Approved by: John Sturman R.G. 5714

## LITHOLOGY AND SAMPLE DATA FOR SOIL BORING LF-31 *(page 1 of 1)*

Project No. 3015.94

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

3015L008:JOS:JSM/RYL 030795

| Depth, feet | Graphic Log | Description | Sample No. and Interval | Penetration Rate (Blows/ft.) | PID (ppm) |
|---|---|---|---|---|---|
| | | **LITHOLOGY** | | **SAMPLE DATA** | |
| 1 | | ASPHALT CONCRETE PAVING.<br>SANDY GRAVEL (GW), FILL, gray, moist, medium dense. | | | |
| 2 | | SANDY GRAVELLY CLAY (CH), FILL, black (5Y 2.5/1), wet, soft, gravel is fine to coarse grained. | | | |
| 3 ▽ | | Stiffness increases at about 3 feet. | | | |
| 4 | | CLAYEY SAND (SW), dark greenish gray (5GY 4/1), mottled dark olive-gray (5Y 3/2), moist, medium dense, some fine gravel, no odor. | | 28 | 0.0/2.1 |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | SILTY CLAY (CH), black (5Y 2.5/1), moist, soft, no odor. | | | |
| 8 | | Sand lens observed at 8 feet, fine to medium sand in clay. | LF 32-8.5' | 4 | 0.0/1.7 |
| 9 | | | | | |
| 10 | | After reaching 10 feet, free water first entered the boring.<br>BOTTOM OF BORING AT 10 FEET. | | | |

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Interval sampled using Modified California Sampler
- Sample retained for analysis
- ▽ Water level at time of drilling
- PID (ppm) Photolonization detector reading (background value/sample value) in parts per million

Well Permit No.: 4822
Date boring drilled: January 6, 1995
Drilling Company: Gregg Drilling
Drilling method: Modified California Sampler
Hammer weight and drop: 140 lbs./30 inches
LF Engineer/Geologist: John Sturman/Bryan Croll

Approved by: John Sturman R.G. 5714

**LITHOLOGY AND SAMPLE DATA FOR SOIL BORING LF-32** *(page 1 of 1)*

Project No. 3015.94

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

3015L009:JOS:JSM/RYL 030795

| LITHOLOGY | | | SAMPLE DATA | | |
|---|---|---|---|---|---|
| Depth, feet | Graphic Log | Description | Sample No. and Interval | Penetration Rate (Blows/ft.) | PID (ppm) |
| 1 | | SANDY CLAY (CL), FILL, dark brown, moist, soft, abundant organic material (landscaping soil). | | | |
| 2 | | GRAVELLY SANDY CLAY (CH), FILL, mottled dark reddish gray (5YR 4/2) and very dark gray (5YR 3/1), moist, soft, gravel is 1/4 to 1-inch diameter, some root hairs observed and decaying wood (small-possibly roots). | | | |
| 3 | | Stiffness increases at about 3 feet. | | | |
| 4 | | Slight organic odor at 3.5 feet. | | | |
| 5 | | | | 17 | 0.0/27 |
| 6 | | SANDY CLAY (CH), very dark gray (5YR 3/1), moist, medium stiff, some fine root hairs. | | | |
| 7 | | color changes to dark greenish gray (5GY 4/1), some hydrocarbon odor at 7 feet. Slight reddish brown tint in some areas, small 1/4-inch diameter sand pockets which appear to be isolated within clay. | | | |
| 8 | | | LF 33-8.5' | 8 | 0.0/293 |
| 9 | ▽ | | | | |
| 10 | | | | | |
| 11 | | CLAYEY SAND (SC), gray (5Y 5/1), with white specks, moist, medium dense, sand is fine to coarse-grained, no odor, some small black mottling (less than 1/8-inch thick | | | |
| 12 | | clay decreases in content. Free water enters boring after reaching 12.5 feet. BOTTOM OF BORING AT 12.5 FEET. | | 24 | |
| 13 | | | | | |

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Interval sampled using Modified California Sampler
- Sample retained for analysis
- ▽ Water level at time of drilling
- PID (ppm) Photoionization detector reading (background value/sample value) in parts per million

Well Permit No.: 4822
Date boring drilled: January 6, 1995
Drilling Company: Gregg Drilling
Drilling method: Modified California Sampler
Hammer weight and drop: 140 lbs./30 inches
LF Engineer/Geologist: John Sturman/Bryan Croll

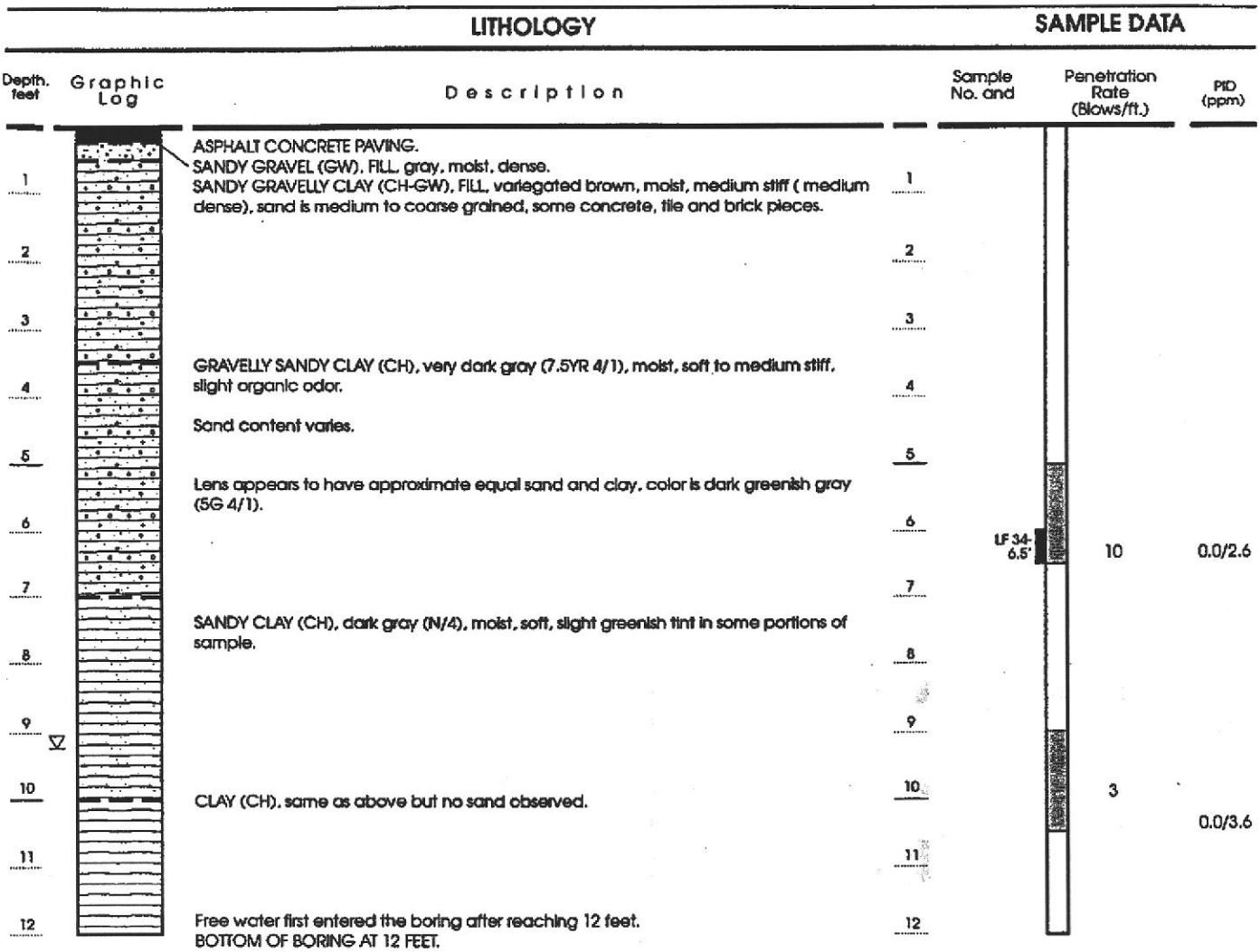
Approved by: John Sturman R. G. 5714

**LITHOLOGY AND SAMPLE DATA FOR SOIL BORING LF-33** *(page 1 of 1)*

Project No. 3015.94

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

3015L010:JOS:JSM/RYL 030795




EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Interval sampled using Modified California Sample
- Sample retained for analysis
- Water level at time of drilling
- PID (ppm) Photoionization detector reading (background value/sample value) in parts per million

Well Permit No.: 4822
Date boring drilled: January 6, 1995
Drilling Company: Gregg Drilling
Drilling method: Modified California Sampler
Hammer weight and drop: 140 lbs./30 inches
LF Engineer/Geologist: John Sturman/Bryan Croll

Approved by: John Sturman R.G. 5714

## LITHOLOGY AND SAMPLE DATA FOR SOIL BORING LF-34 *(page 1 of 1)*

Project No. 3015.94

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

3015L011:JOS:JSM/RYL 030795

| LITHOLOGY | | | SAMPLE DATA | | |
|---|---|---|---|---|---|
| Depth, feet | Graphic Log | Description | Sample No. and Interval | Penetration Rate (Blows/ft.) | PID (ppm) |
| 1 | | ASPHALT CONCRETE PAVING.<br>SANDY GRAVEL (GW), FILL, gray, moist, medium dense. | | | |
| 2 | | SANDY GRAVEL (GW), FILL, reddish brown (5YR 3/1), moist, medium dense. | | | |
| 3 | | GRAVELLY SANDY CLAY (CH), FILL, mottled dark gray and dark greenish gray, moist, very stiff. | | 21 | 0.0/2.0 |
| 4 | | | | | |
| 5 | | SANDY SILTY CLAY (CH), very dark gray (7.5YR 4/10), moist, soft to medium stiff. | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | Some small dark discoloration observed (~1/16-inch), slight oily odor. | | | |
| 9 | | | LF 35-9' | 5 | |
| | | BOTTOM OF BORING AT 9 FEET.<br>No free water encountered. | | | |

EXPLANATION

- Clay
- Silt
- Sand
- Gravel

Interval sampled using Modified California Sampler

Sample retained for analysis

PID (ppm) — Photolonization detector reading (background value/sample value) in parts per million

Well Permit No.: 4822
Date boring drilled: January 6, 1995
Drilling Company: Gregg Drilling
Drilling method: Modified California Sampler
Hammer weight and drop: 140 lbs./30 inches
LF Engineer/Geologist: John Sturman/Bryan Croll

Approved by: John Sturman R.G. 5714

**LITHOLOGY AND SAMPLE DATA FOR SOIL BORING LF-35** *(page 1 of 1)*

Project No. 3015.94

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

3015L012:JOS:JSM/RYL 030795

| Depth, feet | Graphic Log | Description | Sample No. and Interval | Penetration Rate (Blows/ft.) | PID (ppm) |
|---|---|---|---|---|---|
| 1 | | ASPHALT CONCRETE, PAVING. SANDY GRAVEL (GW). FILL, gray (2.5Y 5/0), moist, dense, fine sand, fine gravel subround and subangular. | | | |
| 2 | | SANDY SILTY CLAY (CH). very dark gray (5Y 3/1) moist, very stiff, high plasticity, no odor at 3 feet, some fine gravel for 3-inches, then no gravel observed immediately below. | | | |
| 3 | | | LF 36-3.5' | 20 | 0.0/1.3 |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | SANDY CLAY (CH). dark gray (5Y 4/1). moist becoming wet at about 9-inch, stiff, grading to soft at about 9-inch. organic root hairs slightly decayed observed in abundance with some fine organics, grades. no fine sand observed at 9.5 feet. | | | |
| 8 | | | | | |
| 9 | | | LF 36-9.5' | 12 | 0.0/2.5 |
| 10 | | BOTTOM OF BORING AT 9.5 FEET. No free water encountered. | | | |

EXPLANATION

- Clay
- Silt
- Sand
- Gravel

Interval sampled using Modified California Sample

Sample retained for analysis

PID (ppm) Photoionization detector reading (background value/sample value) in parts per million

Well Permit No.: 4822
Date boring drilled: January 6, 1995
Drilling Company: Gregg Drilling
Drilling method: Modified California Sampler
Hammer weight and drop: 140 lbs./30 inches
LF Engineer/Geologist: Bryan Croll

Approved by: John Stevens R.G. 5714

**LITHOLOGY AND SAMPLE DATA FOR SOIL BORING LF-36** *(page 1 of 1)*

Project No. 3015.94

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

3015LD13:JOS:MPM/RYL 030795