RO 415

Denis L. Brown

Shell Oil Products US
HSE – Environmental Services
20945 S. Wilmington Ave.
Carson, CA 90810-1039
Tel (707) 865 0251
Fax (707) 865 2542
Email denis.l.brown@shell.com

August 16, 20055

Jerry Wickham
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: Subsurface Investigation Work Plan and Site Conceptual Model
Former Shell Service Station
4411 Foothill Boulevard
Oakland, California
SAP Code 135686
Incident #98995746

Dear Mr. Wickham:

Attached for your review and comment is a copy of the *Subsurface Investigation Work Plan and Site Conceptual Model* for the above referenced site. Upon information and belief, I declare, under penalty of perjury, that the information contained in the attached document is true and correct.

If you have any questions or concerns, please call me at (707) 865-0251.

Sincerely,

Denis L. Brown
Sr. Environmental Engineer

CAMBRIA

August 16, 2005

Jerry Wickham
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **Subsurface Investigation Work Plan and Site Conceptual Model**
Former Shell Service Station
4411 Foothill Boulevard
Oakland, California
Incident # 98995746
Cambria Project # 247-0897-008

Dear Mr. Wickham:

On behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell), Cambria Environmental Technology, Inc. (Cambria) prepared this *Subsurface Investigation and Site Conceptual Model* as requested in the June 10, 2005 letter from the Alameda County Health Care Services Agency (ACHCSA). As proposed in Cambria's March 1, 2005 *Monitoring Well Destruction Work Plan*, wells at the site were destroyed on July 14, 2005. In order to install wells that will accurately monitor contaminant concentrations in the site's groundwater, Cambria proposes a depth-discrete soil and groundwater investigation to vertically profile the lithology and hydrocarbon impacts prior to installing new monitoring wells. Cambria will use this information to determine appropriate screened intervals for the new wells.

During a review of its files for the site, Cambria found a copy of an April 21, 1958 letter from P.M. Lehrman of Shell Oil Company to a Mr. W.G.F. Lawler, a June 2, 1958 letter from Shell's Division Operation Manager to Traveler's Insurance Company, and an April 23, 1959 note from D.L. Stevens Company to Shell. These items document the release of an unknown quantity of gasoline as a result of underground piping damage. As a result of this finding, Cambria proposes to investigate the off-site areas to the immediate south, south-southeast, and east of the site.

SITE CHARACTERISTICS

Site Description: The site is a former Shell service station located on the southwest corner of the Foothill Boulevard and High Street intersection in Oakland, California (Figures 1 and 2). Land use in the site vicinity is mixed commercial and residential, with 76-branded and Chevron-branded gasoline service stations occupying the northeastern and northwestern corners of the intersection, respectively. Fremont High School is located on the southeastern intersection corner.

Cambria Environmental Technology, Inc.

5900 Hollis Street
Suite A
Emeryville, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

1958 Underground Storage Tank (UST) Piping Leak: On April 19, 1958, a gasoline shortage was discovered at the operating Shell station. It was determined that there was a piping leak into a concrete pump pit and then into the soil in the vicinity of the storage tanks whenever the pump submerged in one of the site's three 6000-gallon tanks was activated. Product was found in an irrigation well located at 4320 Bond Street, adjacent to the Shell site. Shell installed 22 8-inch wells to depths of 15 feet below grade (fbg) along the property boundary and 1 well within the tank complex. Groundwater was pumped from the wells and the extracted water was transported to a separator. Though the volume of the release is not known, Shell reported in a June 2, 1958 letter that they recovered 650 gallons of gasoline from the wells. No documentation of any soil or groundwater sampling in response to the release has been located. The available documents are included in Attachment A.

1971 UST Removal and Replacement: During a review of archived files for the site, Cambria found a Shell document dated July 15, 1971 that notes plans to remove the existing 6,000-gallon USTs. No documentation of the removal or of any soil or groundwater sampling was located in the archived files.

Cambria also found an invoice dated September 17, 1971 for the delivery of one 10,000-gallon UST, one 8,000-gallon UST, and one 550-gallon underground waste oil tank. No documentation of the tank installation s was located in the archived files.

1977 Dispenser Piping Leak: During a review of archived files for the site, Cambria found a Shell Oil Company Spill Report dated October 19, 1977 documenting the release of 2,000 gallons of gasoline from a leaking pipe that ran from the USTs to the dispenser located closest to High Street. The report notes that the damaged section of pipe was replaced and that leak detectors were installed on all systems. No documentation of the repair or of any soil or groundwater sampling in response to the release was located in the archived files.

1984 UST Removal and Replacement: During a review of archived files for the site, Cambria found a Shell purchase order dated October 1, 1984 for removal of the existing USTs and installation of three 10,000-gallon fiberglass tanks. No documentation of the removal or of any confirmation sampling was located in the archived files.

1991 Waste Oil Tank Leak: During a review of archived files for the site, Cambria found an Underground Storage Tank Unauthorized Release Report submitted by Shell to ACHCSA on June 5, 1991. The report details a release from the 550-gallon waste oil tank at the site. The report states that the release was caused by tank failure, that the volume of release is unknown, and that the contents of the tank had been removed. Shell's suggested remedial action was to remove the waste oil tank.

1992 Waste Oil Tank Removal: The 550-gallon waste oil tank was removed on February 5, 1992. A soil sample was collected at the bottom of the excavation at a depth of approximately 11 fbg. No total petroleum hydrocarbons as gasoline (TPHg), diesel (TPHd), benzene, toluene, ethylbenzene and xylenes (BTEX), oil and grease, halogenated volatile organic compounds, or metals were detected in the sample. Total lead was detected at 6.7 parts per million (ppm). This likely represents the background lead concentration in the local soil. A sample of the stockpiled soil contained 5.2 ppm of TPHg, 14 ppm of TPHd, and 130 ppm of total oil and grease. Details of the waste oil tank removal and sampling activities are presented in the GeoStrategies Inc. (GeoStrategies) report dated March 26, 1992.

1992 Monitoring Well Installation: A single monitoring well (S-1) was installed in the vicinity of the waste-oil tank location. Details of this well installation are presented in GeoStrategies' *Monitoring Well Installation Report* dated January 19, 1993.

1993 Monitoring Well Installations: Hydro Environmental Technologies, Inc. (HETI) installed monitoring wells S-2 and S-3 on May 21, 1993. Well installations details are presented in HETI's report dated July 22, 1993.

1995 Soil and Groundwater Investigation: Pacific Environmental Group (PEG) of San Jose, California conducted a Geoprobe® investigation in June 1995. The investigation consisted of advancing eight on-site soil borings and two off-site borings for the collection of soil and groundwater samples. Details of this investigation are presented in PEG's *Site Investigation* report dated September 12, 1995.

1998 Product Equipment Upgrades: In November 1998, Paradiso Mechanical (Paradiso) of San Leandro, California upgraded the service station by adding secondary containment to the gasoline turbines and dispensers. Details of dispenser upgrade and sampling activities are presented in Cambria's *Dispenser Soil Sampling Report* dated November 30, 1998.

January 1999 Letter Response and Work Plan: In response to the December 7, 1998 ACHCSA letter to Equiva Services LLC (Equiva), Cambria prepared a *Letter Response and Work Plan* dated January 11, 1999. In this work plan, Cambria proposed an additional on-site groundwater monitoring well (S-4) and enhanced groundwater oxygenation via hydrogen peroxide injection into existing site wells.

March 1999 Work Plan Addendum: In a phone conversation with Cambria on February 1, 1999, the ACHCSA requested additional information regarding the location of proposed well S-4 and the use of hydrogen peroxide. As a result, Cambria submitted a *Work Plan Addendum* dated March 18, 1999. In this addendum, Cambria proposed locating well S-4 between the station building and the nearest dispenser-island to the north. Due to the lack of requested response from the Oakland Fire Department on the safety of hydrogen peroxide use, Cambria also proposed the application of oxygen releasing compound (ORC) in lieu of hydrogen peroxide.

April 1999 ACHCSA Letter: In an April 30, 1999 letter to Equiva, ACHCSA requested further information regarding the application of ORC. In addition, the ACHCSA requested that Cambria perform a feasibility study to evaluate alternatives to prevent methyl tertiary butyl ether (MTBE) migration. Cambria provided the requested information in the *Letter Response* dated June 15, 1999. In September 1999, ORC socks were subsequently installed in wells S-1, S-2, and BW-A.

December 1999 Letter Response, Work Plan, and Conduit Study: In a letter dated November 10, 1999, the ACHCSA requested that a site conceptual model (SCM) and work plan be prepared for the site. Cambria submitted a *Letter Response and Work Plan* dated December 13, 1999. In that work plan, Cambria presented findings of a subsurface conduit study. Several conduits, which may provide limited preferential groundwater flow at times of high groundwater elevations, were identified.

The deepest conduits located near the site are sanitary sewer pipelines with flowlines ranging from approximately 6 to 11 fbg. Although the depth to water in wells S-2 and S-3 along the western perimeter of the site has ranged from approximately 6 to 10.5 fbg, the depth to water is typically 8 to 9 fbg. Therefore, only the deepest sanitary sewer conduit trench has the potential to cause preferential flow of impacted groundwater. However, given that only a small portion of the trench backfill typically intersects groundwater and the fact that gravel lenses exist locally from 10 to 13 fbg, the potential for significant preferential groundwater flow in the utility trench is considered to be low.

January 2000 Site Investigation: Cambria conducted a site investigation in January 2000. Per the ACHCSA request, well S-4 was proposed between the station building and southeastern dispenser island. However, a conduit was encountered while drilling boring SB-4, and the boring was relocated approximately 50 feet southeast. The second boring (SB-4B) was located adjacent to the southeast corner of the station building, and well S-4 was installed in boring SB-4B to a depth of 20 fbg. In boring SB-4B, the maximum TPHd and TPHg concentrations were detected in sample SB-4B-5.5 at 27.2 ppm and 28.2 ppm, respectively. The maximum benzene concentration was detected in sample SB-4B-10.5 at 0.0696 ppm. The maximum MTBE concentration by EPA Method 8020 was reported in sample SB-4B-19.0 at 0.233 ppm. MTBE was confirmed by EPA Method 8260 in sample SB-4B-19.0 at a concentration of 0.0549 ppm. Details of the investigation are contained in Cambria's November 17, 2000 *Site Investigation Report.*

November 2001 Corrective Action Plan (CAP): On November 12, 2001, Cambria submitted a CAP in preparation for impending site demolition and fueling facility removal. In the CAP, Cambria discussed remedial alternatives and made recommendations for remedial action. Cambria recommended additional on-site over-excavation, following removal of the underground facilities, to substantially remove residual impacted soils from within the property boundaries. Cambria also recommended removing groundwater from the excavation, and placing ORC at the

base of the excavation to enhance biological degradation of residual impacted soil and groundwater. Continued quarterly groundwater monitoring was recommended to track the subsequent natural attenuation process.

February 2002 UST Closure Report: Paradiso removed the gasoline USTs and hydraulic hoists, and over-excavated approximately 1,250 cubic yards of impacted soil around and beneath the USTs, product dispenser islands, and hydraulic hoists. Phillips Services Corporation extracted approximately 16,000 gallons of groundwater from the excavation pits. Subsequent to over-excavation, Paradiso placed 810 pounds of ORC powder over the excavation bottom. Details of the fuel facilities removal and corrective action are presented in Cambria's *Underground Storage Tank Closure Report* dated February 25, 2002.

May 2002 Well Installation: In May 2002, Cambria installed one groundwater monitoring well (S-5) to complete the network of monitoring wells on site. The well was installed at a depth of 22 fbg. During the boring advancement, oil samples were collected at 15 and 20 fbg for lithologic logging purposes. Because these soil samples were collected beneath the water table, they were not submitted for chemical analysis. The well installation is described in Cambria's July 2, 2002 *Monitoring Well Installation Report.*

2005 Well Destructions: The site is currently a vacant lot at which, according to the property owner, redevelopment construction will begin in September 2005. The five on-site wells (S-1 through S-5) were located in areas where new buildings and a parking lot are proposed. Since the proposed buildings will cover three wells (S-2, S-4 and S-5) and grading for the proposed parking lot could damage wells S-1 and S-3, Cambria destroyed the wells on July 14, 2005 by pressure grouting with neat Portland Type I/II cement. Cambria will submit a report documenting these activities under separate cover.

Sediment Lithology: Sandy clay underlies the site from approximately 6 to 10 fbg. Clayey sand with lenses of gravel underlies the sandy clay from approximately 10 to13 fbg. Sandy clay underlies the clayey sand to the maximum on-site explored depth of 26 fbg.

Groundwater Characteristics and Monitoring Results: Groundwater has been monitored at the site since December 1992. Since then, groundwater depths have ranged from approximately 6 to 12 fbg. The calculated groundwater gradient typically trends to the south-southwest at approximately 0.12 ft/ft.

Elevated concentrations of gasoline hydrocarbons and oxygenates are present in groundwater at the site. During the second quarter 2005 monitoring event, the highest TPHg concentration detected was 13,000 parts per billion (ppb) in both wells S-1 and S-4. At that time, the maximum of benzene and MTBE concentrations in groundwater were 1,900 ppb and 460 ppb, respectively, in S-4. Tert-butyl alcohol (TBA) has been detected in wells S-2, S-4, and S-5 at concentrations

of 450, 140, and 3,700 ppb, respectively, during the September 2004 sampling event. No other oxygenates have been detected in groundwater at the site.

TECHNICAL RATIONALE FOR PROPOSED SCOPE OF WORK

As stated in ACHCSA's June 10, 2005 letter, the continued groundwater monitoring required at the site necessitates installing monitoring wells to replace those to be destroyed prior to the site's redevelopment. In addition, the letter noted that the vertical extent of petroleum hydrocarbons previously detected in groundwater at the site has not been determined. Also, the investigation will include the off-site area potentially impacted by the 1958 gasoline release. The proposed discrete-depth soil and groundwater investigation will provide additional information on the site's lithology and will vertically profile the subsurface contamination. This information will then be used to determine the screened intervals for the replacement wells to be installed.

Cambria's standard field procedures for Geoprobe® soil and groundwater sampling and for well installation are included as Attachments B and C, respectively.

WORK TASKS

Permits: Cambria will obtain required permits for advancing the borings from Alameda County Public Works Department.

Site Access: Shell has an access agreement with the on-site property owner. To complete off-site borings, Cambria will attempt, on behalf of Shell, to obtain an access agreement with the owner of the adjacent property.

Site Safety Plan: Cambria will prepare a comprehensive site safety plan to protect site workers. The plan will be kept on site during field activities and signed by each site worker.

Utility Clearance: Cambria will mark proposed drilling locations, and the locations will be cleared through Underground Service Alert prior to drilling. Additionally, a private utility locator will be used to identify subsurface obstacles to drilling.

Soil Borings: Cambria proposes to advance eight borings (SB-5 through SB-12) to further investigate the vertical and lateral extent of petroleum hydrocarbons in groundwater beneath the site and the adjacent property. Borings SB-5 through SB-8 will be advanced on site, and borings SB-9 through SB-12 will be advanced just south, south-southeast, and east of the site on adjacent

properties. Cambria will advance borings at the approximate locations shown on Figure 2. Locations were chosen based on the findings of the SCM included with this work plan as Attachment D.

Cambria proposes to advance an initial soil boring at each location to approximately 45 fbg, using direct-push technology and a 'dual-tube' sampling system. Dual-tube sampling systems use two sets of probe rods to collect continuous soil cores. One set of rods is driven into the ground as an outer casing. These rods receive the driving force from the hammer and provide a sealed hole from which soil samples may be recovered without the threat of cross contamination.

Under the supervision of a California professional geologist or civil engineer, a Cambria geologist will direct the borings. Borings will be logged continuously to provide detailed lithologic profiles. Soil samples will be collected for laboratory analysis every 5 feet above the water table.

A second boring will be advanced adjacent to the initial boring using direct-push technology and a dual-tube sampling system to collect depth-discrete groundwater samples, where sufficient groundwater is available, at 5-foot intervals from first-encountered groundwater to approximately 45 fbg. Between groundwater sampling events, drill rods and the stainless steel bailer used to collect groundwater samples will be decontaminated to prevent cross contamination from one water bearing unit to another.

Upon sampling completion, the borings will be grouted from the bottom to the surface with neat Portland cement and surfaced to match the existing grade. Soil and groundwater samples will be transported to a State-of-California-approved analytical laboratory for chemical analysis.

Chemical Analyses: A State-approved analytical laboratory will analyze soil and groundwater samples for TPHg, TPHd, BTEX, MTBE, and TBA using EPA Method 8260.

Groundwater Monitoring Well Installation: Based on the results of the discrete-depth soil and groundwater investigation, total depths and screened intervals will be chosen and groundwater monitoring wells S-6 through S-10 will be installed near the four on-site sampling locations (SB-5 through SB-8) and the easternmost off-site sampling location (SB-9). A determination will be made whether to install wells near the remaining off-site sampling locations (SB-10 through SB-12) based on the sampling results. A well installation work plan containing the proposed well construction details will be submitted to ACHCSA for approval before the wells are installed. The wells will be constructed of 4-inch diameter PVC on site and 2-inch diameter PVC off site, and screened with 0.010-inch machined slot. A filter pack consisting of No. 2/12 sand will be installed to 2 feet above the top of the well screen, which will be overlain by 3 to 5 feet of bentonite, and bentonite-cement grout to the surface. The annular material will be installed using a tremie pipe or equivalent means. A traffic-rated vault-box will be installed to protect each well. The wells will be developed by surging and purging at least 10 casing volumes of water.

Reporting: After the monitoring wells have been installed and sampled, we will prepare a report that, at a minimum, will contain:

- A summary of the site background and history;
- Descriptions of the drilling and sampling methods;
- Boring logs;
- Tabulated soil and grab groundwater analytical results, including all historical data;
- Analytical reports and chain-of-custody forms; and
- Cambria's conclusions and recommendations.

Groundwater Monitoring: Following installation of the proposed monitoring wells, the groundwater monitoring program will be re-initiated at the site. Groundwater samples will be collected from site wells on a quarterly basis. Groundwater samples will be analyzed quarterly for TPHg, TPHd, BTEX, and MTBE. Additionally, all samples collected during the initial quarterly event and at least annually thereafter, will be analyzed for the oxygenate compounds di-isopropyl ether, ethyl tertiary butyl ether, tertiary amyl methyl ether, and TBA. Cambria will prepare quarterly monitoring reports for submittal to ACHCSA.

SCHEDULE

Cambria is prepared to begin work upon completion of site redevelopment activities, written approval of this work plan by ACHCSA, and receipt of drilling permits.

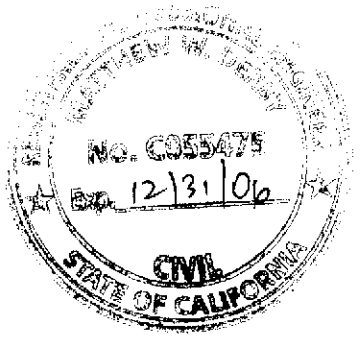
CLOSING

If you have any questions regarding the scope of work outlined in this work plan, please call David Gibbs at (510) 420-3363.

Sincerely,
Cambria Environmental Technology, Inc.

David M. Gibbs, P.G.
Project Geologist

Matthew W. Derby, P.E.
Senior Project Engineer



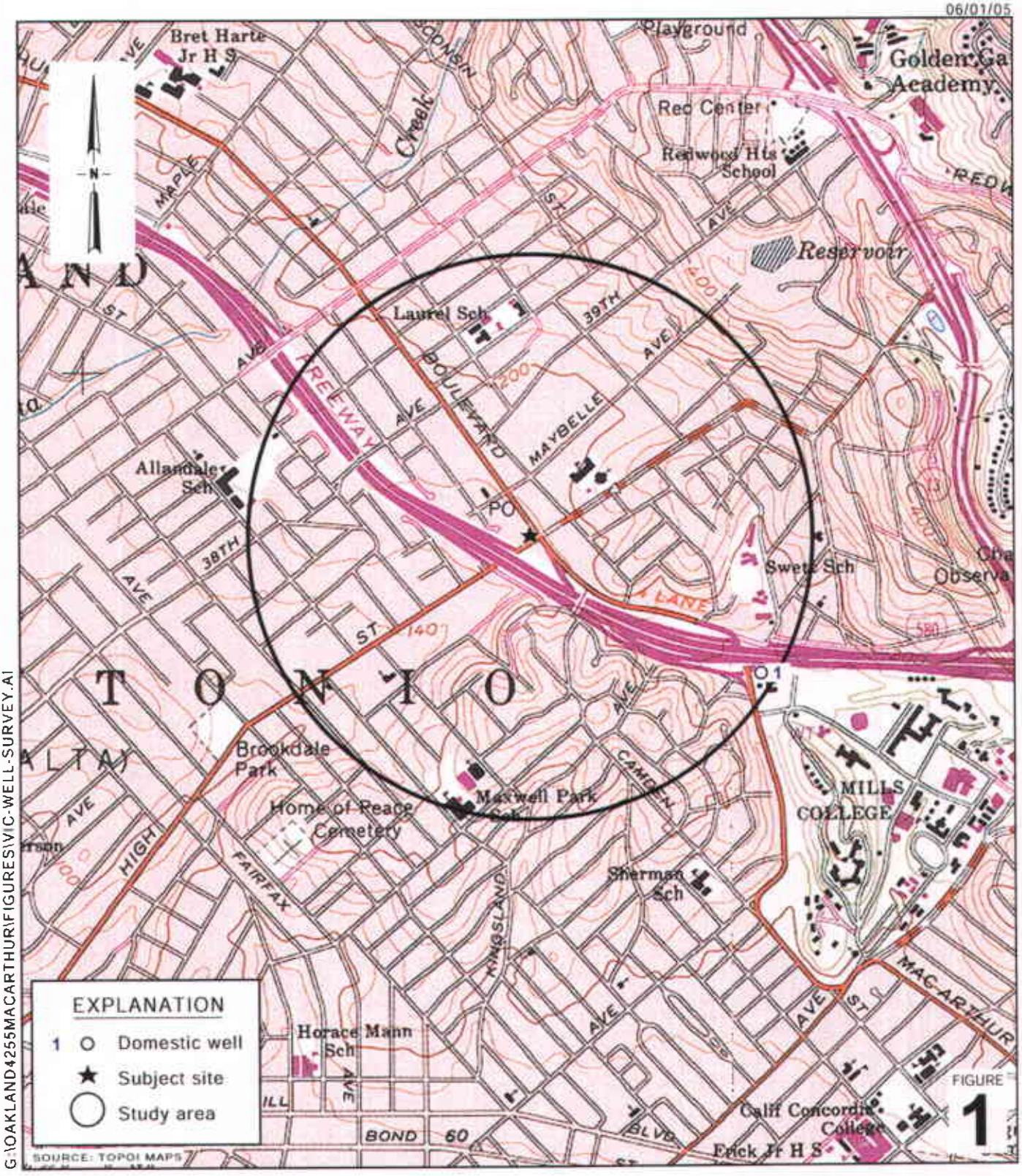
Figures: 1 - Vicinity/Area Well Survey Map
2 - Site Plan

Attachments: A - 1958 and 1977 Gasoline Leak Documents
B - Standard Field Procedures for Geoprobe® Soil and Groundwater Sampling
C - Standard Field Procedures for Installation of Monitoring Wells
D - Site Conceptual Model
D-1 - Available Boring Logs and Cross-Sections
D-2 - Historical Soil Sampling Results
D-3 - Groundwater Elevation Contour Map and Historical Groundwater Sampling Data
D-4 - Plots of Groundwater Concentrations versus Time
D-5 - Well Survey Table
D-6 - Site Conceptual Figures

cc: Denis Brown, Shell Oil Products US, 20945 Wilmington Ave, Carson, CA 90810
Bill Phua c/o Jay-Phares, 10700 MacArthur Boulevard, Suite 200, Oakland, CA 94605-5260, Attention: H.K. Phares

G:\Oakland 4411 Foothill\2005 Site Conceptual Model\Subsurface Investigation and SCM.doc

06/01/05



G:\OAKLAND4255MACARTHUR\FIGURES\VIC-WELL-SURVEY.AI

FIGURE 1

Former Shell Service Station
4255 MacArthur Boulevard
Oakland, California
Incident No.98995758

CAMBRIA

Vicinity/Area Well Survey Map
(1/2 Mile Radius)

08/16/05

Site Plan

EAST 17TH STREET

BOND STREET

FOOTHILL BOULEVARD

HIGH STREET

house w/o basement
4244 E. 17th

vacant lot
w/o basement

backyards
w/o basement

apts w/o basement

house
w/basement

Chevron Service
Station #9-0076
4265 Foothill Blvd.

dispensers

kiosk

USTs

W/O UST

Former BP Service
Station #11109
4280 Foothill Blvd.

76 Service
Station
Building

planter

Former Shell
Service Station
4411 Foothill Blvd.

former dispensers

PROPOSED
BLDG. A

PROPOSED
BLDG. B

former building

excavation boundary

house w/basement
1718 High

apts w/o basement
1724-28 High

house w/basement
4320 Bond

parking lot

parking

Albertson's Supermarket

Fremont High School

4427-33 Foothill

apts w/o basement

4340 Bond

MW-8
MW-2
MW-4
MW-6
MW-3
MW-5
MW-7
MW-9

S-1
S-2
S-3
S-4
S-5

SB-5
SB-6
SB-7
SB-8
SB-9
SB-10
SB-11
SB-12

BW-A

C-1
C-2
C-3
C-4
C-5
C-6
C-7
C-8
C-9
C-10

A
A'
B
B'

EXPLANATION

- SB-5 — Proposed soil boring location
- S-1 — Destroyed monitoring well location
- MW-3 — Recovery well location
- BW-A — Destroyed tank backfill well location
- A — A' — Cross-section line
- Overhead electrical lines (E)
- Sanitary sewer (SS)
- Storm drain (SD)
- Fire hydrant
- Storm drain inlet
- Manhole
- Power pole
- Flow direction

Basement presence based on field observations

Groundwater Flow Direction
(12/30/98 to 06/10/05)

0 30 60 120
Scale (ft)

FIGURE
2

CAMBRIA

Former Shell Service Station
4411 Foothill Boulevard
Oakland, California
Incident No.98995746

G:\OAKLAND 4411 FOOTHILL\FIGURES\EXT-SITE PLAN 7-05.DWG

ATTACHMENT A

1958 and 1977 Gasoline Leak Documents

SM 32 (1/84)—Printed in U.S.A.

REFERENCE

SHELL OIL COMPANY

DATE April 21, 1958

TO Mr. W. C. F. Lawler

FROM P. M. Lehrman
C. & M. Supervisor

SUBJECT C-1604 Foothill and High
Product Loss

A large shortage of gasoline was discovered early on Saturday morning, April 19, 1958. It was determined that this gasoline under the pressure of a pump behind it was forced outh through a break in the line and spilled into a concrete pump pit then down into the ground at the storage tank location. It is important to note that this flow of liquid will take place only when the pump is operating and cannot flow with any consequence when the pump is not operating as the pressure on the liquid is created behind it and pushes it. When the pump is off a check valve at the dispensing location will hold the liquid suspended in the line above the leak.

The submerged pump is activated and is in operation only when the operator is dispensing product at one or more of the islands. The pump is engineered so that it can easily handle eight dispensers and thus when one or two of the dispensers are in operation the pressure head is far greater than necessary to do the job. Thus when a break in the line occurred a pressure was sufficient to force the liquid out if the break was large enough. In this case such a break was made to pass a considerable amount of gasoline.

In order to determine the reason the line failed it is important to detail the system and explain its construction, fault being found by this writer that the system was not constructed per Shell's drawings and specifications.

Two independent units consisting of a 6000 Gallon underground tank with a submerged pump supply the two product requirements of the station. Each is described in a like manner in Shell's drawings.

Each pump consists of two parts, one part submerged in the tank and a part above the tank below grade enclosed in a concrete pump pit. This pit is constructed of concrete and rests on an 18" footing. The center of the pit is open at the bottom and is covered on the top with a steel plate. The footing of the pit is assumed to rest on properly placed fill and sand backfill for the tank carefully placed and rolled.

A two inch gasoline pipe line then feeds from the pump in the pit out through the wall of the pit to the dispensing locations on four islands. The construction drawings depict and describe that the pipe will not be bonded to the pit wall but shall be wrapped in oakum to allow rotation and/or translation of the pump, tank, or its confining pump pit wall.

Continued

The actual construction of the concrete pit and 2" gasoline line was not per Shell's drawings. A swing joint consisting of 2 elbows with a nipple between them was installed supposedly to take any movement that might occur but this swing joint xxx assembly was installed in such a manner that when the concrete pit wall was poured with concrete it was completely embedded within the concrete. This would not cause a break in itself but would surely prevent a movement causing whatever strain that would be developed to be taken by the gasoline pipe line.

It is assumed that because of the extreme weather conditions we have experienced for the past few weeks the ground area in the region of the pit and tanks became thoroughly soaked. At the same time repeated action of rolling vehicles over the area caused additional compaction of the earth especially as the water receded.

Therefore, at some particular moment it is assumed the entire pit rotated a minute amount sufficient to break the gasoline line entering the concrete wall. Thereafter each time the pump was activated and in operation an amount of gasoline passed out through the break and into the pit then into the soil and earth below the pit.

Since this break occured below the surface of the ground there was no way for the operator to realize the leak and further as explained it cannot be easily determined at the pump island as gasoline may still flow in the line.

Steps are now being taken to pump the gasoline out of the ground. An eight inch hole has been dug to a point near the bottom of the tank and it is hoped that most of the gasoline will flow back to this point and be pumped out of the ground.

The concrete pit will be reconstructed so that no future reoccurrence will happen. The other pit will also be reconstructed.

P. M. Lehrman

0304-2 (REV. 1/56) 5-PART
PRINTED IN U. S. A.

SHELL OIL COMPANY

ALTERATION OF ORDER

DATE 9/30/58
ALTERATION No. 1
TO ORDER No.
TO RELEASE No. 987558
DATED 5/7/58

FOR SHIPMENT TO SHELL OIL COMPANY
CARE OF C-1604, FOOTHILL AT HIGH ST.
AT OAKLAND, CALIF.

D. L. STEPHENS COMPANY
990 - 50TH AVE.
OAKLAND, CALIF.

HEREIN CALLED "CONTRACTOR"

IMPORTANT

Mail Invoice in Quadruplicate with origin and one copy of prepaid freight or expres bill, acknowledgment, shipping notices an bills of lading to SHELL OIL COMPANY

315 DERBY AVE.
OAKLAND, CALIF.

The provisions, terms and conditions in the aforementioned purchase order, as altered hereby, are to remain in full force and effect as provided therein.

PERFORM ADDITIONAL WORK AT ABOVE LOCATION TO REPAIR CONCRETE PUMP PIT BOXES, REPLACE CONCRETE SLAB AND CURB. DRILL AND CASE APPROXIMATELY 23 8" WELLS TO 15' DEPTH PLUS OR MINUS. ATTACH COVERS TO CASINGS AND SECURE TO PREVENT DAMAGE, CONTAMINATION AND HAZARD. INSTALL RWD 2 X 4 TOP AND MIDRAIL FENCE WITH POSTS ON 8' CENTER TO DISCOURAGE TRESPASSING OVER WELLS AND DELINEATE WELL AREA. REMOVE FROM PREMISES WASTE FROM DRILLING. TAP EACH WELL ON A SCHEDULE AS REQUESTED BY SHELL SEPARATING GASOLINE FROM WATER IN SEPARATOR PROVIDED BY OTHERS. RECORD FINDINGS AND SUBMIT TO SHELL AT REGULAR INTERVALS.

TOTAL COST APPROX. - $2,500.00

MR-303757

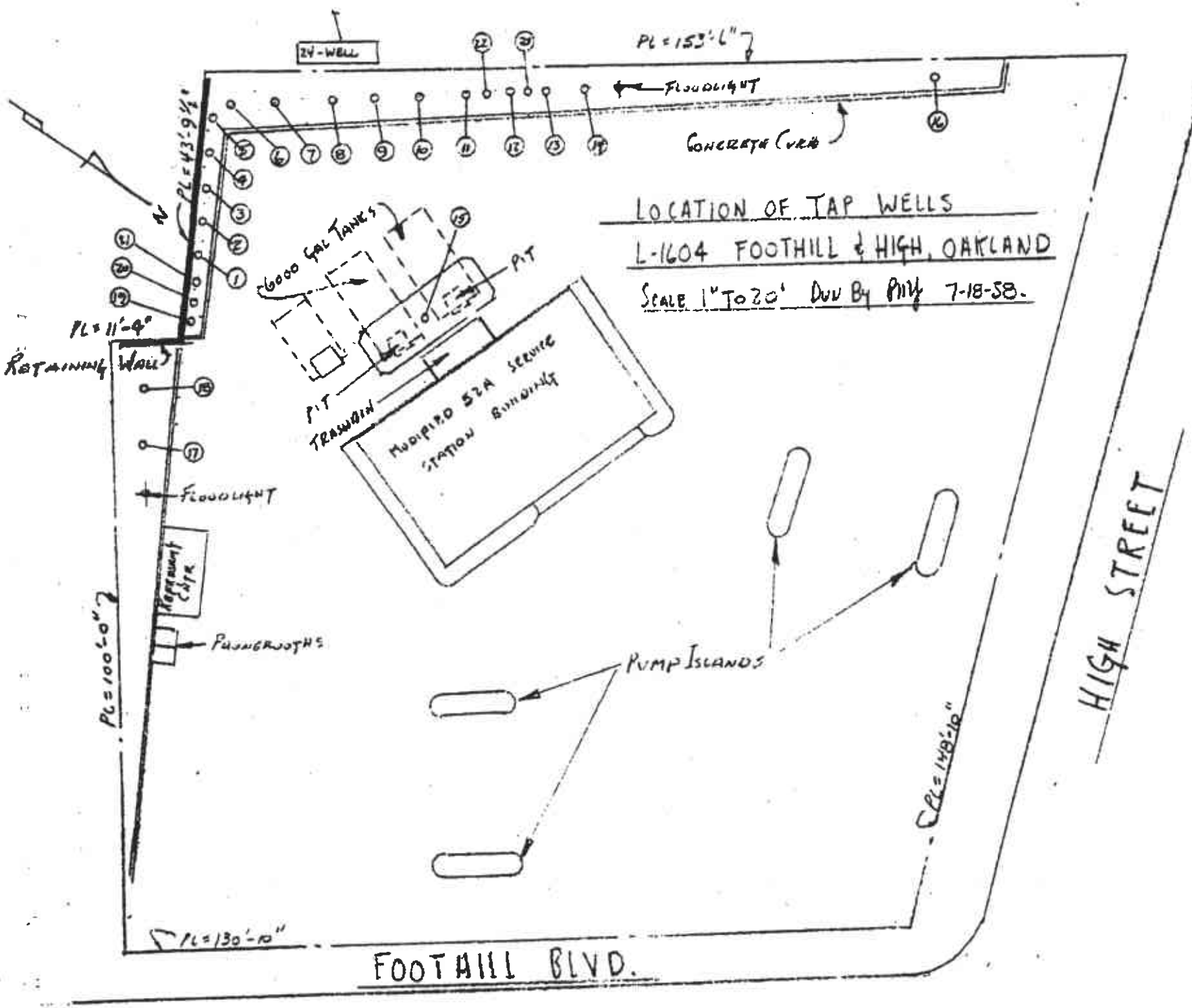
CHARGE: W.O. [illegible]

USED FOR:

If Further Information Is Required
Communicate With E. M. HANSEN

SHELL OIL COMPANY
HEREIN CALLED "SHELL"

INFORMATION COPY-USE AS REQUIRED BY LOCAL PROCEDURE



LOCATION OF TAP WELLS

L-1604 FOOTHILL & HIGH, OAKLAND

SCALE 1" TO 20' DWN BY PHW 7-18-58.

TABULATION OF GASOLINE PUMPED FROM HOLES

SHELL OIL COMPANY
L-1604 HIGH & FOOTHILL

BY DAYS, BY GALLONS, BY HOLES.

DATE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
4-21-58	PUMPING															450							
4-22-58																490							
4-23-58																10							
4-24-58																8							
4-25-58																5							
4-26-58																0							
5-1-58																2							
5-6-58																1							
5-7-58																1							
5-8-58																1							
5-19-58																							13
5-21-58																							5
5-22-58	DRILLING															1							4
5-22-58						5	10	5	10	5						0							5
5-23-58		16	15	6	0	0	0	5	7	5	4	0	36	0	0	0							2
5-26-58		10	12	2	0	0	0	5	3	0	1	0	25	0	0	0							-
5-27-58		4	4	1	0	0	0	3	2	0	0	0	11	0	0	0							
5-28-58		5	4	0	0	0	0	4	4	0	0	0	4	0	0	1							
5-29-58	DRILLING																						
5-30-58	CASINGS																						
5-31-58	CASINGS																						
6-1-58		3	3	0	0	0	0	4	2	0	4	0	2	0	0	3	0	0	0	-	0	-	0
6-2-58		2	2	-	0	0	0	1	-	0	3	0	2	0	0	-	0	0	0	0	0	-	0
6-3-58		1	1	-	0	0	0	2	-	0	-	0	-	0	0	3	0	0	0	0	0	-	0
6-4-58		2	-	-	0	0	0	3	-	0	3	0	-	0	0	4	0	0	0	0	0	-	0
6-5-58		2	-	-	0	0	0	2	-	0	2	0	-	0	0	2	0	0	0	0	0	-	0
6-6-58		2	-	-	0	0	0	2	-	0	-	0	-	0	0	-	0	0	0	0	0	-	0
6-7-58		2	½	½	0	0	0	2	-	0	½	0	½	0	0	½	0	0	0	0	0	-	0
6-8-58		-	½	½	0	0	0	3	½	0	2	0	½	0	0	-	0	0	0	0	0	-	0
6-9-58		1	½	½	0	0	0	2	½	0	½	0	0	0	0	2	0	0	0	0	0	-	0
6-10-58		2	½	½	0	0	0	2	-	0	2	0	0	0	0	-	0	0	0	0	0	-	0
6-11-58		-	½	½	0	0	0	2	-	0	-	0	0	0	0	1	0	0	0	0	0	-	0
6-12-58		2	½	½	0	0	0	-	½	0	½	0	0	0	0	½	0	0	0	0	0	-	0
6-13-58		-	½	½	0	0	0	2	-	0	-	0	0	0	0	-	0	0	0	0	0	-	0
6-14-58		2	-	-	0	0	0	-	½	0	½	0	0	0	0	½	0	0	0	0	0	-	0
6-15-58		-	½	½	0	0	0	2	-	0	-	0	0	0	0	-	0	0	0	0	0	-	0
6-16-58		2	-	-	0	0	0	-	½	0	½	0	0	0	0	½	0	0	0	0	0	-	0
6-17-58		-	½	½	0	0	0	2	-	0	-	0	0	0	0	-	0	0	0	0	0	-	0
6-18-58		2	-	-	0	0	0	-	½	0	½	0	0	0	0	½	0	0	0	0	0	-	0
6-19-58		-	½	½	0	0	0	2	-	0	-	0	0	0	0	-	0	0	0	0	0	-	0
6-20-58		2	2	0	0	0	0	2	5	¼	5	0	0	0	0	2	0	0	0	0	0	0	0
7-8-58		1	1½	0	0	0	0	1	2	¼	1	0	0	0	0	1	0	0	0	0	0	0	0
TOTAL		68	55	22	0	0	0	56	55	11	40	0	88	0	0	51	0	0	0	1	0	13	30

08/03/84 14:05 ☎510 675 6172 SHELL ENV ENGR +++ PACIFIC 009/011

TIME SAVING MEMORANDUM

1/28

C-1604

Test Holes

#1 - 6 1/4" gaso. & water

#2 - 1/2" \ \ \

#3 - 3/4" \ \ \

#7 - 2 1/2" \ \ \

#8 - 1 1/4" \ \ \

#13 - 1 1/2" \ \ \

#14 - 1 3/4 \ \ \

#22 - 3 3/4 \ \ \

All other holes dry.

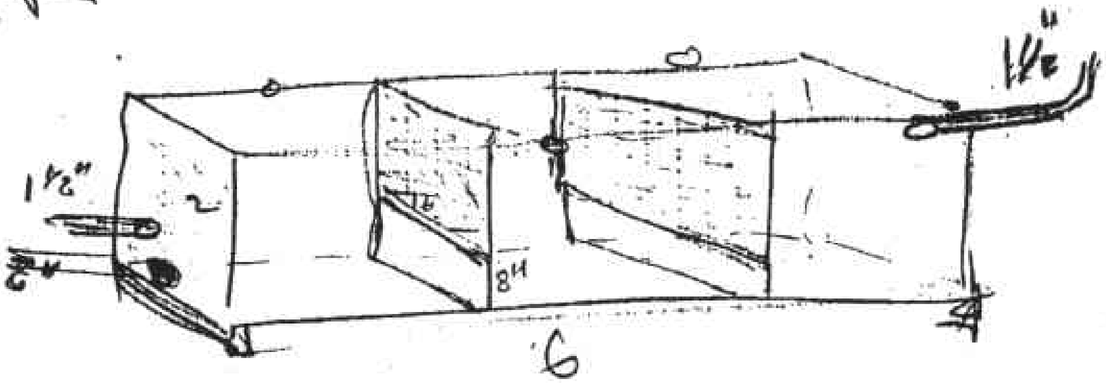
Approx 36 gal-s. pumped out out of which approx 8-11 gals. of gasoline

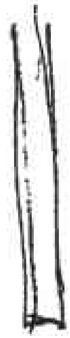
mary

Black Iron

~~13 ga~~

SEPARATOR BOX

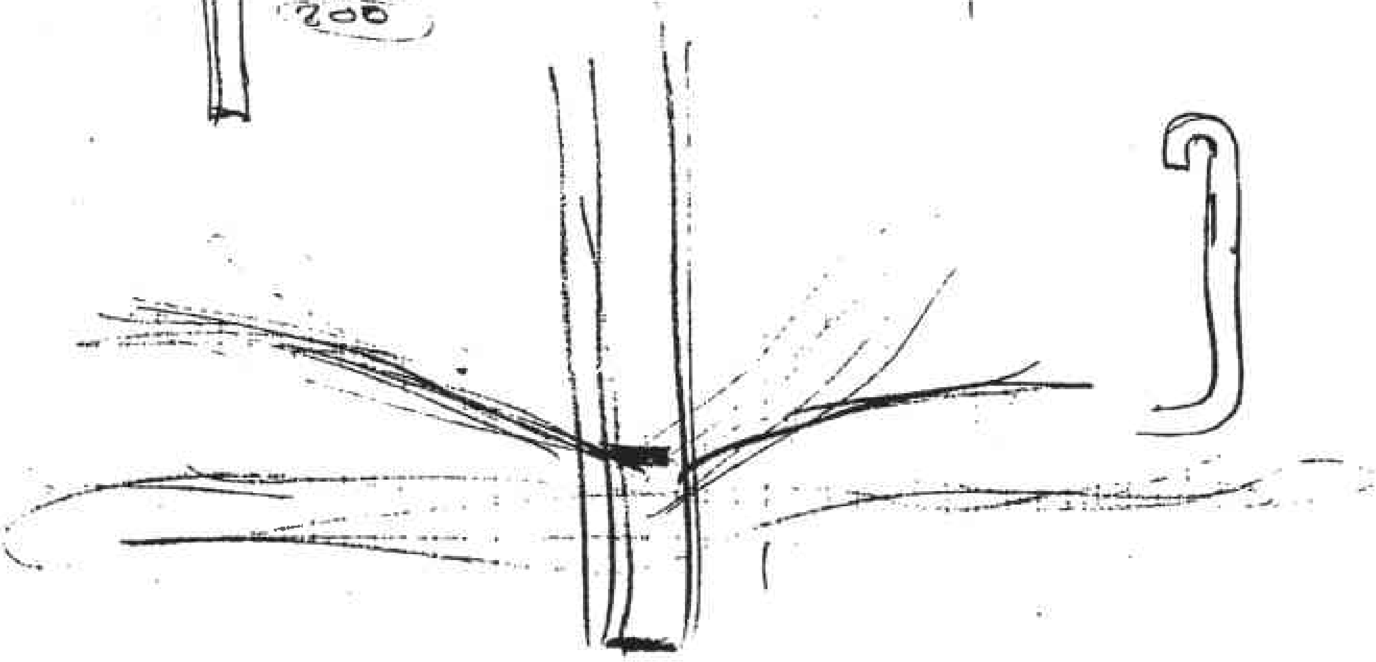




4
6
24 ft
8
200

=124
8

HASP



SR-5615 (REV. 9-60) PRINTED IN U.S.A.

~~AUTHORITY FOR EXPENDITURE~~ **WORK ORDER**

DEPT.	BRANCH OFFICE	ORIGINATING OFFICE	NO.
MARKETING	SAN FRANCISCO DIV.	OAKLAND DISTRICT	WO #2044-58

LOCATION OF PROJECT: FOOTHILL & HIGH, OAKLAND, CALIFORNIA — BOM

APPROPRIATION NO.: NON-RECOVERABLE

DATE PREPARED: 5/24/58 — DATE REGISTERED:

EST. COMPLETION: 30 days — ACTUAL:

REPAIRS TO BROKEN GASO. LINE

LOCATION NUMBER: C-1604

	DESCRIPTION	CAPITAL BUDGET	*TRANSFERRED OR IDLE ASSETS	EXPENSE	TOTAL
9105-3-540-200	REPAIR BROKEN GASOLINE LINE. REPAIR CONCRETE PUMP PITS AND REPLACE AND EXTEND CONCRETE PAD OVER BROKEN AREA. BORE TAP WELLS, CASE & CAP WELLS. PUMP TAP WELLS AS REQUIRED TO RECOVER LOST GASOLINE. MISCELLANEOUS CONTINGENT MEASURES TO ARREST GASOLINE LOSS AND PROTECT AGAINST PROPERTY DAMAGE AND LOSS.			3000.	3000.
	SUB-TOTALS			3000.	3000.

6/27

Approved

BUDGET POSITION			
AVAILABLE IN BUDGET		RETIREMENT EXPENSE (LESS SALVAGE)	
NEW CAPITAL FUNDS REQUIRED BY BUDGET REVISION		TOTAL COST →	3000.

RETIREMENT DATA	
ORIGINAL COST	
LESS DEPRECIATION	
NET BOOK VALUE	
RETIREMENT EXPENSE	
SALVAGE VALUE	( )
BOOK (PROFIT) OR LOSS	

JUSTIFICATION	
BUDGET CAPITAL EXPENDITURE	
MAINTENANCE, PLANT CHANGE, & OTHER EXPENSE	
RETIREMENT EXPENSE	
TOTAL — EXCLUDING TRANSFERRED ASSETS	
ESTIMATED SAVINGS OR REVENUE	
ESTIMATED PAY-OUT PERIOD — EXCLUDING TRANSFERRED ASSETS	
ESTIMATED PAY-OUT PERIOD — INCLUDING TRANSFERRED ASSETS	

DESCRIPTION OF PROJECT AND REASON FOR EXPENDITURE

TO COVER EXPENSES INCURRED TO REPAIR DAMAGES AS DESCRIBED ABOVE AND TO ACCOUNT OTHER EXPENSES. REFER TO DISTRICT LETTER FOR PARTICULARS REGARDING THE CAUSE AND FOR PROCEDURES BEING UNDERTAKEN TO CORRECT DAMAGES.

☐ CONTINUED OVER

RECOMMENDED	APPROVALS — BRANCH OFFICE	APPROVALS — REGIONAL OR HEAD OFFICE
P.M. LERMAN WCM. RWB		

*THIS COLUMN TO INCLUDE DEPRECIATION OF COMPANY DRILLING TOOLS

June 2, 1958

THE TRAVELERS INSURANCE COMPANY
1956 Webster Street
Oakland 12, California

Attention: Mr. Frier, Claims Department

Gentlemen:

RE: Accident Report - Public
Tony Alves, Jr., 4320 Bond Street
Oakland, California
Our Station: C-1604, Foothill & High
Oakland, California

Pursuant to our letter of May 14, 1958, under above subject, and in order to keep you currently advised as to subsequent events which have developed in connection with this Accident Report - Public, please be advised as follows:

Mr. T. Alves, Jr., informed our Oakland District Office of gasoline in a back yard irrigation well located on his property which is adjacent to service station No. C-1604. Our contractor promptly pumped the gasoline out of the well and has continued to frequently pump gasoline from it.

Mr. Alves has been advised and has agreed to temporarily not use the well.

It is our understanding that the well in question was not used for several years and that it was reactivated approximately one and one-half years ago for irrigation purposes.

We understand that your representative, Mr. Grow, will discuss this entire matter with our Oakland District Management in the near future.

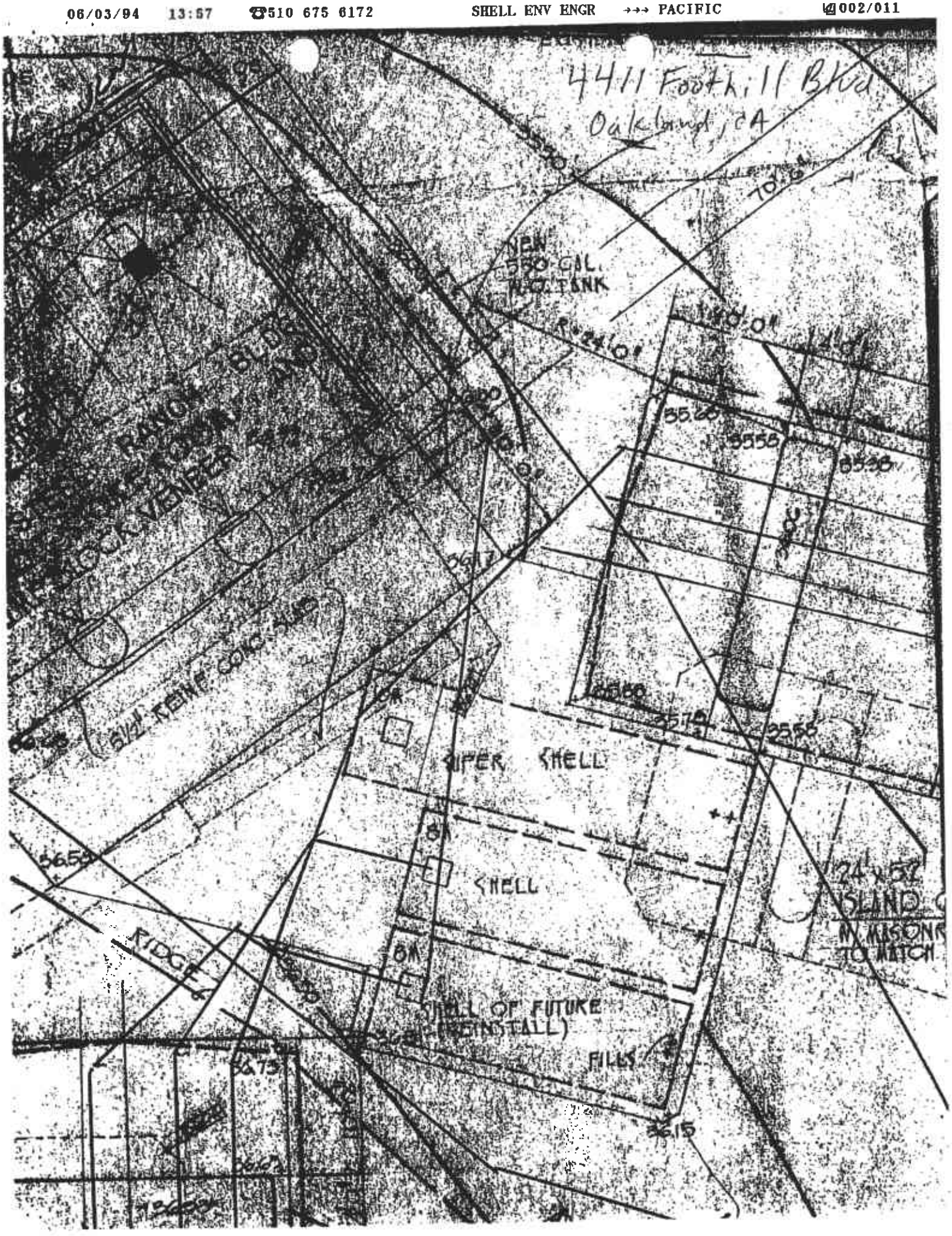
For your information, fifteen toy holes have been drilled in the vicinity of the gasoline line break and as of this writing approximately 650 gallons of gasoline has been recovered from the ground.

Very truly yours,

Original Signed By-
S. K. Holt

S. K. HOLT
Division Operations Manager

WVB:lf
cc: Head Office - Insurance
Oakland District Manager ← THIS COPY


4411 Foothill Blvd
Oakland, CA
NEW 550 GAL. W.O. TANK
SUPER SHELL
SHELL
SHELL OF FUTURE (UNINSTALL)
FILLS
ISLAND
RIDGE

PUMPS · LIFTS · METERS · HOSE · COMPRESSORS · LUBRICATION

D. L. STEVENS CO.
SERVICE STATION AND INDUSTRIAL EQUIPMENT
INSTALLATION SALES AND SERVICE
850 - 66TH AVENUE
OAKLAND 5, CALIFORNIA

PHONES { LOCKHAVEN 6-0838
LOCKHAVEN 6-1888
RES. ELGIN ... 1-5472

Shell Oil Co.
315 Derby Ave.
Oakland, Calif.
Attn. Mr Lehman

April 23, 1959

C-1504
Foothill & High St.
Oakland, Calif.

Subject Test Wells

Gentlemen:

We check all well at the above location April 14/1959 and found no trace of gasoline.

Lyle

D-382 (REV. 10-79)

OIL SPILL REPORT

(To be used for reporting all spills, leaks and underground product discoveries)

LOG NO. 77-2	DISTRIBUTION AREA Northern Calif	PLANT ORIGIN
DATE REPORTED 10-3-77 ~~10-14-77~~	MARKETING AREA Northwest	RETAIL DISTRICT Oakland
OCCURRENCE DATE/TIME 10-3-77 (am/pm)	DISCOVERY DATE/TIME 10-5-77 (am/pm)	STOPPED DATE/TIME 10-5-77

LOCATION OF INCIDENT: ☐ MARKETING PLANT ☒ SERVICE STATION ☐ JOBBER PLANT ☐ COMMERCIAL ACCOUNT ☐ HIGHWAY LOCATION

ADDRESS OF INCIDENT — STREET OR HIGHWAY: 4411 Foothill — CITY: Oakland — STATE: Calif.

TYPE OF INCIDENT: ☐ SPILL ☒ LEAK ☐ UNDERGROUND PRODUCT

DISCHARGE OF PRODUCT CLASSIFICATION: ☐ CLASS I ☐ CLASS II ☐ CLASS III

PRODUCT SPILLED: Shell Regu.

VOLUME LOST (Gallons): Total product 2000 − Product recovered 0 = Net product lost 2000

MONETARY LOSS (dollars): Cost of net product lost (excl. tax & frt) $ 1000 + Cost of clean up, rebrand, damage repairs, etc. $ 2500 = Total net loss to Shell $ 3500

RESPONSIBILITY FOR INCIDENT: ☐ PLANT ☒ DISTRICT ☐ OTHER; specify name of company

ESTIMATED COMPLETION DATE OF REPAIRS AND/OR CLEAN UP: 10-14-7

CAUSE OF INCIDENT

CORROSIVE SOIL CONDITION

WATERWAY/ AREA CONTAMINATED	DESCRIBE CONDITIONS	WEATHER	WATER	ROAD

HOW WAS INCIDENT DISCOVERED? Notified

HOW WAS INCIDENT STOPPED? Replaced section of pipin

TANK OR LINE LEAK

TANK(S) SIZE — LOCATION OF LEAK — TANK: ☐ TOP ☐ SIDE ☐ BOTTOM ☐ HEAD ☐ SEAM ☐ OTHER - specify — YEAR INSTALLED 1961

LINE (S) SIZE — LOCATION OF LEAK — LINE: ☑ LINE ☐ JOINT ☐ ELBOW ☐ WELD ☐ OTHER - specify — YEAR INSTALLED 1967

MATERIAL: ☑ STEEL ☐ FIBERGLASS

COATING TYPE: ☑ SHOP PAINTED ☐ COAL TAR ☐ SHOP COAT WITH ASPHALT ☐ ARMOR COATED INTERIOR ☐ EPOXY ☐ COATED AND WRAPPED

CATHODIC PROTECTION: ☒ NO ☐ YES — state type ☐ IMPRESSED CURRENT ☐ SACRIFICIAL ANODE ☐ OTHER - specify

DATE TEST PERFORMED: 10-3-77

TYPE OF TEST: ☐ PRESSURE ☐ HYDROSTATIC ☒ KENT-MOORE

DESCRIBE ACTION TAKEN TO PREVENT LEAKS IN OTHER TANKS/LINES —

Installed leak detectors in all systems for instant surveillance.

GOVERNMENT AGENCY INFORMATION

	FEDERAL	STATE	COUNTY	LOCAL
NAME OF AGENCY NOTIFIED				
NAME OF PERSON NOTIFIED				
DATE/TIME NOTIFIED				
WAS AGENCY ON SCENE?	☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO
WAS CITATION ISSUED?	☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO
FINE ASSESSED — Enter (F) after amount if fine is final	$	$	$	$

SE ASSISTANCE RENDERED, RECOMMENDATIONS MADE, AND/OR ACTION TAKEN BY AGENCIES -

N/A

AS NEWS MEDIA ON HAND? ☐ NO ☐ YES - *what news coverage resulted? (If printed matter mail copies to - Head Office - Marketing Engineering Dept.)*

N/A

INCIDENT CREATED ANY HAZARD, DAMAGES OR POLLUTION PROBLEMS DESCRIBE BRIEFLY - *(provide sketches and photos)*

N/A

TION TAKEN/CLEAN-UP PROCEDURES USED -

N/A

AS OUTSIDE ASSISTANCE RECEIVED? ☐ NO ☐ YES - *describe below*

N/A

AS CONTINGENCY PLAN USED? ☐ NO ☐ YES

AS IT EFFECTIVE? ☐ YES ☐ NO - *describe improvements needed in plan -*

N/A

SCRIBE DAMAGE/LIABILITY/PERSONAL LIABILITY -

N/A

AS SPILL, LEAK OR UNDERGROUND PRODUCT HANDLING EQUIPMENT AVAILABLE? ☐ NO ☐ YES – ADEQUATE? ☐ NO ☐ YES
plain recommended improvements if required -

N/A

EMEDIAL ACTION OR ACTION TAKEN TO PREVENT RECURRENCE OF THIS KIND OF INCIDENT -

Installation of leak detectors in all systems for surveilliance.

DDITIONAL REMARKS -

ORTING LOCATION	PLANT/DISTRICT NAME	PREPARED BY	SSN NO.	DATE PREPARED
☐ PLANT ☒ DISTRICT	Oakland	K G Newsome	634-7041	10-19-77

ATTACHMENT B

Standard Field Procedures for Geoprobe® Soil and Groundwater Sampling

CAMBRIA

STANDARD FIELD PROCEDURES FOR GEOPROBE® SOIL AND GROUNDWATER SAMPLING

This document describes Cambria Environmental Technology's standard field methods for GeoProbe® soil and ground water sampling. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate ground water depth and quality and to submit samples for chemical analysis.

Soil Classification/Logging

All soil samples are classified according to the Unified Soil Classification System by a trained geologist or engineer working under the supervision of a California Registered Geologist (RG) or a Certified Engineering Geologist (CEG). The following soil properties are noted for each soil sample:

- Principal and secondary grain size category (i.e., sand, silt, clay or gravel)
- Approximate percentage of each grain size category,
- Color,
- Approximate water or separate-phase hydrocarbon saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e., cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

Soil Sampling

GeoProbe® soil samples are collected from borings driven using hydraulic push technologies. A minimum of one and one half ft of the soil column is collected for every five ft of drilled depth. Additional soil samples can be collected near the water table and at lithologic changes. Samples are collected using samplers lined with polyethylene or brass tubes driven into undisturbed sediments at the bottom of the borehole. The ground surface immediately adjacent to the boring is used as a datum to measure sample depth. The horizontal location of each boring is measured in the field relative to a permanent on-site reference using a measuring wheel or tape measure.

Drilling and sampling equipment is steam-cleaned or washed prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon® tape and plastic end caps. Soil samples are labeled and stored at or below 4°C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

After a soil sample has been collected, soil from the remaining tubing is placed inside a sealed plastic bag and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable GasTech® or photoionization detector measures volatile hydrocarbon vapor concentrations in the bag's headspace, extracting the vapor through a slit in the plastic bag. The measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Grab Ground Water Sampling

Ground water samples are collected from the open borehole using bailers, advancing disposable Tygon® tubing into the borehole and extracting ground water using a diaphragm pump, or using a hydro-punch style sampler with a bailer or tubing. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4° C, and transported under chain-of-custody to the laboratory.

Discrete Depth Soil and Ground Water Sampling

Soil and groundwater samples are collected for lithologic and chemical analysis using a direct driven, dual tube soil coring system. A hydraulic hammer drives sampling rods into he ground to collect continuous soil cores. Two nested sampling rods are driven at the same time: a larger diameter outer rod to act as a temporary drive casing and a smaller inner rod to retrieve soil cores. As the rods are advanced the soil is driven into a sample barrel that is attached to the end of the inner rod. The outer rod ensures that the sample is collected from the desired interval by preventing sloughing of the overlying material. After reaching the desired depth the inner rods are removed from the boring and the sleeves containing the soil sample are removed from the inner sample barrel. Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon® tape and plastic end caps. Soil samples are labeled and stored at or below 4°C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

When collecting groundwater samples, the sample barrel and inner rods are removed from the boring once the targeted water bearing zone has been reached. The drive casing is pulled up from 0.5 to 5 feet to allow groundwater to enter the borehole. Small diameter well casing and screen is then installed in the borehole to facilitate sample collection. The drive casing is then pulled up sufficiently to expose the desired length of screen and samples are collected using a bailer, peristaltic, bladder or inertial pump. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4° C, and transported under chain-of-custody to the laboratory.

Duplicates and Blanks

Blind duplicate water samples are usually collected only for monitoring well sampling programs, at a rate of one blind sample for every 10 wells sampled. Laboratory-supplied trip blanks accompany samples collected for all sampling programs to check for cross-contamination caused by sample handling and transport. These trip blanks are analyzed if the internal laboratory quality assurance/quality control (QA/QC) blanks contain the suspected field contaminants. An equipment blank may also be analyzed if non-dedicated sampling equipment is used.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe. If the dual tube system is used, the borings are filled to the ground surface with cement grout poured or pumped through the dual tube casing.

ATTACHMENT C

Standard Field Procedures for Installation of Monitoring Wells

CAMBRIA

STANDARD FIELD PROCEDURES FOR INSTALLING MONITORING WELLS

This document describes Cambria Environmental Technology's standard field methods for drilling, installing, developing and sampling groundwater monitoring wells. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Well Construction and Surveying

Groundwater monitoring wells are installed in soil borings to monitor groundwater quality and determine the groundwater elevation, flow direction and gradient. Well depths and screen lengths are based on groundwater depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and State and local regulatory guidelines. Well screens typically extend 10 to 15 feet below and 5 feet above the static water level at the time of drilling. However, the well screen will generally not extend into or through a clay layer that is at least three feet thick.

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about one to two ft above the well screen. A two feet thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of Portland type I,II cement.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security. The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

Well Development

Wells are generally developed using a combination of groundwater surging and extraction. Surging agitates the groundwater and dislodges fine sediments from the sand pack. After about ten minutes of surging, groundwater is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of groundwater are extracted and the sediment volume in the groundwater is negligible. This process usually occurs prior to installing the sanitary surface seal to ensure sand pack stabilization. If development occurs after surface seal installation, then development occurs 24 to 72 hours after seal installation to ensure that the Portland cement has set up correctly.

All equipment is steam-cleaned prior to use and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 24 hours after they are developed.

Groundwater Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of groundwater are purged prior to sampling. Purging continues until groundwater pH, conductivity, and temperature have stabilized. Groundwater samples are collected using bailers or pumps and are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

ATTACHMENT D

Site Conceptual Model

SITE CONCEPTUAL MODEL
4411 Foothill Boulevard, Oakland
Cambria Environmental Technology, Inc.
August 2005

Site Address:	4411 Foothill Boulevard	**Incident Number:**	98995746
City:	Oakland, CA	**Regulator:**	Alameda County Health Care Services Agency (ACHCSA)

Item	Evaluation Criteria	*Comments/Discussion*
1	**Hydrocarbon Source**	
1.1	Identify/Describe Release Source and Volume (if known)	On April 19, 1958 a gasoline shortage was discovered at the operating Shell station. It was determined that there was a piping leak into a concrete pump pit and then into the soil in the vicinity of the storage tanks whenever the pump submerged in the 6000-gallon tank was activated. Product was found in an irrigation well located at 4320 Bond Street, adjacent to the Shell site. Shell installed twenty two 8-inch wells to depths of 15-fbg along the property boundary and one within the tank complex. Groundwater was pumped from the wells and the extracted water was transported to a separator. Though the volume of the release is not known, Shell reported recovery of approximately 650 gallons of gasoline from the wells. A Shell Oil Spill Report dated October 3, 1977 documented the release of 2,000 gallons of gasoline from a leaking pipe that ran from the USTs to the dispenser located closest to High Street. The report notes that the damaged section of pipe was replaced and that leak detectors were installed on all systems. An Underground Storage Tank Unauthorized Release Report submitted by Shell to ACHCSA on June 5, 1991 detailed a release from the 550-gallon waste oil tank at the site. The report states that the release was caused by tank failure, that the volume of release is unknown, and that the contents of the tank had been removed. The waste oil tank was removed in February 1992. ACHCSA noted inconsistencies between the laboratory results of soil samples collected from native soil and those collected from stockpiled soil from the excavation. This, combined with the inspector's observation of holes in the removed tank, caused the ACHCSA to determine that a site assessment was required.

Site Address:	4411 Foothill Boulevard	**Incident Number:**	98995746
City:	Oakland, CA	**Regulator:**	Alameda County Health Care Services Agency (ACHCSA)

Item	Evaluation Criteria	*Comments/Discussion*
1.2	Discuss Steps Taken to Stop Release	There is no documentation of repairs after the 1958 release except for a statement in an April 21, 1958 Shell Oil Company letter that the concrete pits were to be reconstructed to eliminate reoccurrence. It is assumed that the leaking section of piping was replaced. Shell's Oil Spill Report dated October 19, 1977 notes that the damaged section of pipe responsible for the 1977 gasoline release was replaced and that leak detectors were installed on all systems. The Underground Storage Tank Unauthorized Release Report submitted by Shell to ACHCSA on June 5, 1991 stated that the contents of the waste oil tank were removed; the tank itself was removed in February 1992.
2	**Site Characterization**	
2.1	Current Site Use/Status	The site is a former Shell service station located on the southwest corner of the Foothill Boulevard and High Street intersection in Oakland, California. The station was closed and the USTs and all fueling equipment were removed on December 11, 2001. The site is currently a vacant, partially paved lot. Land use in the site vicinity is mixed commercial and residential, with gasoline service stations occupying the northeastern and northwestern corners of the intersection. Fremont High School is located on the southeastern intersection corner. The site's owner is currently pursuing redevelopment of the property. According to the property owner, redevelopment construction is scheduled to begin in September 2005. The five on-site wells (S-1 through S-5) were located in areas where new buildings and a parking lot are proposed. The wells were destroyed on July 14, 2005.
2.2	Soil Definition Status	Previous subsurface investigations at the site have identified gasoline hydrocarbons and MTBE in areas adjacent to, east, and west of the underground storage tanks (USTs). No significant chemical concentrations have been identified in other areas of the site. The highest TPHg, benzene and MTBE concentrations detected in soil onsite were 1,500 ppm, 9.2 ppm and 2.5 ppm (by EPA method 8020 for TPHg and benzene, and by 8260B for MTBE), respectively, in dispenser samples D-2(2.0) and D-1(2.0) respectively, collected from the eastern dispenser islands on August 26, 1998. The extent of hydrocarbon impacted soil has not been determined.

Site Address:	4411 Foothill Boulevard	**Incident Number:**	98995746
City:	Oakland, CA	**Regulator:**	Alameda County Health Care Services Agency (ACHCSA)

Item	Evaluation Criteria	*Comments/Discussion*
2.3	Separate-Phase Hydrocarbon Definition Status	No separate-phase hydrocarbons have been reported at the site since groundwater monitoring began in 1992. However, gasoline was reported in an irrigation well on an adjacent property after the 1958 piping release.
2.4	Groundwater Definition Status (BTEX)	Based on the results reported in June 2005 quarterly monitoring data, hydrocarbons in shallow groundwater are adequately defined on-site and in all directions except east and northeast (predominantly the upgradient direction but downgradient in June 2005) off-site. Off-site lateral and downgradient contaminant definition is provided by wells intended to monitor the adjacent Chevron and former BP sites.
2.5	BTEX Plume Stability and Concentration Trends	BTEX and TPHg concentrations are fluctuating or decreasing in most of the on-site wells with the exception of well S-4, which has shown a recent increase in both BTEX and TPHg, concurrent with a rise in the water table. During the June 2005 quarterly sampling event 28,000 ppb of TPHg was detected, the highest concentration seen at this location. The fluctuation in concentrations in other wells may be partially explained by off-site contributions to the contamination as well as remediation efforts at the adjacent sites. Plots of BTEX concentrations in onsite wells over time are included as Attachment D4.
2.6	Groundwater Definition Status (MTBE)	As with BTEX contamination definition, MTBE in the site's shallow groundwater is adequately defined on-site and in all directions except east and northeast off-site. Off-site lateral and downgradient contaminant definition is provided by wells intended to monitor the adjacent Chevron and former BP sites.
2.7	MTBE Plume Stability and Concentration Trends	MTBE concentrations in affected wells are fluctuating but gradually decreasing over time. As of January 1, 2003, MTBE is no longer included in the formulation of Shell gasoline, and since there is no suspected ongoing source, the currently observed concentrations are expected to attenuate naturally over time. Offsite contributions, however, could lead to continued detections in site wells. Plots of MTBE concentrations in onsite wells over time are included as Attachment D4.
2.8	Groundwater Flow Direction, Depth Trends and Gradient Trends	Groundwater at the site ranged from 5.39 to 8.90 fbg during the June 2005 monitoring event; the shallowest recorded depth to water was 3.99 fbg in March 2000. The prevailing groundwater flow direction for the area around the site is south-southwest; the on-site flow direction is variable and may be influenced by groundwater extraction at adjacent sites. Overall, the area's groundwater gradient was approximately 0.032 feet per foot in June 2005.

Site Address:	4411 Foothill Boulevard	Incident Number:	98995746
City:	Oakland, CA	Regulator:	Alameda County Health Care Services Agency (ACHCSA)

Item	Evaluation Criteria	*Comments/Discussion*
2.9a	Regional Geology	The regional geology consists primarily of Quaternary deposits, alluvial sands, silts, clays, and gravel deposited in the eastern portion of the San Francisco Bay Basin. Geologic maps indicate an old stream channel (Courtland Creek) emerging from the moderately sloping area approximately 600 feet northeast of the site, indicating that former stream deposits may occur near the site. The creek is now routed in storm drains. The former creek channel runs south of the site, prior to discharging into the East Creek Slough and into the San Leandro Bay.
2.9b	Topography	The site is located on the nearly flat East Bay Plain, approximately 0.75 mile northeast of the Brooklyn Basin Tidal Canal of the Oakland Estuary. The Brooklyn Basin Tidal Canal is a channel that connects the Oakland inner harbor on the San Francisco Bay with the San Leandro Bay. The site is at an elevation of approximately 35 feet above mean sea level. The surface water closest to the site is Oakland's Peralta Creek, located approximately 3,800 feet northwest or cross gradient of the site.
2.9c	Stratigraphy and Hydrogeology	Sandy clay underlies the site from approximately 6 to 10 fbg. Clayey sand with lenses of gravel underlies the sandy clay from approximately 10-13 fbg. Sandy clay underlies the clayey sand to the maximum onsite explored depth of 26 fbg. The site appears to be located in the Oakland sub-area of the East Bay Plain Groundwater Basin.[1] As indicated by the California Regional Water Quality Control Board (RWQCB), there are no well-defined aquitards in the sub-area.

[1] California Regional Water Quality Control Board (CRWQCB), San Francisco Bay Region, Groundwater Committee, July 1999, *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report.*

Site Address:	4411 Foothill Boulevard	**Incident Number:**	98995746
City:	Oakland, CA	**Regulator:**	Alameda County Health Care Services Agency (ACHCSA)

Item	Evaluation Criteria	*Comments/Discussion*
2.10	Preferential Pathways Analysis	As reported in Cambria's December 13, 1999 *Letter Response and Work Plan*, several conduits, which may provide limited preferential groundwater flow at times of high groundwater elevations, have been identified at the site. The deepest conduits located near the site are sanitary sewer pipelines with flowlines ranging from approximately 6 to 11 fbg. Although the depth to water in wells S-2 and S-3 along the western perimeter of the site has ranged from approximately 6 to 10.5 fbg, the depth to water is typically 8 to 9 fbg. Therefore, only the deepest sanitary sewer conduit trench has the potential to cause preferential flow of impacted groundwater. However, given that only a small portion of the trench backfill typically intersects groundwater and the fact that gravel lenses exist locally from 10 to 13 fbg, the potential for significant preferential groundwater flow in the utility trench is considered to be low.
2.11	Other Pertinent Issues	The groundwater hydrocarbon plume may be commingled with those from the adjacent Chevron and former BP service station.
3	**Remediation Status**	
3.1	Remedial Actions Taken	In response to the 1958 gasoline release, Shell installed twenty wells along the property boundary and one within the tank complex. Groundwater was pumped from the wells and the extracted water was transported to a separator. Approximately 650 gallons of gasoline was extracted from the wells. Over-excavation activities performed during January 2002 removed approximately 2,550 tons of soil, equivalent to approximately 1,250 cubic yards, and approximately 16,000 gallons of groundwater. Subsequent to over-excavation, 810 pounds of Oxygen Reducing Compound (ORC) were spread over the base of the excavations. A relatively larger amount of ORC powder was spread in the area of higher residual chemical impact before clean backfill was placed in the pits and compacted. Between April and October 2001, dual vapor extraction (DVE) and groundwater extraction (GWE) have extracted approximately 18,588 gallons of groundwater from wells S-2, BW-A, and T-2 and removed an estimated 1.05 pounds of TPHg, and 0.39 pounds of MTBE.

Site Address:	4411 Foothill Boulevard	**Incident Number:**	98995746
City:	Oakland, CA	**Regulator:**	Alameda County Health Care Services Agency (ACHCSA)

Item	Evaluation Criteria	*Comments/Discussion*
3.2	Area Remediated	Mobile DVE and GWE addressed hydrocarbon and MTBE removal in the vicinity of the former UST complex and the former waste oil tank.
3.3	Remediation Effectiveness	MTBE and hydrocarbon concentrations decreased in target well S-2 during extraction; TPHg concentrations declined from 18,000 ppb in June 2001 to 3,700 ppb in March 2002 and MTBE concentrations declined from 18,000 ppb to 7,500 ppb during that same period. Since that time MTBE concentrations have been steadily declining at this location, though there was a slight rise in March 2005, and TPHg concentrations, though fluctuating, have not returned to pre-extraction levels in well S-2.
4	**Well and Sensitive Receptor Survey**	
4.1	Designated Beneficial Water Use	The Oakland sub-area has existing listed beneficial uses for municipal, domestic, agricultural, industrial service and industrial process water supply.
4.2	Shallow Groundwater Use	Shallow wells within a half-mile of the site are associated with testing or groundwater monitoring or remediation.
4.3	Deep Groundwater Use	The deepest reported wells within a half-mile radius are a 776-foot industrial water-producing well located almost 1/2 mile south-southwest of the site, a 244-foot test well located almost 1/2 mile southwest of the site, and a 235-foot test well located approximately 0.4 miles south-southwest of the site.
4.4	Well Survey Results	Cambria's November 17, 2000 *Site Investigation Report* cited a February 2000 sensitive receptor survey in which 58 monitoring, test, and industrial wells were identified within a one-half mile radius of the site. No domestic, irrigation, or municipal water supply wells were identified within the survey radius. Cambria's December 13, 1999 *Letter Response and Work Plan* stated that The Pacific Environmental Group conducted a basement survey in 1995 in order to identify basements downgradient of the site which could serve as potential sensitive receptors. There did not appear to be any basement immediately downgradient of the site which may serve as a sensitive receptor.
4.5	Likelihood of Impact to Wells	Due to depth and distance, it is unlikely that chemicals originating from the site will impact any of the identified industrial wells.
4.6	Likelihood of Impact to Surface Water	Given that the nearest surface water, Oakland's Peralta Creek, is located approximately 3,800 feet northwest or cross gradient of the site of the site, the likelihood of impact to surface water

Site Address:	4411 Foothill Boulevard	Incident Number:	98995746
City:	Oakland, CA	Regulator:	Alameda County Health Care Services Agency (ACHCSA)

Item	Evaluation Criteria	*Comments/Discussion*
		from chemicals originating from the site is low.
5	**Risk Assessment**	
5.1	Site Conceptual Exposure Model (current and future uses)	The site is scheduled to be redeveloped in the summer of 2005; new commercial buildings are proposed. Adjacent properties are single and multi-family residences.
5.2	Exposure Pathways	Potential exposure pathways include inhalation of COCs volatilized to indoor and outdoor air from impacted groundwater and soil on site by the commercial occupants of the site and by the residential occupants of the west-northwestern adjacent properties. No impacted surface soil (less than 10 fbg) has been encountered or is expected on the offsite property. Therefore, ingestion of, dermal exposure to, and inhalation of particulates from impacted soil are not considered as complete exposure pathways.
5.3	Risk Assessment Status	No risk assessment has been performed for this site.
5.4	Identified Human Exceedances	No risk assessment has been performed for this site.
5.5	Identified Ecological Exceedances	No risk assessment has been performed for this site.
6	**Additional Recommended Data or Tasks**	
6.1	Re-install wells based on depth discrete groundwater investigation and historical sampling results.	
6.2	Lateral soil and groundwater definition, southeast of well S-4 and south of 1958 fuel release.	
6.3	Continued groundwater monitoring.	

Known environmental documents for site:

April 21, 1958 – Letter from P.M. Lehrman of Shell Oil Company to Mr. W.G.F. Lawler

March 26, 1992 – Waste Oil Tank Removal Observation Report, GeoStrategies. Inc.

October 15, 1992 – Work Plan, GeoStrategies. Inc.

February 23, 1993 – Work Plan, GeoStrategies. Inc.

July 22, 1993 – Monitoring Well Installation Report, Hydro-Environmental Technologies

April 25, 1995 – Technical Response and Site Assessment Work Plan, Pacific Environmental Group

September 12, 1995 – Site Investigation, Pacific Environmental Group

November 30, 1998 – Dispenser Soil Sampling Report, Cambria

January 11, 1999 – Letter Response and Work Plan, Cambria

December 13, 1999 – Letter Response and Work Plan, Cambria

Site Address:	4411 Foothill Boulevard	**Incident Number:**	98995746
City:	Oakland, CA	**Regulator:**	Alameda County Health Care Services Agency (ACHCSA)

Item	**Evaluation Criteria**	***Comments/Discussion***
March 18, 1999 – Work Plan Addendum, Cambria		
November 17, 2000 – Site Investigation Report, Cambria		
November 12, 2001– Corrective Action Plan, Cambria		
February 25, 2002 – Underground Storage Tank Closure Report, Cambria		
April 2, 2002 – Monitoring Well Installation Work Plan, Cambria		
July 1, 2002 – Monitoring Well Installation Report, Cambria		
March 1, 2005 – Monitoring Well Destruction Work Plan, Cambria		
March 23, 2005 – Dispenser Upgrade Sampling Report, Cambria		

ATTACHMENT D-1

Available Boring Logs and Cross-Sections

SITE/LOCATION 4411 Foothill Boulevard, Oakland, CA	BEGUN 5/21/93	BORING DIAMETER 10 Inches	ANGLE/BEARING 90 Degrees	BORING NO S-2
DRILLING CONTRACTOR Gregg Drilling	COMPLETED 5/21/93	FIRST ENCOUNTERED WATER DEPTH 14 Feet		BOTTOM OF BORING 22 Feet
OPERATOR Moe Ruud	LOGGED BY Tony Ramirez	STATIC WATER DEPTH/DATE 9 Feet		
DRILL MAKE & MODEL Mobile B-53	SAMPLING METHOD Continuous sample			WELL NO. S-2
WELL MATERIAL 4" SCH 40 PVC	SLOT SIZE 0.020"	FILTER PACK #2/12	WELL SEAL Neat cement over hydrated pellets	BOTTOM OF WELL 22 Feet

BLOWS/FOOT	FIELD HEAD-SPACE *	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
							ASPHALT
		1					BASEROCK
		2					Sandy Lean CLAY (CL); black; moderate plasticity; 30% fine to coarse, angular to sub-rounded sand; dry.
		3					
		4					
	6.5	5					Sandy Lean CLAY (CL); olive-grey; moderate plasticity; 35% fine to coarse, angular to sub-rounded sand; dry.
38		6					
		7					Same as above, but moist.
33		8					
37		9		▼			Clayey SAND (SC); brown-grey; poorly graded; fine to coarse, angular to sub-rounded sand; 40% clay; moist.
	68.8	10					
52		11					Clayey GRAVEL (GC); brown; poorly graded; fine, sub-angular gravel; 30% clay; 10% fine to coarse sand; moist.
31	*PID (ppm)	12					Clayey SAND (SC); brown-grey; poorly graded; fine to coarse, angular to sub-rounded sand; 40% clay; moist.

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: June 7, 1993

APPROVED BY: John H. Turney, P.E.

SOIL BORING LOG S-2
AND
WELL CONSTRUCTION S-2

Shell Service Station
4411 Foothill Boulevard
Oakland, CA
WIC #204-5508-3400

PLATE
C-2

SHEET 1 OF 2

JOB NO.
12-010

SITE/LOCATION	BEGUN	BORING DIAMETER	ANGLE/BEARING	BORING NO
4411 Foothill Boulevard, Oakland, CA	5/21/93	10 Inches	90 Degrees	S-2
DRILLING CONTRACTOR	**COMPLETED**	**FIRST ENCOUNTERED WATER DEPTH**		**BOTTOM OF BORING**
Gregg Drilling	5/21/93	14 Feet		22 Feet
OPERATOR	**LOGGED BY**	**STATIC WATER DEPTH/DATE**		
Moe Ruud	Tony Ramirez	9 Feet		
DRILL MAKE & MODEL	**SAMPLING METHOD**			**WELL NO.**
Mobile B-53	Continuous sample			S-2
WELL MATERIAL	**SLOT SIZE**	**FILTER PACK**	**WELL SEAL**	**BOTTOM OF WELL**
4" SCH 40 PVC	0.020"	#2/12	Neat cement over hydrated pellets	22 Feet

BLOWS/FOOT	FIELD HEAD-SPACE *	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
							Clayey SAND (SC); continued from sheet 1.
							Clayey GRAVEL (GC); same as 10' to 11'.
26		13					Clayey SAND (SC); same as 11' to 12.5'.
		14		▽			Silty SAND (SM); light brown; poorly graded; fine to medium, angular to sub-rounded sand; 20% silt; wet.
	10.8						
31		15					Clayey SAND (SC); brown-grey; poorly graded; fine to coarse, angular to sub-rounded sand; 40% clay; wet.
		16					
21							
		17					
18		18					Fat CLAY (CH); light brown; high plasticity; 10% fine to medium, angular to sub-rounded sand; wet.
		19					Fat CLAY (CH); light brown; high plasticity; moist.
26		20					
27		21					Same as above.
43		22					
		23					
	*PID (ppm)	24					

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: June 7, 1993

APPROVED BY: John H. Turney, P.E.

SOIL BORING LOG S-2
AND
WELL CONSTRUCTION S-2

Shell Service Station
4411 Foothill Boulevard
Oakland, CA
WIC #204-5508-3400

PLATE
C-2

SHEET 2 OF 2

JOB NO.
12-010

4411 Foothill Boulevard, Oakland, CA	BEGUN 5/21/93	BORING DIAMETER 10 Inches	ANGLE/BEARING 90 Degrees	BORING NO S-3
DRILLING CONTRACTOR Gregg Drilling	COMPLETED 5/21/93	FIRST ENCOUNTERED WATER DEPTH 14 Feet		BOTTOM OF BORING 20 Feet
OPERATOR Ted Hogan	LOGGED BY Tony Ramirez	STATIC WATER DEPTH/DATE 9 Feet		
DRILL MAKE & MODEL Mobile B-53	SAMPLING METHOD Continuous sample			WELL NO. S-3
WELL MATERIAL 4" SCH 40 PVC	SLOT SIZE 0.020"	FILTER PACK #2/12	WELL SEAL Neat cement over hydrated pellets	BOTTOM OF WELL 20 Feet

BLOWS/FOOT	FIELD HEAD-SPACE *	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
							ASPHALT
							BASEROCK
		1					Sandy Lean CLAY (CL); black; moderate plasticity; 30% fine to coarse, angular to sub-rounded sand; dry.
		2					
		3					
		4					
		5					
	2.1	6					Sandy Lean CLAY (CL); olive-grey; moderate plasticity; 25% fine to coarse, angular to sub-rounded sand; dry.
38							
		7					Clayey SAND (SC); brown-grey; poorly graded; fine to coarse, angular to sub-rounded sand; 25% clay; 10% fine, sub-angular to sub-rounded gravel; moist.
39		8					
		9		▼			
32							
		10					Clayey SAND (SC); olive-grey; poorly graded; fine to coarse, angular to sub-rounded sand; 25% clay; moist.
	916						
42		11					Clayey SAND (SC); olive-grey; poorly graded; fine to coarse, angular to sub-rounded sand; 25% clay; 15% fine, sub-angular to sub-rounded gravel; moist.
	*PID (ppm)	12					Sandy GRAVEL (GP); explanation on sheet 2.

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: June 7, 1993

APPROVED BY: John H. Turney, P.E.

SOIL BORING LOG S-3
AND
WELL CONSTRUCTION S-3

Shell Service Station
4411 Foothill Boulevard
Oakland, CA
WIC #204-5508-3400

PLATE
C-3

SHEET 1 OF 2

JOB NO.
12-010

Cambria Environmental Technology, Inc.
5900 Hollis Street Suite A
Emeryville, CA 94608
Telephone: (510) 420-0700
Fax: (510) 420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	S-4 (SB-4B)
JOB/SITE NAME	Shell-branded Service Station	**DRILLING STARTED**	07-Jan-00
LOCATION	4411 Foothill Blvd, Oakland	**DRILLING COMPLETED**	07-Jan-00
PROJECT NUMBER	244-0897	**WELL DEVELOPMENT DATE (YIELD)**	29-Mar-00
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	39.06
DRILLING METHOD	Hollow-stem auger	**TOP OF CASING ELEVATION**	38.70 ft
BORING DIAMETER	10"	**SCREENED INTERVAL**	5 to 20 fbg
LOGGED BY	M. Gaffney	**DEPTH TO WATER (First Encountered)**	14.8 ft (07-Jan-00) ▽
REVIEWED BY	S. Bork, RG# 5620	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Hand Augered to 5 fbg		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)
							ASPHALT	0.3
					SP		**SAND** (SP); light brown; loose; dry; 10% silt, 80% medium to coarse grained sand, 10% gravel; high estimated permeability.	3.0
3	N/A N/A	SB-4B 5.5		5	ML		**SILT** (ML); light brown; medium stiff; dry; 5% clay, 85% silt, 10% fine grained sand; medium plasticity, medium estimated permeability. @ 4.0' - 5% clay, 75% silt, 15% sand; medium plasticity, low estimated permeability.	7.5
139	N/A N/A	SB-4B 10.5		10	SP		**SAND** (SP); grey green; loose; dry; 10% silt, 80% medium grained sand, 10% gravel; high estimated permeability.	
	N/A N/A N/A			15			▽	
21	N/A N/A N/A	SB-4B 19.0		20	ML		@ 19' - wet.	19.3
							Clayey SILT (ML); light brown with black and red spots; hard; wet; 20% clay, 75% silt, 5% fine grained gravel; medium plasticity, low estimated permeability.	20.0

WELL DIAGRAM

- Portland Type I/II
- Bentonite Seal
- Monterey Sand #2/16
- 4"-diam., 0.010" Slotted Schedule 40 PVC
- Bottom of Boring @ 20 ft

WELL LOG SONOMA (PID) G:\OAKLAND 4411 FOOTHILL\GINT\GINT.GPJ DEFAULT.GDT 2/10/05

Cambria Environmental Technology, Inc.
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Emeryville, CA 94608
Telephone: (510) 420-0700
Fax: (510) 420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	S-5
JOB/SITE NAME	Shell-branded Service Station	DRILLING STARTED	09-May-02
LOCATION	4411 Foothill Blvd, Oakland	DRILLING COMPLETED	09-May-02
PROJECT NUMBER	244-0897	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Gregg Drilling	GROUND SURFACE ELEVATION	
DRILLING METHOD	Hollow-stem auger	TOP OF CASING ELEVATION	NA
BORING DIAMETER	10"	SCREENED INTERVAL	5 to 22 fbg
LOGGED BY	S. Couch	DEPTH TO WATER (First Encountered)	9.0 ft (09-May-02)
REVIEWED BY	M. Derby, PE# 55475	DEPTH TO WATER (Static)	NA

REMARKS: Hand Augered to 5 fbg. Well located 50' southeast of the middle of northwest driveway.

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)
				0			**ASPHALT**	0.3
							FILL light brown; damp; silty, sandy.	
				5				
				10			@ 9 fbg - wet.	
							SAND (SP) grayish brown; saturated; 10% silt, 90% sand.	12.0
	17 30 37			15	SP		@ 15.0 fbg - strong odor detected.	
	18 50			20	ML		**SILT** (ML); light grayish brown; wet; 10% clay, 80% silt, 10% sand; odor detected.	20.0 22.0

WELL DIAGRAM:
- Portland Type I/II Cement
- Bentonite Seal
- 2"-diameter, 0.010" Slotted Schedule 40 PVC
- 4"-diam., 0.010" Slotted Schedule 40 PVC
- Bottom of Boring @ 22 ft

WELL LOG SONOMA (PID) G:\OAKLAND 4411 FOOTHILL\GINT\GINT.GPJ DEFAULT.GDT 2/10/05

Cambria Environmental Technology, Inc.
5900 Hollis Street Suite A
Emeryville, CA 94608
Telephone: (510) 420-0700
Fax: (510) 420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	S-4 (SB-4B)
JOB/SITE NAME	Shell-branded Service Station	DRILLING STARTED	07-Jan-00
LOCATION	4411 Foothill Blvd, Oakland	DRILLING COMPLETED	07-Jan-00
PROJECT NUMBER	244-0897	WELL DEVELOPMENT DATE (YIELD)	29-Mar-00
DRILLER	Gregg Drilling	GROUND SURFACE ELEVATION	39.06
DRILLING METHOD	Hollow-stem auger	TOP OF CASING ELEVATION	38.70 ft
BORING DIAMETER	10"	SCREENED INTERVAL	5 to 20 fbg
LOGGED BY	M. Gaffney	DEPTH TO WATER (First Encountered)	14.8 ft (07-Jan-00)
REVIEWED BY	S. Bork, RG# 5620	DEPTH TO WATER (Static)	NA
REMARKS	Hand Augered to 5 fbg		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)
							ASPHALT	0.3
					SP		**SAND** (SP); light brown; loose; dry; 10% silt, 80% medium to coarse grained sand, 10% gravel; high estimated permeability.	3.0
				5	ML		**SILT** (ML); light brown; medium stiff; dry; 5% clay, 85% silt, 10% fine grained sand; medium plasticity, medium estimated permeability. @ 4.0' - 5% clay, 75% silt, 15% sand, medium plasticity, low estimated permeability.	
3	N/A N/A	SB-4B 5.5						7.5
							SAND (SP); grey green; loose; dry; 10% silt, 80% medium grained sand, 10% gravel; high estimated permeability.	
139	N/A N/A	SB-4B 10.5		10	SP			
	N/A N/A N/A			15			▽	
21	N/A N/A N/A	SB-4B 19.0		20	ML		@ 19' - wet. **Clayey SILT** (ML); light brown with black and red spots; hard; wet; 20% clay, 75% silt, 5% fine grained gravel; medium plasticity, low estimated permeability.	19.3 20.0

WELL DIAGRAM

- Portland Type I/II
- Bentonite Seal
- Monterey Sand #2/16
- 4"-diam., 0.010" Slotted Schedule 40 PVC
- Bottom of Boring @ 20 ft

WELL LOG SONOMA (PID) G:\OAKLAND 4411 FOOTHILL\GINT\GINT.GPJ DEFAULT.GDT 2/10/05

Cambria Environmental Technology, Inc.
1144 - 65th St.
Oakland, CA 94608
Telephone: (510) 420-0700
Fax: (510) 420-9170

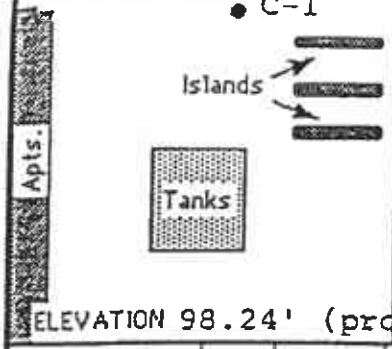
BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	S-5
JOB/SITE NAME	Shell-branded Service Station	**DRILLING STARTED**	09-May-02
LOCATION	4411 Foothill Blvd, Oakland	**DRILLING COMPLETED**	09-May-02
PROJECT NUMBER	244-0897	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hollow-stem auger	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	10"	**SCREENED INTERVAL**	5 to 22 ft bgs
LOGGED BY	S. Couch	**DEPTH TO WATER (First Encountered)**	9.0 ft (09-May-02) ▽
REVIEWED BY	M. Derby, PE# 55475	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Hand Augered to 5 fbg. Well located 50' southeast of the middle of northwest driveway.		

TPHg (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
				0			**ASPHALT**	0.3	Portland Type I/II Cement
							FILL light brown; damp; silty, sandy.		Bentonite Seal
				5					2"-diameter, 0.010" Slotted Schedule 40 PVC
				10			@ 9 fbg - wet. ▽		
							SAND (SP) grayish brown; saturated; 10% silt, 90% sand.	12.0	
	17 30 37			15	SP		@ 15.0 fbg - strong odor detected.		4"-diam., 0.010" Slotted Schedule 40 PVC
	18 50			20	ML		**SILT** (ML); light grayish brown; wet; 10% clay, 80% silt, 10% sand; odor detected.	20.0	
								22.0	Bottom of Boring @ 22 ft

WELL LOG (SHELL) G:\OAF450-1\GINT\GINT.GPJ DEFAULT.GDT 6/26/02

LOCATION MAP



ELEVATION 98.24' (project)

PACIFIC ENVIRONMENTAL GROUP, INC.

WELL / BORING NO. C-1
PAGE 1 OF 1

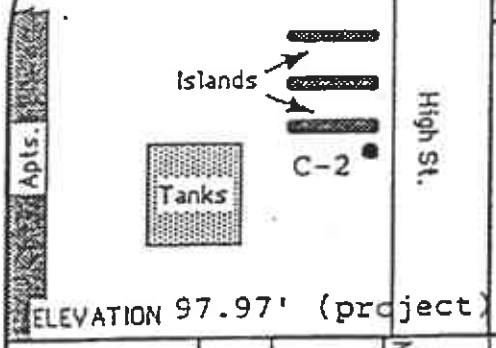
PROJECT NO. 120-57.01
LOGGED BY: E.G.
DRILLED BY: BAYLAND
DRILLING METHOD: HSA
SAMPLING METHOD: CAL. MOD.
CASING TYPE: SCH. 40 PVC
SLOT SIZE: 0.020
GRAVEL PACK: CA

CLIENT: G.R. CHEVRON USA
DATE DRILLED: 8-13-87
LOCATION: HIGH AND FOOTHILL
HOLE DIAMETER: 8"
HOLE DEPTH: 40-1/2'
WELL DEPTH: 40'
WELL DIAMETER: 3"

WELL COMPLETION	MOISTURE CONTENT	PENETRATION RESISTANCE (BLOW/FT)	DEPTH (feet)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY/REMARKS
	Dp		2			CL	ASPHALT AND BASEROCK. CLAY; fill; black; silty; 0-10% fine to coarse sand; disturbed; soft; no product odor.
			4			CL	CLAY; olive; silty; 0-10%fine to medium sand; red to black; FeO stained. @ 7': 20-30% fine to coarse sand; trace caliche; occasional pores; FeO mottled; stiff; trace fine to coarse gravel; no product odor.
	Dp	24	6				
	Dp-Mst	28	8				
			10			SC	CLAYEY SAND; yellowish brown; 15-25% fines; fine to coarse grained; 0-10% fine to coarse gravel; sub-rounded; no product odor.
			12				
	Mst	40	14			CL	CLAY; olive to strong brown; 10-20% fine to medium sand; trace coarse sand; FeO stains; very stiff; wet in root holes; no product odor.
			16				
			18				@ 19': 20-30% fine sand intermittently; moderate plasticity; no product odor.
	Mst -Wt	49	20				
			22				
	Mst -Wt	56	24				@ 24': 20-30% fine to coarse sand; trace fine gravel; very stiff; moderate plasticity; no product odor.
			26				
			28				@ 29': light gray; 0-10% fine sand; moderate plasticity; caliche mottle; very stiff; no product odor.
	Mst -Wt	62	30				
			32				
	Wt	68	34			SP-SC	SAND TO CLAYEY SAND; olive to brown; 5-20% fines; fine to coarse grained; 10-25% fine to medium gravel; very dense; faint product odor.
			36				
			38			CL	CLAY; strong brown; as above; 20-30% fine sand to coarse gravel; stiff; no product odor.
	Wt	70	40				Bottom of boring at 40-1/2'

PACIFIC ENVIRONMENTAL GROUP, INC.

WELL / BORING NO. C-2
PAGE 1 OF 1



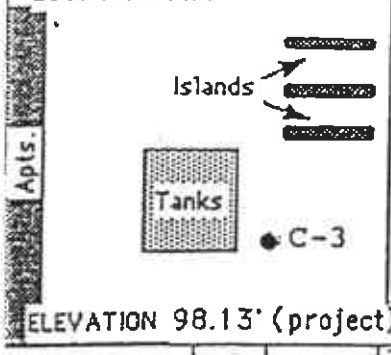
ELEVATION 97.97' (project)

PROJECT NO. 120-57.01
LOGGED BY: E.G.
DRILLED BY: BAYLAND
DRILLING METHOD: HSA
SAMPLING METHOD: CAL. MOD.
CASING TYPE: SCH. 40 PVC
SLOT SIZE: 0.020
GRAVEL PACK: CA

CLIENT: G.R. CHEVRON USA
DATE DRILLED: 8-13-87
LOCATION: HIGH AND FOOTHILL
HOLE DIAMETER: 8"
HOLE DEPTH: 40-1/2'
WELL DEPTH: 40'
WELL DIAMETER: 3"

WELL COMPLETION	MOISTURE CONTENT	PENETRATION RESISTANCE (BLOW/FT)	DEPTH (feet)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY/REMARKS
							ASPHALT AND BASEROCK.
			2			CL	CLAY FILL; black; abundant root fragments; silty; 0-10% fine sand; soft; faint product odor.
	Dp	22	4			CL	CLAY; gray; 5-15% fine to coarse sand; moderate plasticity; silty; trace fine gravel; stiff; no product odor.
			6				
			8			CL-GC	CLAY TO CLAYEY GRAVEL; strong brown; 30-60% fine to coarse sand and gravel; FeO mottled; sub-rounded to sub-angular; very stiff; strong product odor.
	Dp-Mst	42	10				
			12				
			14			CL	CLAY; Yellowish brown; silty; moderate plasticity; occasional root fragments; FeO mottled; very stiff; 10-20% fine to medium sand; no product odor.
	Mst-Wt	50	16				
			18				
	Mst--Wt	not rec.	20				
			22				@ 24': contains up to 25% fine to coarse sand and fine gravel; faint product odor.
			24				
	Mst--Wt	70	26				
			28				@ 29': Strong product odor.
	Wt	42	30				
			32			SC	CLAYEY SAND; dark yellowish brown; 15-20% fines; fine to medium grained; medium dense; no product odor.
	Wt	24	34				
			36				
			38			CL	CLAY; dark yellowish brown; 15-30% fine to coarse sand; silty; 10-15% fine to medium gravel; very stiff; no product odor.
	Wt	57	40				Bottom of Boring at 40-1/2'

LOCATION MAP



ELEVATION 98.13' (project)

PACIFIC ENVIRONMENTAL GROUP, INC.

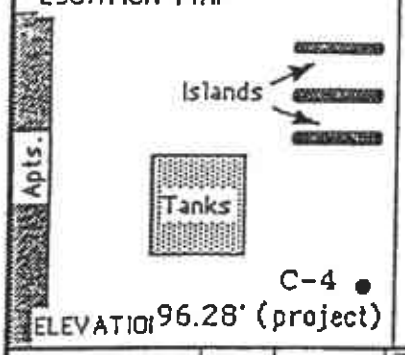
WELL / BORING NO. C-3
PAGE 1 OF 1

PROJECT NO. 120-57.01
LOGGED BY: E.G.
DRILLED BY: BAYLAND
DRILLING METHOD: HSA
SAMPLING METHOD: CAL. MOD.
CASING TYPE: SCH. 40 PVC
SLOT SIZE: 0.020
GRAVEL PACK: CA

CLIENT: G.R. CHEVRON USA
DATE DRILLED: 8-13-87
LOCATION: HIGH AND FOOTHILL
HOLE DIAMETER: 8"
HOLE DEPTH: 40-1/2'
WELL DEPTH: 40'
WELL DIAMETER: 3"

WELL COMPLETION	MOISTURE CONTENT	PENETRATION RESISTANCE (BLOW/FT)	DEPTH (feet)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY/REMARKS
			2			CL	ASPHALT AND BASEROCK. CLAY FILL; olive to black; 0-10% fine sand; silty; soft; no product odor.
			4			CL	CLAY; olive; 5-10% fine to coarse sand; slightly silty; stiff; no product odor.
	Dp	P	6				
			8				
	Dp	79	10				@ 9': yellowish brown; 30-40% fine sand to medium gravel; stiff; faint product odor.
			12				
	Dp	36	14				@ 14': yellowish brown; 5-10% fine to medium sand; FeO mottled; trace root fragments; moderate plasticity; no product odor.
			16				
			18				
	Dp	38	20				@ 19': no product odor.
			22				
			24				@ 24': no product odor.
	Dp	46	26				
			28				
	Wt	59	30			GC	CLAYEY GRAVEL; yellowish brown; 20-30% fines; 20% fine to coarse sand; fine to coarse grained; FeO stained; very stiff; no product odor.
			32				
			34			CL	CLAY; olive to yellowish brown; moderate plasticity; FeO stained; 0-5% fine to coarse sand; very stiff; no product odor.
	Wt	25	36				
			38				
	Wt	70	40				Bottom of Boring at 40-1/2'

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

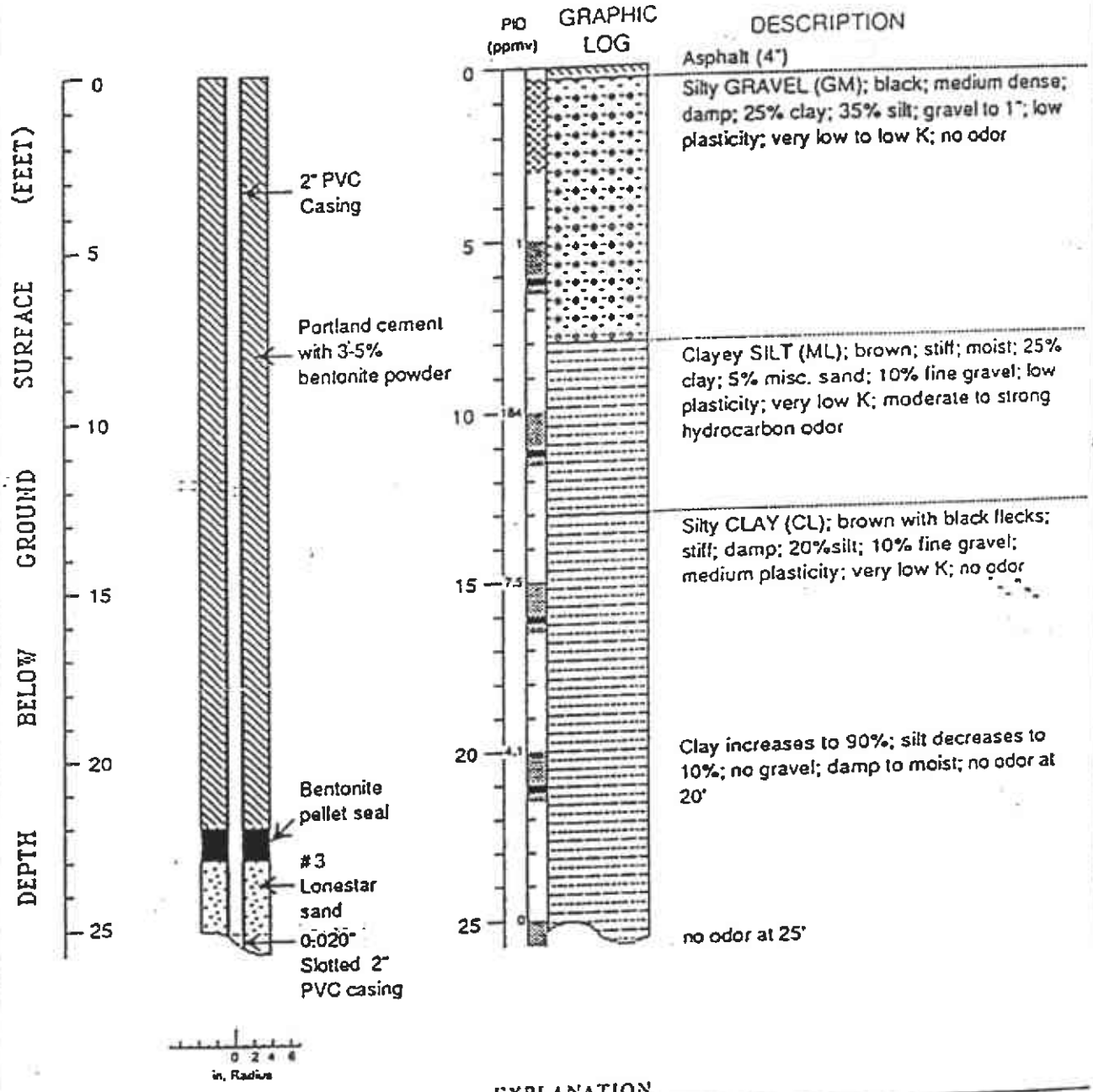
WELL / BORING NO. C-4
PAGE 1 OF 1

PROJECT NO. 120-57.01
LOGGED BY: E.G.
DRILLED BY: BAYLAND
DRILLING METHOD: HSA
SAMPLING METHOD: CAL. MOD.
CASING TYPE: SCH. 40 PVC
SLOT SIZE: 0.020
GRAVEL PACK: CA

CLIENT: G.R. CHEVRON USA
DATE DRILLED: 8-13-87
LOCATION: HIGH AND FOOTHILL
HOLE DIAMETER: 8"
HOLE DEPTH: 40-1/2'
WELL DEPTH: 40'
WELL DIAMETER: 3"

WELL COMPLETION	MOISTURE CONTENT	PENETRATION RESISTANCE (BLOW/FT)	DEPTH (feet)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY/REMARKS
			2			CL	ASPHALT AND BASEROCK. CLAY; fill; black; silty; 0-10% fine sand; no product odor.
	Dp	P	4			CL	CLAY; olive; 5-10% fine to coarse sand; slighty silty; stiff; damp; no product odor.
	Dp	39	10			SC	CLAYEY SAND; yellowish brown; 20-40% fines; fine to medium grained; FeO stained; trace root fragments; hard; strong product odor.
	Dp	37	14			CL	CLAY; strong brown; slightly silty; moderate plasticity; 10-30% fine sand to medium gravel; hard; no product odor.
	Dp	49	20				@ 19': no product odor.
	Dp	N/A	24				@ 24': decrease sand; no product odor.
	Mst -Wt	41	30				@ 29': olive; 0-10% fine to medium sand; hard; no product odor.
	Mst -Wt	80	34				@ 34': yellowish brown; 20-25% fine to medium sand; silty; hard; no product odor.
	Mst -Wt	>32	40				@ 39': olive; 0-10% fine to medium sand; slightly silty; hard; no product odor. Bottom of Boring at 40-1/2'

Well C-5 (BH-E)



EXPLANATION

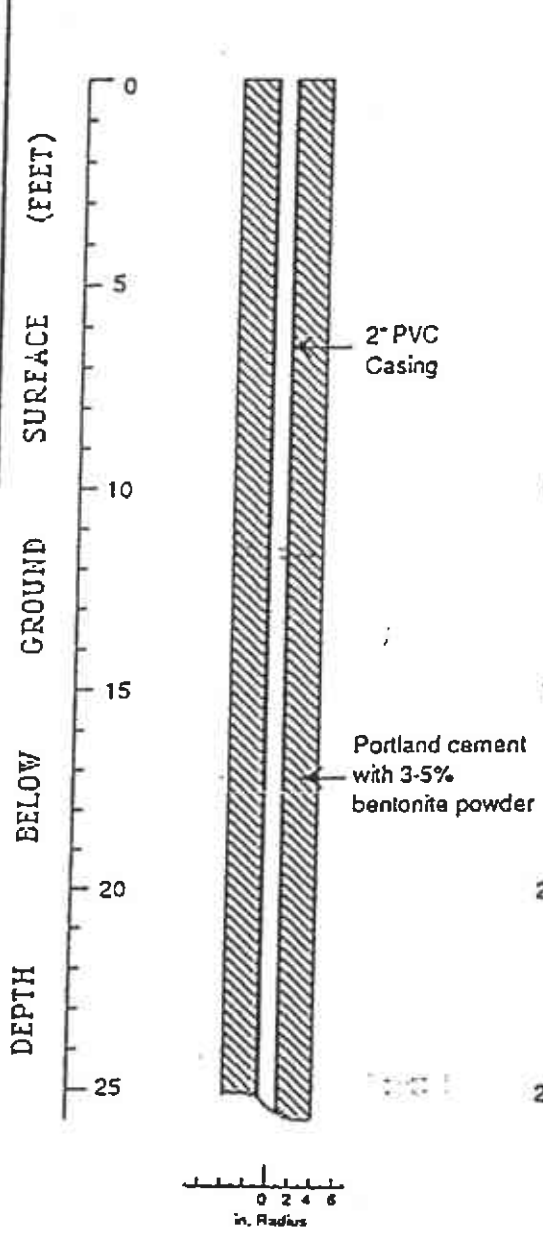
- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Uncertain contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

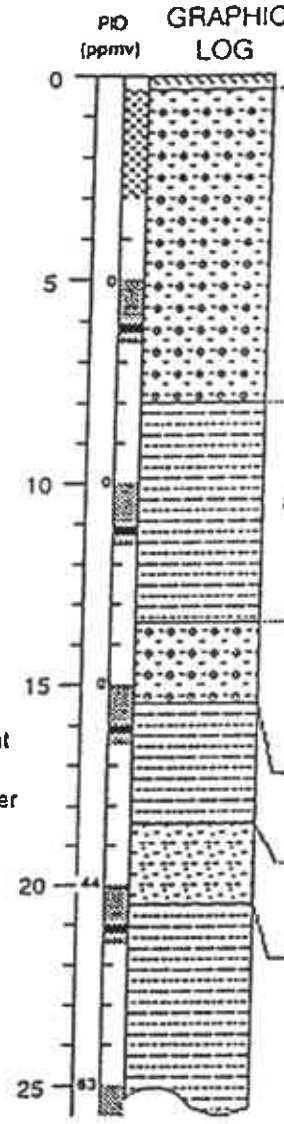
Logged by: Robert E. Kitay
Supervisor: James W. Carmody; RG 4872
Drilling Company: Soils Exploration Services, Vacaville, CA
Driller: Russ Ellis
Drilling Method: Hollow stem auger
Date Drilled: August 1, 1990
Well Head Completion: 2" locking well-plug with traffic-rated vaul
Type of sampler: Split barrel (2" ID)
Ground surface elevation: 35.83 feet above mean sea level

Well Construction and Boring Log Details - Well C-5 (BH-E)

Chevron Service Station #9-0076
Oakland, California

Well C-6 (BH-F)





DESCRIPTION

Asphalt (5")

Gravelly SILT (MH); tan; very stiff; damp; 30% fine gravel; 20% clay; 5% fine to medium sand; medium plasticity; very low to low K; no odor

Silty CLAY (CL); brown; very stiff; damp; 20% silt; medium plasticity; very low K; no odor

Silty GRAVEL (GM); yellow; medium dense; damp; 30%silt; 10% clay; 5% fine gravel; angular gravel to 1" diameter; low K; no odor; gravel consists of white and dark brown chert

Silty CLAY (CL); brown; very stiff; damp; 20% silt; medium plasticity; very low K; no odor

Silty SAND (SW); green; medium dense; wet; 30% silt; 10% fine gravel; low to moderate K; moderate hydrocarbon odor

Clayey SILT (ML); green; very stiff; wet; 20% clay; 10% sand; 5% fine gravel; low plasticity; low K; moderate hydrocarbon odor

Moist; moderate hydrocarbon odor at 25'

EXPLANATION

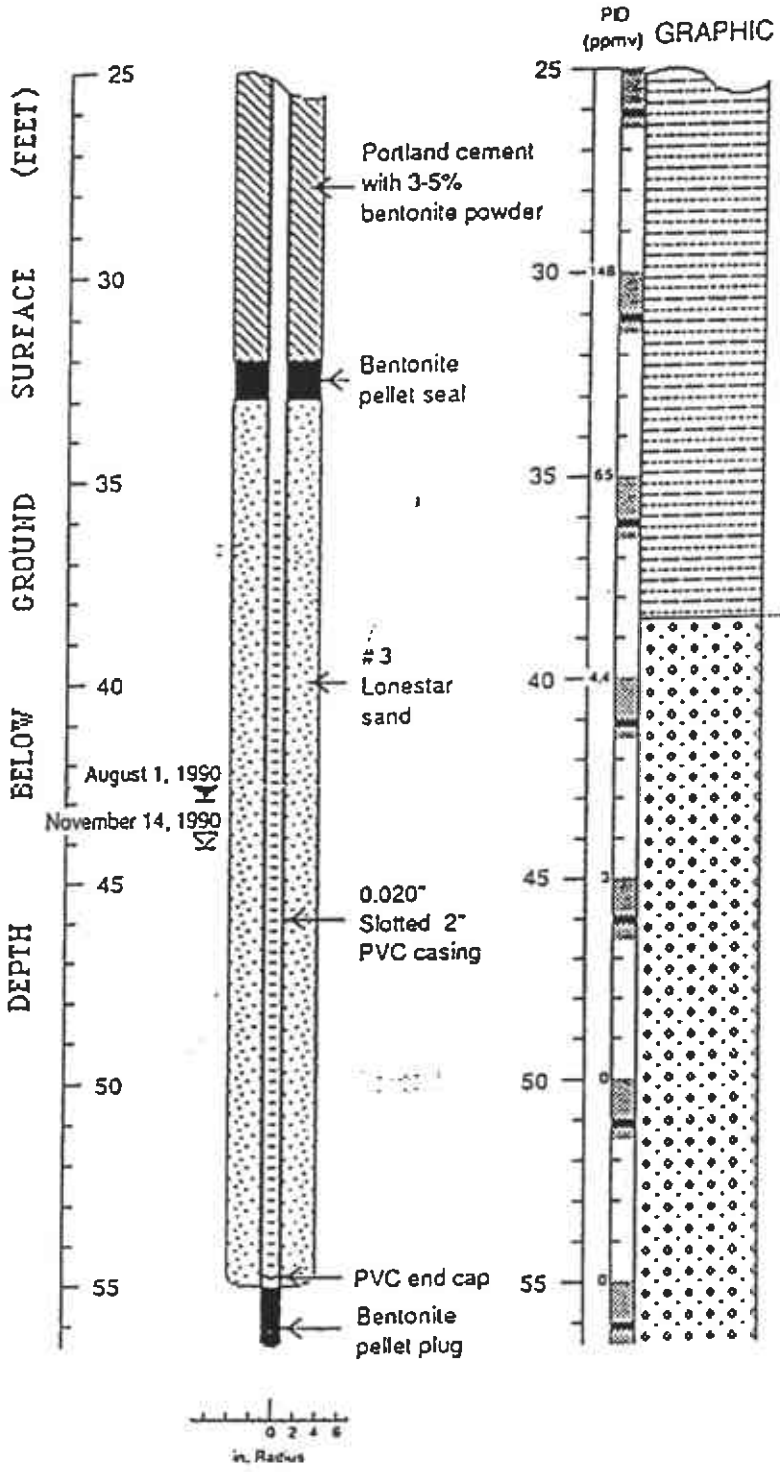
- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Uncertain contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

Logged by:	Robert E. Kitay
Supervisor:	James W. Carmody; RG 4872
Drilling Company:	Soils Exploration Services, Vacaville, CA
Driller:	Russ Ellis
Drilling Method:	Hollow stem auger
Date Drilled:	August 1, 1990
Well Head Completion:	2" locking well-plug with traffic-rated vault
Type of sampler:	Split barrel (2" ID)
Ground surface elevation:	

Well Construction and Boring Log Details - Well C-6 (BH-F)

Chevron Service Station #9-0076
Oakland, California

WELL C-6 (BH-F) (cont.)



DESCRIPTION

25% clay; 70% silt; 5% fine sand; damp; strong hydrocarbon odor at 30'

Moderate hydrocarbon odor at 35'

Sandy GRAVEL (GW); tan to yellow; very dense; damp; 25% sand; 15% clay; 15% silt; moderate K; no odor; gravel consists of brown chert, milky quartz and jasper

Clay decreases to 0%; sand increases to 40%; moist to wet; no odor at 45'

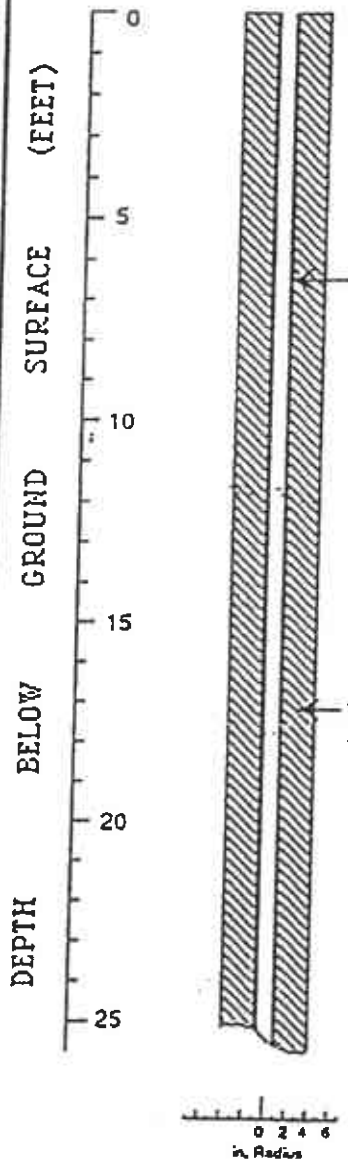
No odor at 50'

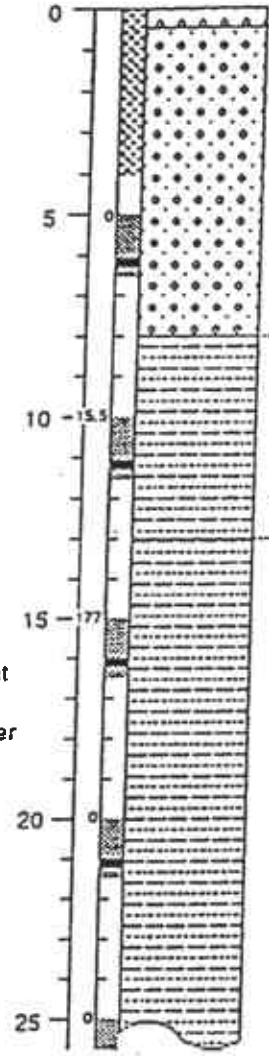
No odor at 55'

Well Construction and Boring Log Details - Well C-6 (BH-F)

Chevron Service Station #9-0076
Oakland, California

Well C-7 (BH-G)





DESCRIPTION

Topsoil (6")

Sandy GRAVEL (GW); light brown mottled red-brown; medium dense; damp; 20% sand; 10% silt; gravel to 1" diameter; very high K; no odor; FeO staining

Clayey SILT (MH); olive; very stiff; damp; 10% clay; 5-10% fine sand; medium plasticity; low K; no odor

Silty CLAY (CL); brown; very stiff; damp to moist; 35% silt; 5% fine sand; medium plasticity; very low K; strong hydrocarbon odor

Wet; no odor at 20'

Clay increases to 85%; silt decreases to 10%; medium to high plasticity; no odor at 25'

EXPLANATION

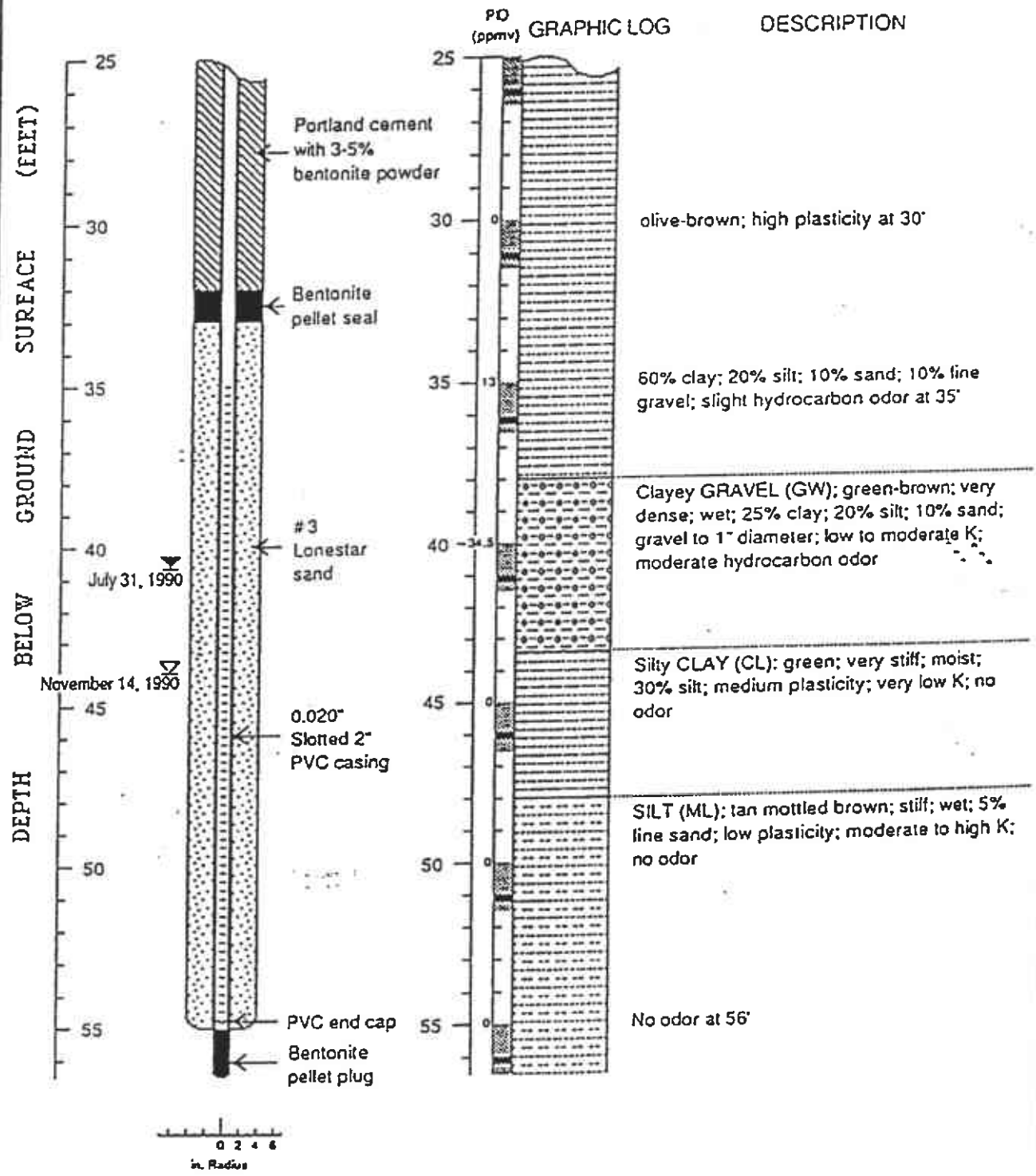
- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Uncertain contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

Logged by:	Robert E. Kitay
Supervisor:	James W. Carmody; RG 4872
Drilling Company:	Soils Exploration Services, Vacaville, CA
Driller:	Russ Ellis
Drilling Method:	Hollow stem auger
Date Drilled:	July 31, 1990
Well Head Completion:	2" locking well-plug, stovepipe, traffic-rated vault
Type of sampler:	Split barrel (2" ID)
Ground surface elevation:	32.65 feet above mean sea level

Well Construction and Boring Log Details - Well C-7 (BH-G)

Chevron Service Station #9-0076
Oakland, California

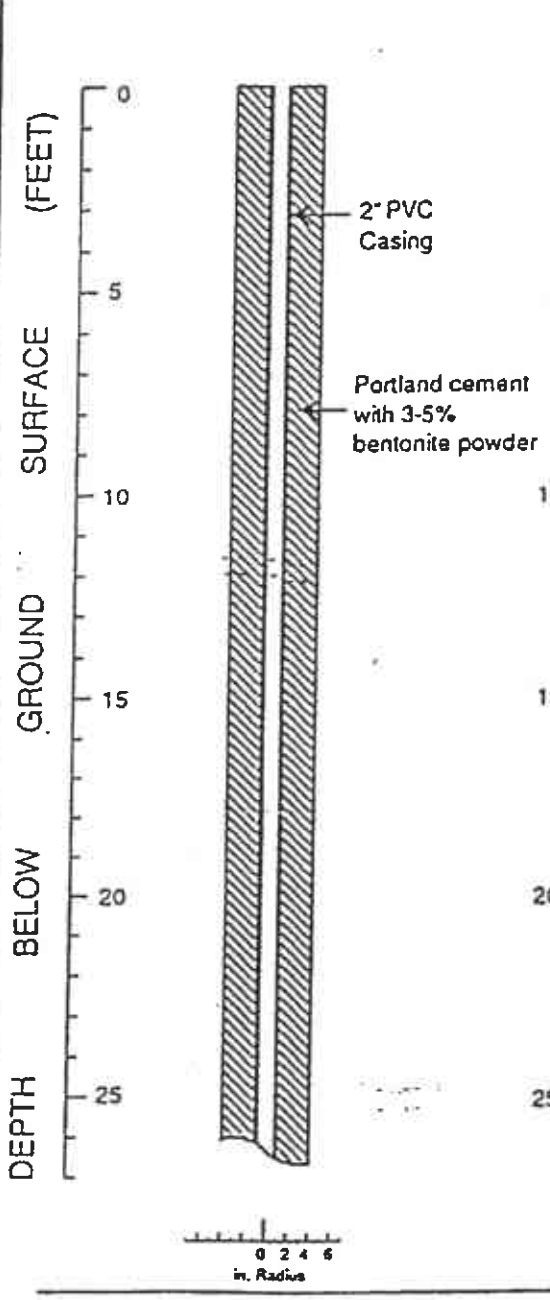
WELL C-7 (BH-G) (cont.)

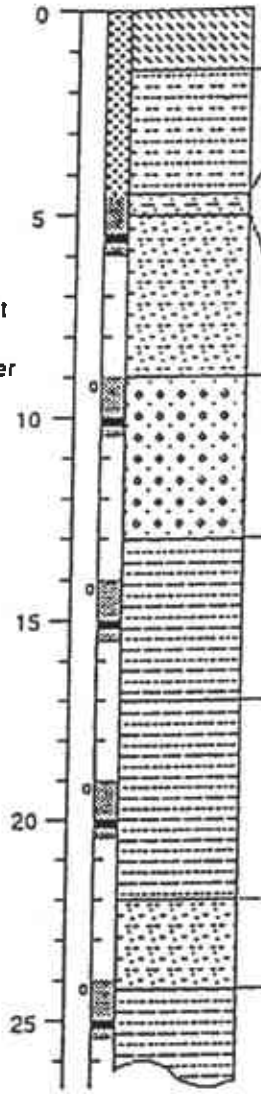


Well Construction and Boring Log Details - Well C-7 (BH-G)

Chevron Service Station #9-0076
Oakland, California

WELL C-8 (BH-H)





DESCRIPTION

Asphalt

SILT (ML); light tan-gray; medium stiff; dry to damp; 90 % silt; 5% fine to coarse sands; 5% clay; low K; no odor

Clayey SAND (SM/SC); yellow brown; stiff; dry to damp; 60% coarse sand; 20% clay; 20% silt; moderate K; no odor

Sandy SILT (MH); olive-tan to white; stiff; dry; 60% silt; 30% fine sand; 10% clay; medium plasticity; low K; no odor

Gravelly SAND (SW); brown-tan; medium dense; moist; 70% fine to coarse sand; 20% gravel to .5" diameter; 10% silt; high to very high K; no odor

Silty CLAY (CL); brown; stiff; damp; 50% clay; 25% silt; 20% fine sand; 5% gravel to .25" diameter; medium plasticity; very low K; no odor

Silty CLAY (CL); brown-tan; very stiff; damp; 75% clay; 20% silt; 5% very fine sand; medium plasticity; very low K; no odor

Silty SAND (SP); brown; loose; damp; 70% very fine sand; 30 % silt; moderate to high K; no odor

Silty CLAY (CL); gray-blue; stiff; damp; 50% clay; 45% silt; 5% very fine sand; medium plasticity; very low K; no odor

EXPLANATION

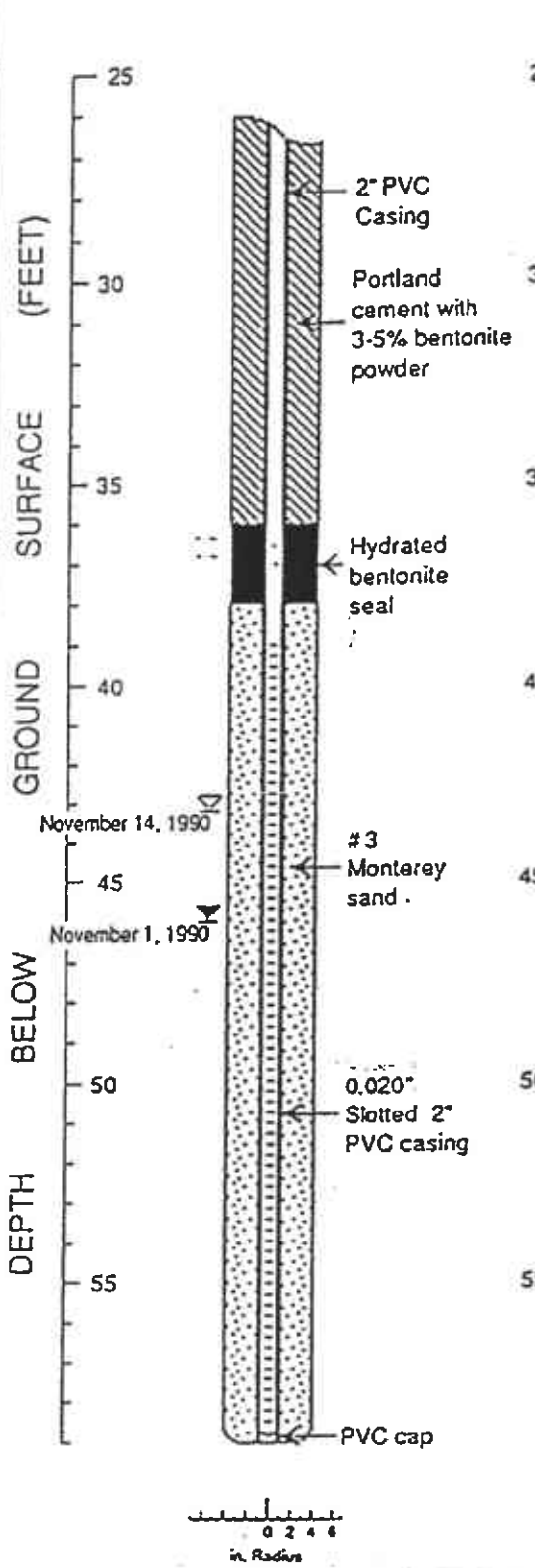
- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Uncertain contact
- Gradational contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

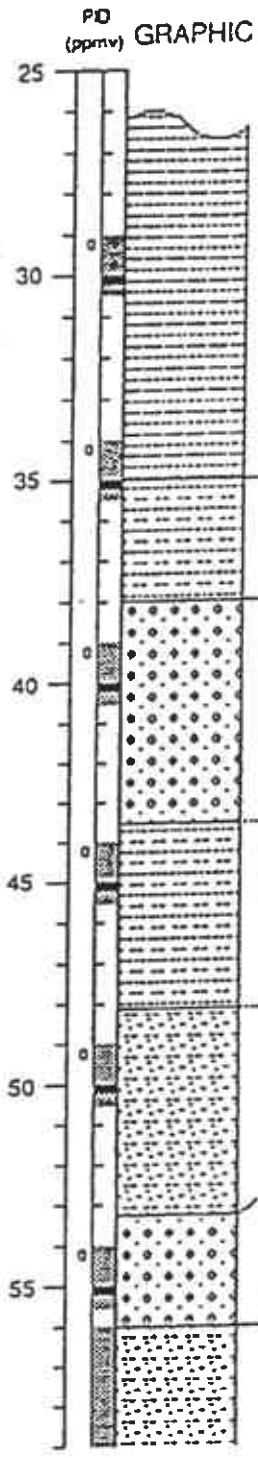
Logged by: Robert Kitay / Mariette Shin
Supervisor: James W. Carmody; RG 4872
Drilling Company: Soils Exploration Services, Vacaville, CA
Driller: Rick Carr
Drilling Method: Hollow-stem auger
Date Drilled: November 1, 1990
Well Head Completion: 2" locking well-plug; traffic rated vault
Type of Sampler: Split barrel (2" ID)
Ground Surface Elevation: 31.17 feet above mean sea level

Boring Log and Well Construction Details - Well C-8 (BH-H)

Chevron Service Station #9-0076
Oakland, California

WELL C-8 (BH-H) (cont.)





DESCRIPTION

Black streaks across sample at 34'

Sandy CLAY/Silty CLAY (CL); light-gray to white; stiff; moist; 50% clay; 30% sand; 20% silt; high plasticity; very low K; no odor (Contact-driller)

Gravelly SAND/ Silty SAND (SW); yellow-brown to orange; medium dense to dense; moist; 50% very fine to coarse sand; 20% gravel to .5" diameter; 20% silt; 10% clay; low to moderate K; no odor

SILT to Sandy SILT (ML); light brown mottled gray-green; medium stiff; 60-100% silt; 0-40% very fine sand; moderate K; no odor
Wet at 46'

Silty SAND (SW); brown; dense; wet; 90% fine to coarse sand; 10% silt; high K; no odor

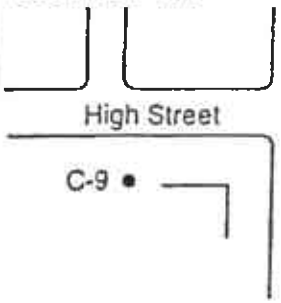
Gravelly SAND (SW); tan-brown; dense; very moist to wet; 60% very fine to coarse sand; 25% gravel to .75" diameter; 15% silt; high K ; no odor

Silty SAND (ML); tan-brown; damp to moist; medium dense to dense; 70% fine to coarse sand; 25% silt; 5% gravel to .3" diameter; moderate K; no odor

Boring Log and Well Construction Details - Well C-8 (BH-H)

Chevron Service Station #9-0076
Oakland, California

LOCATION MAP

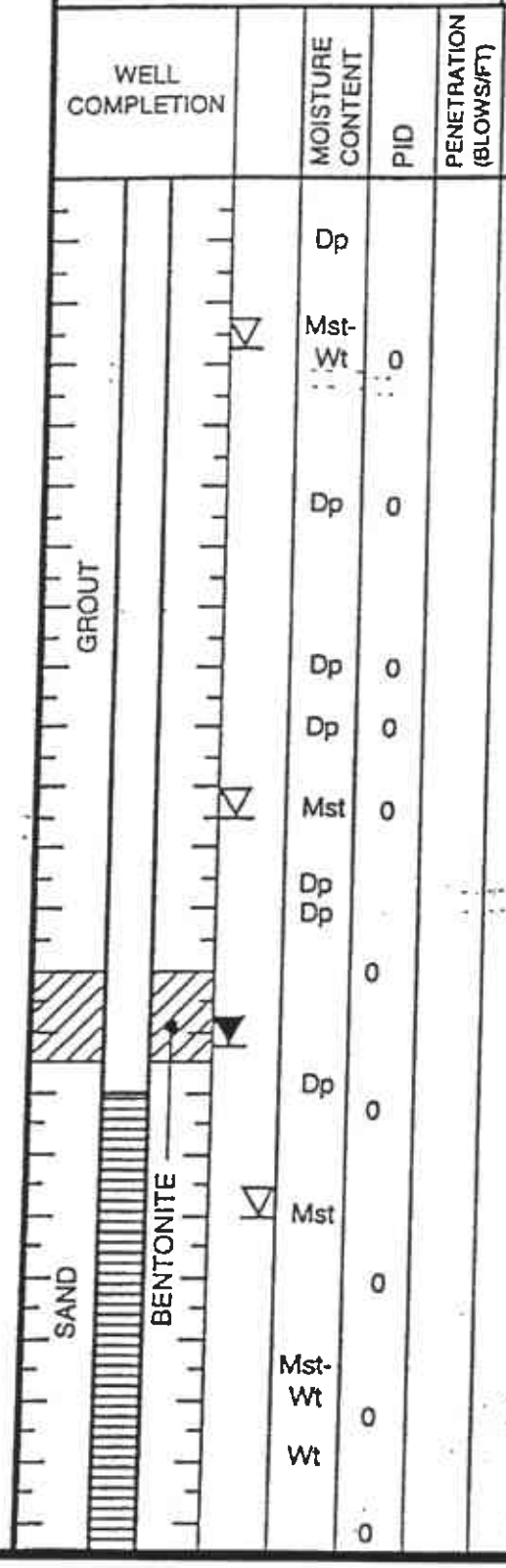


PACIFIC ENVIRONMENTAL GROUP, INC.

WELL NO. C-9
PAGE 1 OF 1

PROJECT NO. 325-024.1B
LOGGED BY: CWR
DRILLER: MDE
DRILLING METHOD: HSA
SAMPLING METHOD: CORE
CASING TYPE: SCH 40 PVC
SLOT SIZE: 0.020"
SAND PACK: #3 SAND

CLIENT: CHEVRON
DATE DRILLED: 7-10-96
LOCATION: 4265 Foothill Blvd.
HOLE DIAMETER: 8"
HOLE DEPTH: 45'
WELL DIAMETER: 2"
WELL DEPTH: 45'
CASING STICKUP: NA



LITHOLOGY / REMARKS

ASPHALT 4"

CLAYEY GRAVEL - FILL: dark yellowish brown; 15-20% clay; 10% medium sand; 70-75% subangular gravel to 2" diameter; wood chips; no product odor.

CLAY: dark yellowish brown; moderate plasticity; 90% clay with minor silt; 10% medium sand; no product odor.

SANDY CLAY: dark yellowish brown; moderate plasticity; 60-70% clay; 30-40% coarse subangular sand to fine subangular gravel; no product odor.

@10': as above; yellowish brown with pervasive gray and black mottling in thin horizontal bands; low to moderate plasticity; 60% clay; 20% silt; 20% medium sand; blocky fractures; manganese oxide streaks and specks; no product odor.

SILTY CLAY: dark yellowish brown; moderate plasticity; 60% clay; 30% silt; 10% fine sand; manganese oxide specks; some fracturing; no product odor.

@21': as above; yellowish brown with light gray mottling; moderate plasticity; trace manganese oxide specks; blocky fractures; no product odor.

SANDY CLAY: yellowish brown; pervasive orange brown and gray mottling; moderate plasticity; 60% clay; 10% silt; 30% fine sand; manganese oxide specks; some fracturing; no product odor.

@30': gray with yellowish brown; moderate plasticity; manganese oxide specks; 70% clay; 10% silt; 20% fine sand; trace fine gravel; extensive blocky fractures; no product odor.

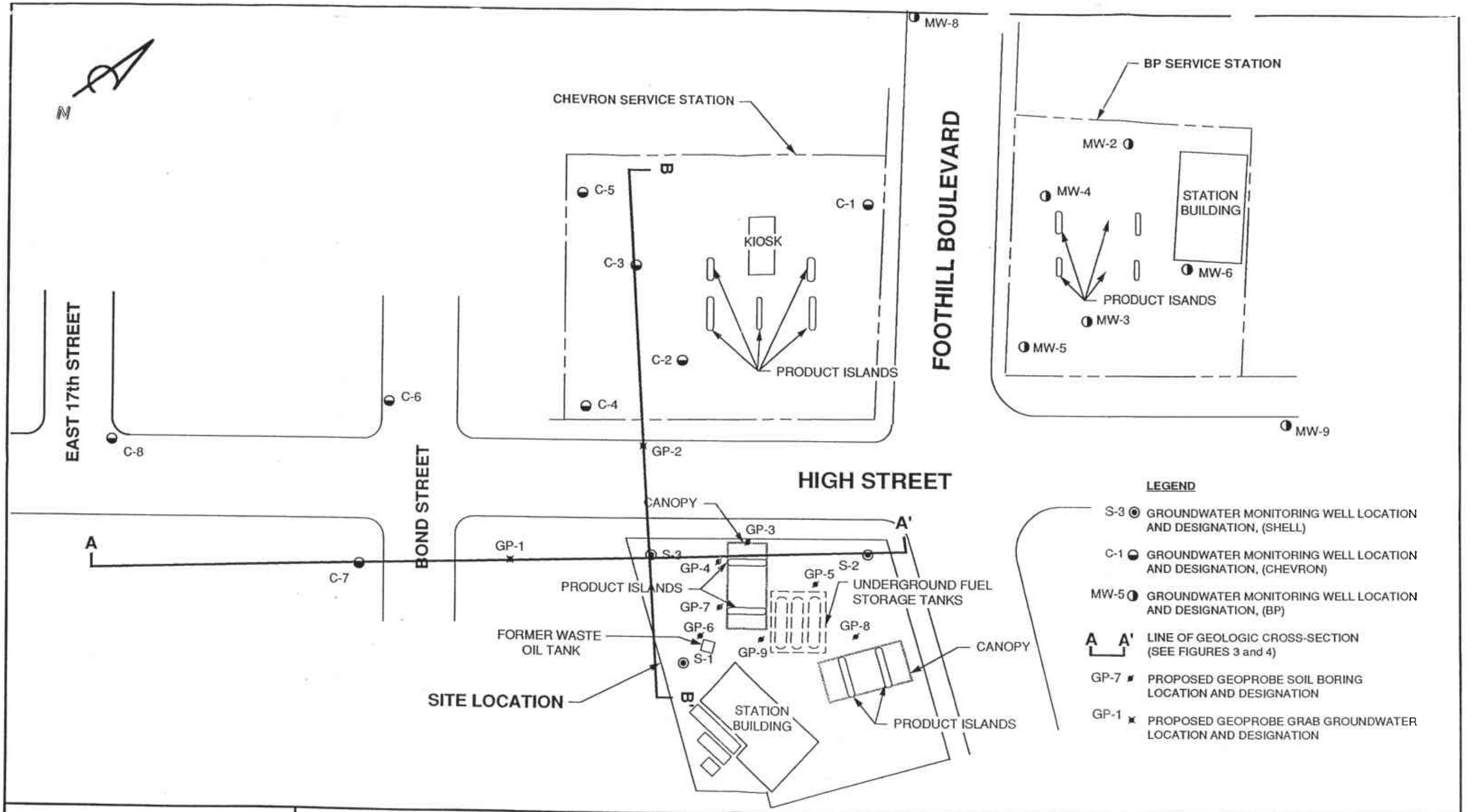
@35': as above; yellowish brown with pervasive gray mottling in horizontal bands; low to moderate plasticity; 50% clay; 20% silt; 30% fine sand; trace white mudstone lithic fragments; no product odor.

CLAYEY SAND: yellowish brown; 30-40% clay; 20% silt; 40-50% fine sand; gray mottling; no product odor.

CLAYEY GRAVEL: yellowish brown; 20-30% clay; 20% medium to coarse sand; 50-60% subangular to subrounded gravel comprised of predominately weathered clastic and volcanic fragments; no product odor.

GRAVEL: black, brown, and white; trace fines; 10% coarse sand; 85% subrounded to subangular gravel to 4" diameter; clastics and volcanic fragments; no product odor.

BOTTOM OF BORING AT 45'



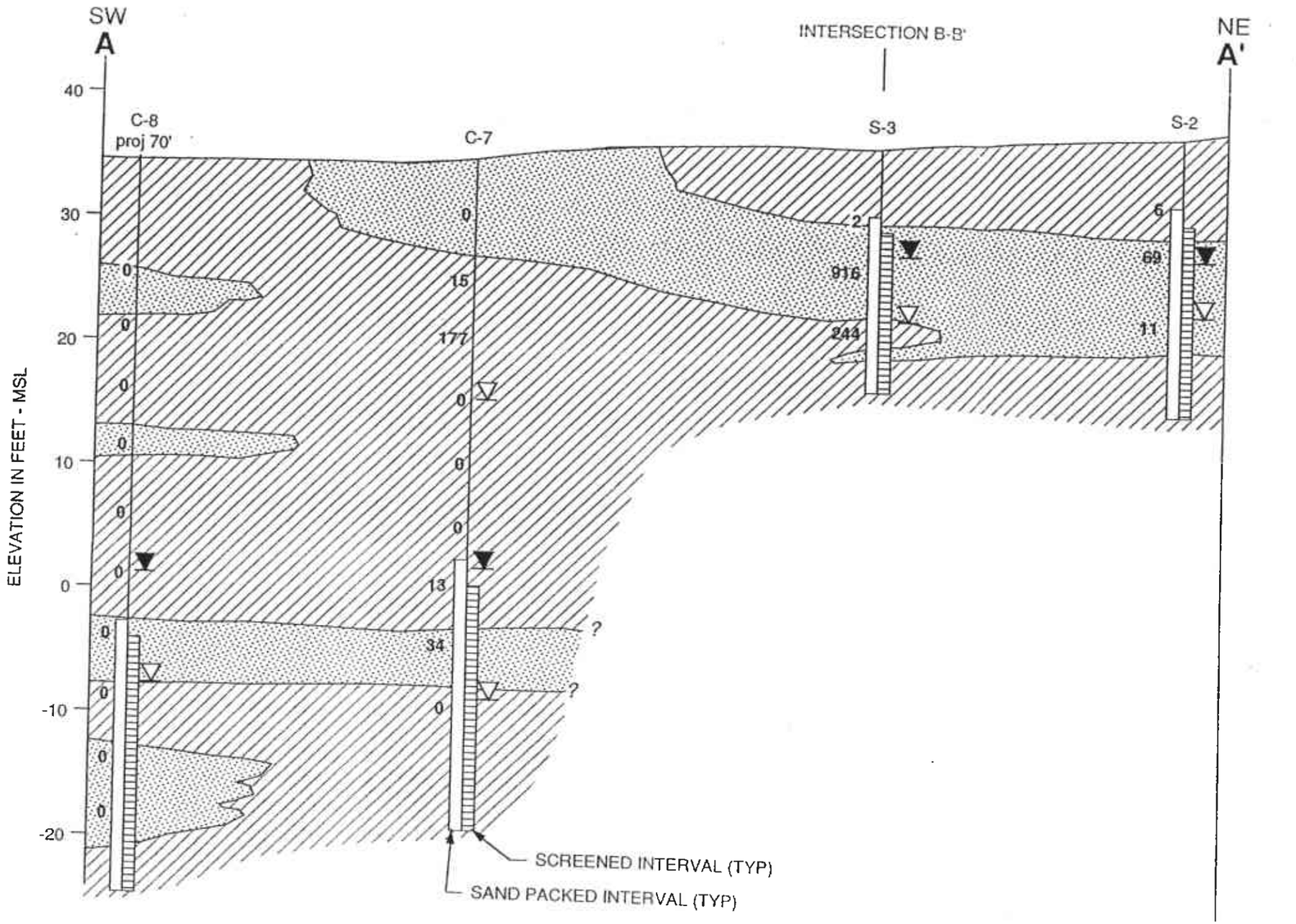
PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE
0 50 100 FEET

SHELL SERVICE STATION
4411 Foothill Boulevard at High Street
Oakland, California

PROPOSED GEOPROBE LOCATION MAP

FIGURE: 2
PROJECT: 305-131.1B



LEGEND

- PRIMARILY FINE-GRAINED DEPOSITS - CL and SM
- PRIMARILY COARSE-GRAINED DEPOSITS - SC, SW, SP, GC, GW and GP
- S-2 GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION (SHELL)
- C-7 GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION (CHEVRON)
- proj PROJECTED ONTO LINE OF SECTION IN FEET
- ▽ FIRST ENCOUNTERED WATER LEVEL AT TIME OF DRILLING
- ▼ STATIC WATER LEVEL, 6-16-94
- 916 PHOTO IONIZATION DETECTOR LEVEL IN PARTS PER MILLION

PACIFIC ENVIRONMENTAL GROUP, INC.

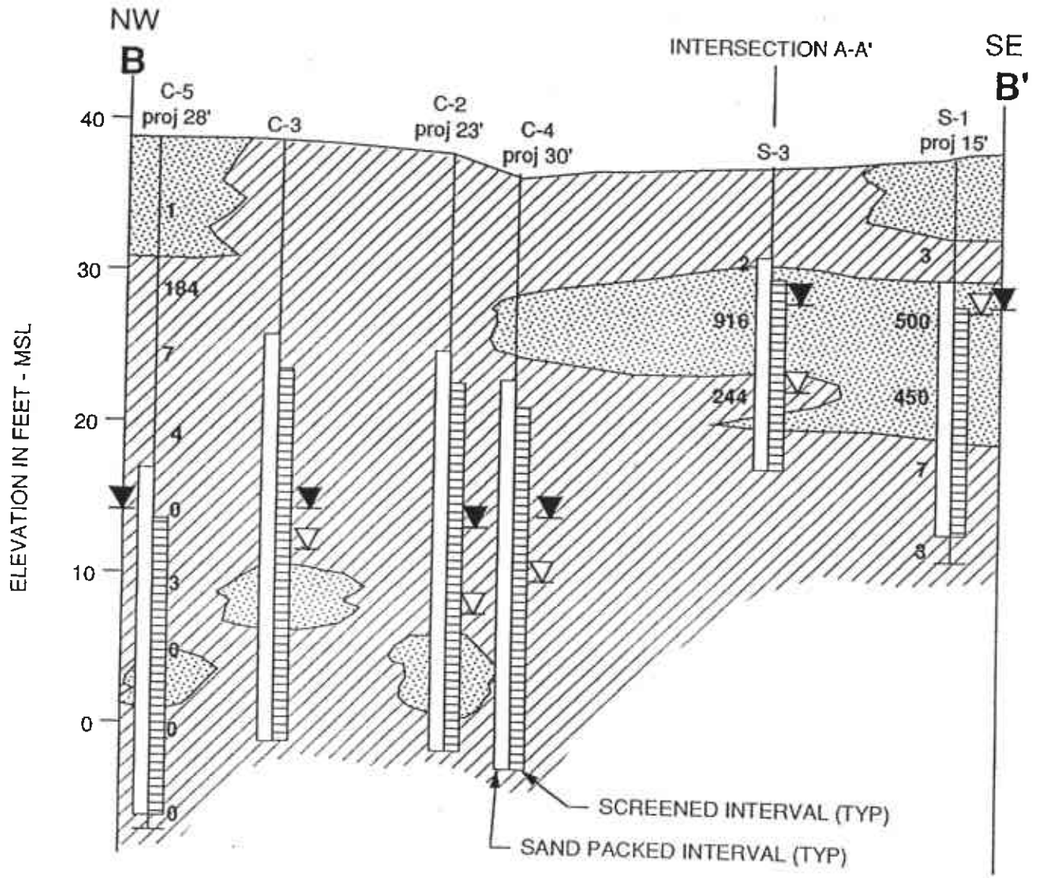
SCALE

HORIZONTAL : 1" = 50'
VERTICAL : 1" = 10'

SHELL SERVICE STATION
4411 Foothill Boulevard at High Street
Oakland, California

GEOLOGIC CROSS-SECTION A-A'

FIGURE:
3
PROJECT:
305-131.1B



LEGEND

- PRIMARILY FINE-GRAINED DEPOSITS - CL and SM
- PRIMARILY COARSE-GRAINED DEPOSITS - SC, SW, SP, GC and GM
- S-3 GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION (SHELL)
- C-2 GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION (CHEVRON)
- proj PROJECTED ONTO LINE OF SECTION IN FEET
- ▽ FIRST ENCOUNTERED WATER LEVEL AT TIME OF DRILLING
- ▼ STATIC WATER LEVEL, 6-16-94
- 916 PHOTO IONIZATION DETECTOR LEVEL IN PARTS PER MILLION

PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE

HORIZONTAL : 1" = 50'
VERTICAL : 1" = 10'

SHELL SERVICE STATION
4411 Foothill Boulevard at High Street
Oakland, California

GEOLOGIC CROSS-SECTION B-B'

FIGURE: 4
PROJECT: 305-131.1B

ATTACHMENT D-2

Historical Soil Sampling Results

Historical Soil Sampling Results - Former Shell-branded Service Station, 4411 Foothill Blvd., Oakland, California - Incident #98995746

Sample ID	Depth (fbg)	Date Sampled	MTBE	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Xylenes	TPHmo	Hydraulic Oil
			← (Concentrations reported in milligrams per kilogram) →								
SW-1	11.0	2/5/1992	---	<1.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	---	---
S-1-6.0	6.0	11/24/1992	---	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	---
S-1-11.0	11.0	11/24/1992	---	**110**	**180**	**0.45**	<0.005	**2.2**	**8**	**390**	---
S-1-16.0	16.0	11/24/1992	---	**2.8**	<1.0	<0.050	**0.51**	**0.097**	**0.50**	<1.0	---
S-1-21.0	21.0	11/24/1992	---	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	---
S-1-26.0	26.0	11/24/1992	---	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	---
S-2-6.0	6.0	5/21/1993	---	<0.5	<10	<0.005	<0.005	<0.005	<0.005	---	---
S-2-10.5	10.5	5/21/1993	---	**95**	<10	<0.005	<0.005	**0.52**	**0.56**	---	---
S-2-15.0	15.0	5/21/1993	---	<0.5	<10	<0.005	<0.005	<0.005	**0.013**	---	---
S-3-6.5	6.5	5/21/1993	---	<0.5	<10	<0.005	<0.005	<0.005	<0.005	---	---
S-3-11.0	11.0	5/21/1993	---	**1,300**	**36**	<0.005	<0.005	**35**	**200**	---	---
S-3-15.0	15.0	5/21/1993	---	<0.5	<10	<0.005	**0.019**	**0.020**	**0.11**	---	---
GP-3-8.0	8.0	6/28/1995	---	ND	**2.0**	**0.006**	ND	ND	ND	---	---
GP-3-12.0	12.0	6/28/1995	---	**8.4**	**3.7**	**0.13**	**0.029**	**0.14**	**0.36**	---	---
GP-4-8.0	8.0	6/28/1995	---	**7.2**	**2.9**	**0.098**	**0.009**	**0.054**	**0.13**	---	---
GP-4-12.0	12.0	6/28/1995	---	**280.0**	**3.7**	ND	**3.1**	**3.9**	**25**	---	---
GP-5-8.0	8.0	6/28/1995	---	ND	ND	ND	ND	ND	ND	---	---
GP-5-12.0	12.0	6/28/1995	---	ND	ND	ND	ND	ND	ND	---	---
GP-6-8.0	8.0	6/27/1995	---	**87**	ND	**1.3**	**2.2**	**6.6**	**7.3**	---	---
GP-6-12.0	12.0	6/27/1995	---	**39**	ND	ND	**0.14**	**0.29**	**5.4**	---	---
GP-7-8.0	8.0	6/27/1995	---	ND	ND	ND	**0.15**	**0.017**	**180**	---	---
GP-7-12.0	12.0	6/27/1995	---	**840**	ND	**6.0**	**20**	**98**	**43**	---	---

Historical Soil Sampling Results - Former Shell-branded Service Station, 4411 Foothill Blvd., Oakland, California - Incident #98995746

Sample ID	Depth (fbg)	Date Sampled	MTBE	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Xylenes	TPHmo	Hydraulic Oil
			← (Concentrations reported in milligrams per kilogram) →								
GP-8-8.0	8.0	6/28/1995	---	ND	ND	ND	ND	ND	ND	---	---
GP-8-12.0	12.0	6/28/1995	---	**86**	ND	ND	**1.0**	**2.0**	**15**	---	---
GP-9-8.0	8.0	6/28/1995	---	**190**	ND	ND	**3.6**	**13**	**380**	---	---
GP-9-12.0	12.0	6/28/1995	---	**760**	ND	**0.71**	**17**	**76**	**41**	---	---
D-1(2.0)	2.0	8/26/1998	**2.5 (13)**	**1,100**	---	**9.2**	**4.1**	**15**	**61**	---	---
D-2(2.0)	2.0	8/26/1998	<6.2	**1,500**	---	**3.6**	**4.3**	**7.1**	**21**	---	---
D-3(2.0)	2.0	8/26/1998	**(1.4)**	**160**	---	**1.3**	**0.61**	**2.9**	**2.0**	---	---
D-4(2.0)	2.0	8/26/1998	**0.83**	**180**	---	**0.29**	**0.17**	**0.10**	**0.43**	---	---
SB-4-5.5	5.5	1/7/2000	<0.025	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	---	---
SB-4-9.0	9.0	1/7/2000	<1.25	**786**	**244.0**	**2.27**	**1.68**	**8.1**	**26.5**	---	---
SB-4-16.0	16.0	1/7/2000	**0.893**	**294**	**209.0**	**1.50**	**4.35**	**3.88**	**15.7**	---	---
SB-4-19.5	19.5	1/7/2000	<0.025	**2.08**	<1.0	**0.212**	**0.0168**	**0.0168**	**0.0167**	---	---
SB-4-24.5	24.5	1/7/2000	<0.025	<1.0	<1.0	**0.00724**	<0.005	<0.005	<0.005	---	---
SB-4B-5.5	5.5	1/7/2000	**0.0345 (0.0603)**	**28.2**	**27.2**	**0.0176**	<0.01	**0.0408**	**0.0738**	---	---
SB-4B-10.5	10.5	1/7/2000	<0.125	**6.19**	<5.0	**0.0696**	<0.025	**0.0915**	<0.025	---	---
SB-4B-19.0	19.0	1/7/2000	**0.0549 (0.233)**	<1.0	<5.0	**0.0445**	<0.005	<0.005	<0.005	---	---
T1W-8.5' (A1)	8.5	12/11/2001	**0.034**	<1.0	---	<0.005	<0.005	<0.005	<0.005	---	---
T1E-9' (A1)	9.0	12/11/2001	**0.14**	**5.0**	---	<0.005	<0.005	**0.049**	**0.04**	---	---
T2W-8.5' (A1)	8.5	12/11/2001	**0.12**	<1.0	---	<0.005	<0.005	<0.005	<0.005	---	---

Historical Soil Sampling Results - Former Shell-branded Service Station, 4411 Foothill Blvd., Oakland, California - Incident #98995746

Sample ID	Depth (fbg)	Date Sampled	MTBE	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Xylenes	TPHmo	Hydraulic Oil
			(Concentrations reported in milligrams per kilogram)								
T2E-9' (A1)	9.0	12/11/2001	**0.012**	<1.0	---	<0.005	**0.015**	<0.005	**0.020**	---	---
T3W-8.5' (A1)	8.5	12/11/2001	**0.21**	**1.8**	---	<0.005	<0.005	<0.005	**0.015**	---	---
T3E-9' (A1)	9.0	12/11/2001	**0.32**	**1.2**	---	<0.005	<0.005	<0.005	<0.005	---	---
D1-4.5' (B)	4.5	12/11/2001	**0.35**	**1,000**	---	**1.4**	**0.20**	**15**	**5.1**	---	---
D2-4' (B)	4.0	12/11/2001	**1.4**	**270**	---	**0.18**	<0.050	**0.11**	**0.094**	---	---
D3-4.5' (A1)	4.5	12/11/2001	**0.058**	**6.3**	---	**0.097**	**0.007**	**0.036**	**0.024**	---	---
D4-4.5' (A1)	4.5	12/11/2001	**0.021**	**4.9**	---	**0.12**	<0.005	**0.033**	**0.067**	---	---
P1-4' (A1)	4.0	12/11/2001	**0.009**	<1.0	---	<0.005	<0.005	<0.005	<0.005	---	---
P2-4.5' (A1)	4.5	12/11/2001	**0.061**	<1.0	---	<0.005	<0.005	<0.005	<0.005	---	---
P3-4.5' (A1)	4.5	12/11/2001	<0.005	**4.1**	---	<0.005	<0.005	<0.005	<0.005	---	---
P4-4.5' (A1)	4.5	12/11/2001	**0.13**	**11**	---	**0.035**	<0.005	**0.035**	**0.012**	---	---
P5-4.5' (A1)	4.5	12/11/2001	**0.14**	**51**	---	<0.005	<0.005	<0.005	**0.34**	---	---
E-1-8.0 (A2)	8.0	1/2/2002	<0.02	**9.5**	---	**0.19**	**0.09**	**0.94**	**5.2**	---	---
E-2-8.0 (A2)	8.0	1/2/2002	**0.23**	**7.5**	---	**0.23**	**0.04**	**0.91**	**2.0**	---	---
E-3-8.0 (A2)	8.0	1/2/2002	**0.54**	**3.7**	---	**0.46**	**0.06**	**3.9**	**0.52**	---	---
E-4-8.0 (A2)	8.0	1/2/2002	**0.041**	**1.5**	---	**0.093**	**0.005**	**0.005**	**0.006**	---	---
E-5-12.0 (A2)	12.0	1/2/2002	<0.02	**54**	---	**0.71**	**0.46**	**2.6**	**16**	---	---
E-6-11.0 (A2)	11.0	1/2/2002	<0.02	**75**	---	**2.9**	**3.6**	**12**	**54**	---	---
E-7-14.0 (A2)	14.0	1/2/2002	<0.02	**41**	---	**1.0**	**0.53**	**2.2**	**11**	---	---
E-8-11.0 (A2)	11.0	1/2/2002	<0.02	**310**	---	**2.0**	**1.8**	**14**	**77**	---	---

Historical Soil Sampling Results - Former Shell-branded Service Station, 4411 Foothill Blvd., Oakland, California - Incident #98995746

Sample ID	Depth (fbg)	Date Sampled	MTBE	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Xylenes	TPHmo	Hydraulic Oil
			← (Concentrations reported in milligrams per kilogram) →								
E-9-9.0 (A2)	9.0	1/2/2002	0.03	55	---	0.06	0.03	0.05	0.08	---	---
E-10-9.0 (A2)	9.0	1/3/2002	0.082	<0.20	---	0.002	0.004	<0.002	0.007	---	---
E-11-9.0 (A2)	9.0	1/3/2002	0.010	<0.20	---	0.007	<0.002	<0.002	<0.002	---	---
E-12-11.0 (A2)	11.0	1/3/2002	0.48	23	---	1.1	0.12	2.0	12	---	---
E-13-9.0 (A2)	9.0	1/3/2002	0.012	<0.20	---	<0.002	<0.002	<0.002	<0.002	---	---
E-14-9.0 (A2)	9.0	1/3/2002	0.024	2.7	---	0.005	<0.002	0.19	0.23	---	---
E-15-11.0 (A2)	11.0	1/4/2002	0.33	1,800	---	9.6	42	100	590	---	---
E-16-11.0 (A2)	11.0	1/4/2002	<0.02	770	---	3.8	2.8	37	210	---	---
E-17-13.0 (A2)	13.0	1/4/2002	0.04	31	---	0.65	0.19	2.5	8.3	---	---
E-18-13.0 (A2)	13.0	1/4/2002	<0.02	17	---	1.2	2.8	1.0	2.2	---	---
E-19-9.0 (A2)	9.0	1/4/2002	0.014	0.54	---	0.002	<0.002	0.004	0.027	---	---
C-1-8.0 (B)	8.0	1/7/2002	<0.5	<1.0	---	<0.005	<0.005	<0.005	<0.005	---	---
C-2-8.0 (B)	8.0	1/7/2002	<0.5	<1.0	---	<0.005	<0.005	<0.005	<0.010	---	---
C-3-3.5 (B)	3.5	1/7/2002	<0.5	<1.0	---	<0.005	<0.005	<0.005	<0.005	---	---
C-4-8.0 (B)	8.0	1/7/2002	<0.5	290	---	0.15	<0.050	4.9	8.9	---	---
C-5-8.0 (B)	8.0	1/7/2002	<0.5	<1.0	---	<0.005	<0.005	<0.005	<0.005	---	---
C-6-4.0 (B)	4.0	1/7/2002	<0.5	6.5	---	<0.005	<0.005	<0.005	<0.010	---	---
C-7-8.0 (B)	8.0	1/7/2002	<0.5	87	---	<0.025	<0.025	0.43	<0.050	---	---
C-8-4.0 (B)	8.0	1/7/2002	<0.5	81	---	0.026	<0.025	0.038	<0.050	---	---
C-9-9.0 (B)	9.0	1/7/2002	0.65	<1.0	---	<0.005	<0.005	<0.005	<0.005	---	---

Historical Soil Sampling Results - Former Shell-branded Service Station, 4411 Foothill Blvd., Oakland, California - Incident #98995746

Sample ID	Depth (fbg)	Date Sampled	MTBE	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Xylenes	TPHmo	Hydraulic Oil
			(Concentrations reported in milligrams per kilogram)								
C-10-9.0 (B)	9.0	1/7/2002	<0.5	**84**	---	**0.039**	<0.025	**0.61**	**0.27**	---	---
C-11-9.0 (B)	9.0	1/7/2002	<0.5	<1.0	---	<0.005	<0.005	<0.005	<0.005	---	---
C-12-9.0 (B)	9.0	1/7/2002	<0.5	**6.6**	---	<0.010	<0.010	**0.013**	<0.025	---	---
C-13-4.0 (B)	4.0	1/7/2002	<0.5	**2.7**	---	<0.005	<0.005	<0.005	<0.005	---	---
C-14-4.0 (B)	4.0	1/7/2002	<0.5	**11**	---	<0.050	<0.050	<0.050	<0.10	---	---
C-15-8.0 (B)	8.0	1/7/2002	<0.5	**250**	---	<0.050	<0.050	**4.4**	**4.7**	---	---
H-1-9.0 (B)	9.0	1/17/2002	<0.5	**120**	---	**0.094**	<0.025	**0.047**	**0.18**	---	**14,000**
H-1-11.0 (B)	11.0	1/17/2002	<0.5	**210**	---	**0.2**	**0.071**	**2.2**	**10**	---	**230**
H-2-9.0 (B)	9.0	1/17/2002	<0.5	**32**	---	**0.015**	<0.005	**0.048**	**0.053**	---	<10
H-2-11.0 (B)	11.0	1/17/2002	<0.5	**400**	---	**0.54**	**0.1**	**7.3**	**24**	---	**78**
H-3-11.0 (B)	11.0	1/17/2002	<0.5	**250**	---	**0.21**	**0.52**	**3.1**	**14**	---	<10

Notes and Abbreviations:

Samples analyzed for:
MTBE = Methyl tertiary butyl ether by EPA Method 8260 (EPA Method 8020)
TPHd = Total petroleum hydrocarbons as diesel by EPA Method 8015 (Modified)
TPHg = Total petroleum hydrocarbons calculated as gasoline by EPA Method 8015 (Modified)
Benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020 (Modified)
TPHmo = Total petroleum hydrocarbons as motor oil

mg/kg = ppm
--- = sample not analyzed for this constituent.
ND = non detect

ATTACHMENT D-3

Groundwater Elevation Contour Map and Historical Groundwater Sampling Data

07/06/05

Groundwater Elevation Contour Map

June 10, 2005

EAST 17TH STREET

BOND STREET

FOOTHILL BOULEVARD

HIGH STREET

house w/o basement
4244 E. 17th

backyards
w/o basement

vacant lot
w/o basement

apts w/o basement

house
w/basement

house w/basement
1718 High

apts w/o basement
1724-28 High

house w/basement
4320 Bond

apts w/o basement
4340 Bond

Albertson's Supermarket

Groundwater Flow Direction
(12/30/98 to 06/10/05)

Former BP Service Station #11109
4280 Foothill Blvd.

Chevron Service Station #9-0076
4265 Foothill Blvd.

Former Shell Service Station
4411 Foothill Blvd.

76 Service Station Building

W/O UST

USTs

dispensers

kiosk

planter

former dispensers

former USTs

former W/O UST

former building

proposed parking

proposed planter

excavation boundary

BLDG. A

BLDG. B

C-1	NA	990 - 6/6/05 1,100 - 6/6/05
C-2	NA	940 - 6/6/05 200 - 6/6/05
C-3	NA	<0.5 - 6/6/05 <0.5 - 6/6/05
C-4	NA	2,000 - 6/6/05 130 - 6/6/05
C-5	NA	<0.5 - 3/7/05 <0.5 - 3/7/05
C-6	NA	110 - 6/6/05 59 - 6/6/05
C-7	NA	<0.5 - 6/6/05 6 - 6/6/05
C-8	NA	<0.5 - 3/7/05 <0.5 - 3/7/05
C-9	NS	<0.5 - 3/7/05 <0.5 - 3/7/05
C-10	NA	<0.5 - 6/6/05 390 - 6/6/05
MW-1	NA	<0.50 - 9/17/04 21 - 9/17/04
MW-2	NA	<0.50 - 9/17/04 21 - 9/17/04
MW-3	NA	<0.50 - 3/7/05 5.1 - 3/7/05
MW-4	NA	<0.50 - 3/7/05 42 - 3/7/05
MW-5	NA	3,900 - 3/9/04 <50 - 3/9/04
MW-6	NA	<0.50 - 3/7/05 5.8 - 3/7/05
MW-7	NA	41 - 3/7/05 7.2 - 3/7/05
MW-8	NA	<0.50 - 3/7/05 <0.50 - 3/7/05
MW-9	NA	<0.50 - 3/7/05 <0.50 - 3/7/05
S-1	32.65	25 <10
S-2	30.10	200 630
S-3	31.45	<0.50 <0.50
S-4	29.79	1,900 890
S-5	30.79	1.3 80
BW-A		

EXPLANATION

- S-1 — Monitoring well location, proposed for destruction
- MW-3 — Recovery well location
- BW-A — Destroyed tank backfill well location
- NS — Not surveyed
- NA — Not available
- → — Groundwater flow direction
- XX.XX — Groundwater elevation contour, in feet above mean sea level (msl), approximately located, dashed where inferred
- Well / ELEV / Benzene / MTBE — Well designation; Groundwater elevation, in feet above msl; Benzene and MTBE concentrations are in parts per billion and are analyzed by EPA Method 8260.

Basement presence based on field observations

0 25 50 100
Scale (ft)

FIGURE
2

Former Shell Service Station
4411 Foothill Boulevard
Oakland, California
Incident No.98995746

CAMBRIA

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WELL CONCENTRATIONS
Former Shell Service Station
4411 Foothill Boulevard
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
S-1	12/18/1992	41,000	NA	3,100	1,100	1,200	8,700	NA	NA	NA	NA	NA	NA	38.31	9.06	NA	NA
S-1	05/26/1993	39,000	6,000	1,300	4,700	1,500	7,800	NA	NA	NA	NA	NA	NA	38.31	NA	NA	NA
S-1	05/28/1993	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38.31	12.13	26.18	NA
S-1	06/03/1993	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38.31	8.89	29.42	NA
S-1	06/08/1993	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38.31	8.80	29.51	NA
S-1	09/21/1993	34,000	5,900	480	5,000	3,800	18,000	NA	NA	NA	NA	NA	NA	38.31	10.40	27.91	NA
S-1	12/14/1993	25,000	13,000	1,100	5,000	2,200	11,000	NA	NA	NA	NA	NA	NA	38.31	9.66	28.65	NA
S-1	03/17/1994	57,000	1,600	1,300	5,400	2,100	11,000	NA	NA	NA	NA	NA	NA	38.31	8.20	30.11	NA
S-1	06/16/1994	57,000	3,000	1,600	6,000	2,000	13,000	NA	NA	NA	NA	NA	NA	38.31	9.41	28.90	NA
S-1	09/22/1994	39,000	ND	1,300	2,100	1,500	7,100	NA	NA	NA	NA	NA	NA	38.31	11.13	27.18	NA
S-1 a	12/15/1994	30,000	3,100	1,100	4,700	1,600	10,000	NA	NA	NA	NA	NA	NA	38.31	7.15	31.16	NA
S-1 a, b	03/30/1995	30,000	3,100	1,400	4,000	1,500	11,000	NA	NA	NA	NA	NA	NA	38.31	6.09	32.22	NA
S-1	06/2019/95	28,000	2,100	1,100	2,300	1,100	8,300	NA	NA	NA	NA	NA	NA	38.31	7.30	31.01	NA
S-1	09/20/1995	40,000	2,600	840	3,600	1,300	8,600	NA	NA	NA	NA	NA	NA	38.31	10.02	28.29	NA
S-1 a	12/06/1995	38,000	6,400	920	3,200	1,500	9,400	NA	NA	NA	NA	NA	NA	38.31	11.64	26.67	NA
S-1	03/21/1996	48,000	NA	700	4,200	1,100	8,600	NA	NA	NA	NA	NA	NA	38.31	6.87	31.44	NA
S-1	09/06/1996	41,000	4,100	830	2,600	2,100	12,000	<250	NA	NA	NA	NA	NA	38.31	10.50	27.81	NA
S-1	12/19/1996	40,000	2,500	540	3,100	1,900	9,800	920	NA	NA	NA	NA	NA	38.31	8.24	30.07	NA
S-1	03/17/1997	42,000	4,700	610	2,700	1,700	11,000	3,500	NA	NA	NA	NA	NA	38.31	7.26	31.05	NA
S-1	06/11/1997	28,000	4,000	540	960	1,300	5,300	220	NA	NA	NA	NA	NA	38.31	10.69	27.62	NA
S-1 (D)	06/11/1997	30,000	3,900	580	1,000	1,400	5,400	<125	NA	NA	NA	NA	NA	38.31	10.69	27.62	NA
S-1	09/17/1997	27,000	4,400	310	1,200	1,900	9,000	170	NA	NA	NA	NA	NA	38.31	10.26	28.05	NA
S-1 (D)	09/17/1997	27,000	4,400	270	1,200	1,900	9,000	170	NA	NA	NA	NA	NA	38.31	10.26	28.05	NA
S-1	12/11/1997	21,000	3,400	350	820	1,500	6,500	<125	NA	NA	NA	NA	NA	38.31	6.96	31.35	NA
S-1	03/16/1998	25,000	2,500	250	820	670	5,000	<125	NA	NA	NA	NA	NA	38.31	6.00	32.31	NA
S-1 (D)	03/16/1998	26,000	NA	250	840	720	5,100	<125	NA	NA	NA	NA	NA	38.31	6.00	32.31	5.3/3.7
S-1	06/23/1998	<1,000	230	280	14	23	15	6,100	7,800	NA	NA	NA	NA	38.31	6.31	32.00	3.8/2.4
S-1	09/01/1998	26,000	2,300	370	620	1,300	33	1,400	120	NA	NA	NA	NA	38.31	9.17	29.14	1.4/2.6
S-1	12/30/1998	29,900	1,970	174	732	1,680	5,740	182	NA	NA	NA	NA	NA	38.31	8.99	29.32	1.6/2.0
S-1	03/30/1999	14,200	1,150	1,360	260	1,070	3,580	<500	90.0	NA	NA	NA	NA	38.31	6.10	32.21	1.2/1.8

WELL CONCENTRATIONS
Former Shell Service Station
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Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
S-1	03/31/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38.31	7.84	30.47	NA
S-1	06/14/1999	20,200	4,280	135	407	825	5,000	705	NA	NA	NA	NA	NA	38.31	7.94	30.37	1.4/2.1
S-1	09/30/1999	18,300	3,120	189	531	1,250	4,740	322	NA	NA	NA	NA	NA	38.31	10.04	28.27	4.3/2.0
S-1	12/22/1999	2,450	444a	50.2	97.5	139	458	133	NA	NA	NA	NA	NA	38.31	9.42	28.89	1.8/2.3
S-1	03/09/2000	1,230d	1,200a	21.2d	115d	116d	411d	45.1d	NA	NA	NA	NA	NA	38.30	6.21	32.09	2.0/2.9
S-1	06/20/2000	755	352a	26.0	48.4	43.1	230	71.5	NA	NA	NA	NA	NA	38.30	9.18	29.12	2.0/2.4
S-1	09/05/2000	2,980	783a	43.5	117	168	871	192	NA	NA	NA	NA	NA	38.30	10.14	28.16	0.6/0.3
S-1	12/04/2000	399	238a	5.34	14.6	36.2	106	24.9	NA	NA	NA	NA	NA	38.30	10.10	28.20	8.6/9.8
S-1	12/12/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38.30	9.22	29.08	NA
S-1	03/08/2001	2,940	1,390a	49.6	52.9	21.8	749	87.6	NA	NA	NA	NA	NA	38.30	5.84	32.46	2.7e
S-1	06/07/2001	10,000	1,400	120	370	680	2,400	150	NA	NA	NA	NA	NA	38.30	8.80	29.50	6.2/2.2
S-1	09/13/2001	240	<200	1.8	8.9	16	53	NA	17	NA	NA	NA	NA	38.30	10.25	28.05	7.8/8.9
S-1	11/19/2001	1,400	<300	14	42	110	260	NA	27	NA	NA	NA	NA	38.30	9.87	28.43	7.7/7.3
S-1	03/18/2002	7,500	<300	40	370	560	2,000	NA	20	NA	NA	NA	NA	38.30	5.08	33.22	5.6/6.1
S-1	06/19/2002	1,000	180	4.7	36	68	250	NA	14	NA	NA	NA	NA	38.30	9.26	29.04	NA
S-1	09/11/2002	2,100	<350	8.1	68	180	820	NA	7.1	NA	NA	NA	NA	38.30	10.54	27.76	6.5
S-1	12/11/2002	4,100	<500	16	93	310	900	NA	<20	NA	NA	NA	NA	38.04	9.97	28.07	8.0
S-1	03/11/2003	14,000	<1,600	71	470	1,000	3,300	NA	<50	NA	NA	NA	NA	38.04	7.31	30.73	5.2
S-1	06/10/2003	1,700	110 a	7.7	44	190	340	NA	4.5	NA	NA	NA	NA	38.04	8.14	29.90	14.0
S-1	09/09/2003	3,200	96 a	11	110	350	1,100	NA	5.8	NA	NA	NA	NA	38.04	9.31	28.73	7.5
S-1	12/09/2003	6,000	1,000 a	20	170	530	1,700	NA	6.1	NA	NA	NA	NA	38.04	7.24	30.80	28.6
S-1	03/09/2004	390	300 a	5.8	30	67	160	NA	5.6	NA	NA	NA	NA	38.04	5.56	32.48	6.4
S-1	06/08/2004	5,600	2,500 a	11	140	660	1,900	NA	5.0	NA	NA	NA	NA	38.04	8.82	29.22	30.0
S-1	09/07/2004	<50	130 i	<0.50	<0.50	<0.50	<1.0	NA	0.75	<2.0	<2.0	<2.0	<5.0	38.04	9.84	28.20	14.4
S-1	12/06/2004	Unable to sample		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38.04	9.20	28.84	NA
S-1	12/15/2004	560	120 i	2.2	26	67	220	NA	1.4	NA	NA	NA	NA	38.04	5.39	32.65	31.7
S-1	03/07/2005	12,000	460 i	12	310	830	2,600	NA	<5.0	NA	NA	NA	NA	38.04	5.77	32.27	16.1
S-1	**06/10/2005**	**13,000**	**1,200 i**	**25**	**310**	**1,200**	**3,300**	**NA**	**<10**	**NA**	**NA**	**NA**	**NA**	**38.04**	**5.39**	**32.65**	**0.17**
S-2	05/28/1993	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38.79	9.51	29.28	NA

WELL CONCENTRATIONS
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Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
S-2	06/03/1993	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38.79	9.51	29.28	NA
S-2	06/08/1993	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38.79	9.57	29.22	NA
S-2	06/29/1993	1,300	NA	290	35	38	130	NA	NA	NA	NA	NA	NA	38.79	NA	NA	NA
S-2	09/21/1993	3,300	NA	870	24	190	120	NA	NA	NA	NA	NA	NA	38.79	10.54	28.25	NA
S-2	12/14/1993	1,300	NA	400	16	36	27	NA	NA	NA	NA	NA	NA	38.79	9.76	29.03	NA
S-2	03/17/1994	4,500	NA	610	27	92	110	NA	NA	NA	NA	NA	NA	38.79	9.92	28.87	NA
S-2 (D)	03/17/1994	4,000	NA	610	26	93	120	NA	NA	NA	NA	NA	NA	38.79	9.92	28.87	NA
S-2	06/16/1994	2,800	NA	690	45	97	140	NA	NA	NA	NA	NA	NA	38.79	10.11	28.68	NA
S-2	09/22/1994	4,000	NA	630	94	64	230	NA	NA	NA	NA	NA	NA	38.79	10.51	28.28	NA
S-2	12/15/1994	1,600	NA	450	300	67	130	NA	NA	NA	NA	NA	NA	38.79	9.12	29.67	NA
S-2 b	03/30/1995	8,200	NA	2,800	190	240	700	NA	NA	NA	NA	NA	NA	38.79	7.86	30.93	NA
S-2	06/20/1995	9,600	NA	2,600	160	170	500	NA	NA	NA	NA	NA	NA	38.79	9.51	29.28	NA
S-2	09/20/1995	4,200	NA	920	45	98	140	NA	NA	NA	NA	NA	NA	38.79	10.06	28.73	NA
S-2	12/06/1995	<5,000	NA	790	67	64	130	NA	NA	NA	NA	NA	NA	38.79	10.52	28.27	NA
S-2	03/21/1996	3,700	NA	850	45	96	170	NA	NA	NA	NA	NA	NA	38.79	8.60	30.19	NA
S-2	09/06/1996	2,400	NA	500	33	39	84	490	NA	NA	NA	NA	NA	38.79	10.50	28.29	NA
S-2	12/19/1996	1,200	NA	330	15	24	31	430	NA	NA	NA	NA	NA	38.79	9.40	29.39	NA
S-2	03/17/1997	4,100	NA	780	42	110	120	2,200	NA	NA	NA	NA	NA	38.79	9.82	28.97	NA
S-2	06/11/1997	760	NA	120	<5.0	7.0	7.6	900	NA	NA	NA	NA	NA	38.79	10.18	28.61	NA
S-2	09/17/1997	1,500	NA	230	8.6	40	27	480	NA	NA	NA	NA	NA	38.79	9.90	28.89	NA
S-2	12/11/1997	1,300	NA	240	15	33	57	280	NA	NA	NA	NA	NA	38.79	8.27	30.52	NA
S-2	03/16/1998	1,100	NA	830	48	<10	<10	4,700	4,800	NA	NA	NA	NA	38.79	7.97	30.82	7.0/4.3
S-2	06/23/1998	720	NA	46	6.8	50	68	50	8.8	NA	NA	NA	NA	38.79	8.20	30.59	4.2/3.8
S-2 (D)	06/23/1998	810	NA	49	7.1	50	70	49	8.8	NA	NA	NA	NA	38.79	8.20	30.59	4.2/3.8
S-2	09/01/1998	<2,000	NA	170	<20	<20	<20	9,300	12,000	NA	NA	NA	NA	38.79	9.85	28.94	1.9/1.6
S-2	12/30/1998	<5,000	NA	369	<50	<50	<50	14,300	NA	NA	NA	NA	NA	38.79	9.84	28.95	2.0/1.8
S-2	03/30/1999	<2,000	NA	234	<20.0	27.4	36.9	49,200	53,000	NA	NA	NA	NA	38.79	8.41	30.38	2.1/1.8
S-2	03/31/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38.79	8.67	30.12	NA
S-2	06/14/1999	<1,000	NA	175	<10.0	<10.0	11.1	67,500	NA	NA	NA	NA	NA	38.79	9.80	28.99	NA
S-2	09/30/1999	678	177a	135	8.22	14.9	25.8	17,100	17,000c	NA	NA	NA	NA	38.79	10.58	28.21	5.1/4.8

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Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
S-2	12/22/1999	316	142a	55.8	10.1	5.26	10.4	9,410	8,810	NA	NA	NA	NA	38.79	10.13	28.66	9.6/5.2
S-2	03/09/2000	2,670	630a	1,190d	62.7	84.1	125	29,200d	31,400c	NA	NA	NA	NA	38.78	7.88	30.90	7.6/5.0
S-2	06/20/2000	<5,000	401a	348	<50.0	50.4	127	35,800	33,900c	NA	NA	NA	NA	38.78	10.27	28.51	1.9/2.2
S-2	09/05/2000	<5,000	373a	106	<50.0	<50.0	<50.0	25,800	37,100c	NA	NA	NA	NA	38.78	10.19	28.59	0.5/1.6
S-2	12/04/2000	<250	1,730a	4.37	<2.50	<2.50	<2.50	4,500	5,130c	NA	NA	NA	NA	38.78	10.30	28.48	10.6/9.4
S-2	12/12/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38.78	9.66	29.12	NA
S-2	03/08/2001	<2,500	<51.3	318	45.7	53.5	88.5	15,500	17,500	NA	NA	NA	NA	38.78	8.57	30.21	2.7e
S-2	06/07/2001	18,000	11,000	450	170	390	2,200	13,000	18,000	NA	NA	NA	NA	38.78	9.39	29.39	1.1/2.0
S-2	09/13/2001	13,000	<5,000	140	110	350	1,400	NA	9,200	NA	NA	NA	NA	38.78	10.34	28.44	11.0/4.5
S-2	11/19/2001	15,000	8,700	71	27	86	330	NA	7,500	NA	NA	NA	NA	38.78	9.90	28.88	5.0/3.1
S-2	03/18/2002	3,700	14,000	93	<20	35	100	NA	7,500	NA	NA	NA	NA	38.78	9.91	28.87	0.9/4.2
S-2	06/19/2002	2,100	<2,000	92	<10	24	50	NA	4,700	NA	NA	NA	NA	38.78	9.98	28.80	NA
S-2	09/11/2002	2,100	<450	54	<5.0	19	55	NA	1,900	NA	NA	NA	NA	38.78	10.25	28.53	3.5
S-2	12/11/2002	570	1,900	9.4	<2.5	7.2	14	NA	1,100	NA	NA	NA	NA	38.47	9.99	28.48	2.0
S-2	03/11/2003	2,900	<1,800	150	5.5	54	84	NA	870	NA	NA	NA	NA	38.47	9.25	29.22	2.4
S-2	06/10/2003	2,200	840 a	83	<5.0	22	52	NA	970	NA	NA	NA	NA	38.47	9.20	29.27	5.0
S-2	09/09/2003	1,200	270 a	57	<2.5	11	33	NA	740	NA	NA	NA	NA	38.47	9.70	28.77	3.7
S-2	12/09/2003	3,100	1,900 a	84	<5.0	45	90	NA	660	NA	NA	NA	NA	38.47	9.31	29.16	24.21
S-2	03/09/2004	1,600	990 a	140	<5.0	31	49	NA	610	NA	NA	NA	NA	38.47	8.24	30.23	2.6
S-2	06/08/2004	640	400 a	40	<2.5	4.2	6.6	NA	460	NA	NA	NA	NA	38.47	9.40	29.07	8.2
S-2	09/07/2004	<100	240 i	6.6	<1.0	1.3	2.3	NA	140	<4.0	<4.0	<4.0	450	38.47	9.78	28.69	2.4
S-2	12/06/2004	260	140 a	26	<1.0	2.0	<2.0	NA	270	NA	NA	NA	NA	38.47	9.45	29.02	8.5
S-2	03/07/2005	2,300	450 i	100	<5.0	11	<10	NA	570	NA	NA	NA	NA	38.47	7.82	30.65	16.7
S-2	**06/10/2005**	**<2,500**	**550 a**	**200**	**<25**	**<25**	**<50**	**NA**	**630**	**NA**	**NA**	**NA**	**NA**	**38.47**	**8.37**	**30.10**	**0.70**
S-3	05/28/1993	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	37.33	8.45	28.88	NA
S-3	06/03/1993	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	37.33	8.36	28.97	NA
S-3	01/19/1900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	37.33	8.41	28.92	NA
S-3	06/29/1993	29,000	NA	1,500	1,800	950	6,200	NA	NA	NA	NA	NA	NA	37.33	NA	NA	NA
S-3	09/21/1993	15,000	NA	900	2,200	2,600	11,000	NA	NA	NA	NA	NA	NA	37.33	10.08	27.25	NA

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4411 Foothill Boulevard
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
S-3	12/94/1993	20,000	NA	1,100	2,400	1,800	8,500	NA	NA	NA	NA	NA	NA	37.33	8.80	28.53	NA
S-3	03/17/1994	14,000	NA	580	190	750	1,700	NA	NA	NA	NA	NA	NA	37.33	8.34	28.99	NA
S-3	06/16/1994	20,000	NA	700	690	1,400	4,100	NA	NA	NA	NA	NA	NA	37.33	9.12	28.21	NA
S-3 (D)	06/16/1994	19,000	NA	680	560	1,300	3,700	NA	NA	NA	NA	NA	NA	37.33	NA	NA	NA
S-3	09/22/1994	24,000	NA	630	1,100	1,400	5,700	NA	NA	NA	NA	NA	NA	37.33	10.27	27.06	NA
S-3 (D)	09/22/1994	25,000	NA	720	1,100	1,500	6,100	NA	NA	NA	NA	NA	NA	37.33	NA	NA	NA
S-3	12/15/1994	18,000	NA	520	800	1,100	4,200	NA	NA	NA	NA	NA	NA	37.33	7.81	29.52	NA
S-3 (D)	12/15/1994	23,000	NA	1,000	1,900	2,000	8,600	NA	NA	NA	NA	NA	NA	37.33	NA	NA	NA
S-3 b	03/30/1995	8,800	NA	360	730	700	3,700	NA	NA	NA	NA	NA	NA	37.33	7.06	30.27	NA
S-3 (D)	03/30/1995	7,600	NA	330	570	600	2,600	NA	NA	NA	NA	NA	NA	37.33	NA	NA	NA
S-3	06/20/1995	9,600	NA	510	170	960	1,700	NA	NA	NA	NA	NA	NA	37.33	8.15	29.18	NA
S-3 (D)	06/20/1995	9,800	NA	500	170	950	1,700	NA	NA	NA	NA	NA	NA	37.33	NA	NA	NA
S-3	09/20/1995	21,000	NA	400	560	1,300	4,600	NA	NA	NA	NA	NA	NA	37.33	9.32	28.01	NA
S-3	12/06/1995	24,000	NA	630	1,400	1,400	6,000	NA	NA	NA	NA	NA	NA	37.33	10.53	26.80	NA
S-3 (D)	12/06/1995	22,000	NA	630	1,200	1,400	5,500	NA	NA	NA	NA	NA	NA	37.33	NA	NA	NA
S-3	03/21/1996	9,100	NA	290	110	490	1,600	NA	NA	NA	NA	NA	NA	37.33	7.32	30.01	NA
S-3 (D)	03/21/1996	11,000	NA	310	250	540	2,100	NA	NA	NA	NA	NA	NA	37.33	NA	NA	NA
S-3	09/06/1996	15,000	NA	440	300	1,100	3,000	500	NA	NA	NA	NA	NA	37.33	10.10	27.23	NA
S-3 (D)	09/06/1996	11,000	NA	490	170	820	1,500	700	NA	NA	NA	NA	NA	37.33	NA	NA	NA
S-3	12/19/1996	12,000	NA	600	380	850	2,500	380	NA	NA	NA	NA	NA	37.33	8.36	28.97	NA
S-3 (D)	12/19/1996	12,000	NA	590	380	830	2,500	540	NA	NA	NA	NA	NA	37.33	8.36	28.97	NA
S-3	03/17/1997	12,000	NA	520	140	740	1,400	320	NA	NA	NA	NA	NA	37.33	8.57	28.76	NA
S-3 (D)	03/17/1997	9,600	NA	500	100	680	1,100	<250	NA	NA	NA	NA	NA	37.33	8.57	28.76	NA
S-3	06/11/1997	9,600	NA	510	94	740	1,100	410	NA	NA	NA	NA	NA	37.33	9.26	28.07	NA
S-3	09/17/1997	21,000	NA	140	560	1,800	7,200	130	NA	NA	NA	NA	NA	37.33	9.62	27.71	NA
S-3	12/11/1997	24,000	NA	530	970	1,600	6,900	950	NA	NA	NA	NA	NA	37.33	7.34	29.99	NA
S-3 (D)	12/11/1997	29,000	NA	520	1,000	1,600	7,300	970	NA	NA	NA	NA	NA	37.33	7.34	29.99	NA
S-3	03/16/1998	29,000	NA	840	810	1,700	6,000	<250	NA	NA	NA	NA	NA	37.33	5.75	31.58	3.0/3.4
S-3	06/23/1998	3,800	NA	90	220	240	1,400	<50	NA	NA	NA	NA	NA	37.33	5.98	31.35	4.2/2.0
S-3	09/01/1998	9,600	NA	480	120	870	1,800	490	<50	NA	NA	NA	NA	37.33	8.98	28.35	1.9/2.8

WELL CONCENTRATIONS
Former Shell Service Station
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Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
S-3 (D)	09/01/1998	9,200	NA	420	110	800	1,700	110	<50	NA	NA	NA	NA	37.33	8.98	28.35	1.9/2.8
S-3	12/30/1998	7,660	NA	240	103	410	834	64.9	NA	NA	NA	NA	NA	37.33	9.11	28.22	1.8/1.6
S-3	03/30/1999	2,070	NA	195	10.0	<5.00	48.6	354	64.6	NA	NA	NA	NA	37.33	6.95	30.38	1.3/1.5
S-3	03/31/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	37.33	7.48	29.85	NA
S-3	06/14/1999	1,250	NA	37.4	17.4	110	109	118	NA	NA	NA	NA	NA	37.33	8.85	28.48	NA
S-3	09/30/1999	8,270	2,020a	226	113	686	1,440	184	NA	NA	NA	NA	NA	37.33	9.66	27.67	3.5/2.8
S-3	12/22/1999	9,530	2,270a	207	132	603	1,450	616	NA	NA	NA	NA	NA	37.33	9.50	27.83	0.98/0.8
S-3	03/09/2000	2,290d	1,600a	84.5d	17.0d	104d	105d	29.3d	NA	NA	NA	NA	NA	37.30	6.25	31.05	1.0/1.4
S-3	06/20/2000	5,570	2,900a	117	41.6	395	393	354	NA	NA	NA	NA	NA	37.30	9.67	27.63	1.8/2.0
S-3	09/05/2000	6,930	1,600a	127	85.5	354	535	509	NA	NA	NA	NA	NA	37.30	9.49	27.81	1.1/1.9
S-3	12/04/2000	8,390	1,460a	217	82.4	471	952	436	NA	NA	NA	NA	NA	37.30	9.23	28.07	1.1/1.5
S-3	12/12/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	37.30	9.23	28.07	NA
S-3	03/08/2001	19,400	1,720a	465	772	1,230	3,830	160	NA	NA	NA	NA	NA	37.30	8.17	29.13	1.1f
S-3	06/07/2001	12,000	1,400	230	110	900	1,100	120	NA	NA	NA	NA	NA	37.30	8.78	28.52	0.8/0.9
S-3	09/13/2001	32,000	<2,000	400	880	2,000	7,000	NA	<100	NA	NA	NA	NA	37.30	9.93	27.37	3.7/2.9
S-3	11/19/2001	26,000	<2,000	160	210	990	4,100	NA	<50	NA	NA	NA	NA	37.30	9.33	27.97	2.9/1.9
S-3	03/18/2002	3,800	810	61	120	130	620	NA	5.0	NA	NA	NA	NA	37.30	7.03	30.27	1.1/4.7
S-3	06/19/2002	3,200	<500	48	81	160	360	NA	9.4	NA	NA	NA	NA	37.30	8.92	28.38	NA
S-3	09/11/2002	16,000	<1,100	230	570	980	3,900	NA	<50	NA	NA	NA	NA	37.30	9.54	27.76	3.0
S-3	12/11/2002	16,000	<1,500	130	270	770	3,000	NA	<50	NA	NA	NA	NA	36.85	9.23	27.62	1.6
S-3	03/11/2003	8,100	<1,500	29	110	190	1,700	NA	<20	NA	NA	NA	NA	36.85	7.32	29.53	3.9
S-3	06/10/2003	Well inaccessible		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	36.85	NA	NA	NA
S-3	09/09/2003	5,900	640 a	44	140	130	1,500	NA	4.4	NA	NA	NA	NA	36.85	8.99	27.86	2.2
S-3	12/09/2003	27,000	1,500 a	130	460	550	4,900	NA	<20	NA	NA	NA	NA	36.85	7.67	29.18	1.6
S-3	03/09/2004	11,000	1,700 a	24	100	230	3,200	NA	<5.0	NA	NA	NA	NA	36.85	6.35	30.50	2.1
S-3	06/08/2004	1,700	1,100 a	11	34	29	420	NA	<2.5	NA	NA	NA	NA	36.85	8.25	28.60	0.1
S-3	09/07/2004	850	310 i	13	0.99	23	17	NA	7.0	<2.0	<2.0	<2.0	<5.0	36.85	9.05	27.80	0.1
S-3	12/06/2004	Unable to sample		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	36.85	7.70	29.15	NA
S-3	12/15/2004	620	270 i	1.9	7.8	10	180	NA	<0.50	NA	NA	NA	NA	36.85	5.83	31.02	2.4
S-3	03/07/2005	4,500	400 i	<0.50	7.7	30	350	NA	<0.50	NA	NA	NA	NA	36.85	4.58	32.27	4.4

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S-3	**06/10/2005**	**850**	**130 a**	**<0.50**	**1.3**	**7.4**	**53**	**NA**	**<0.50**	**NA**	**NA**	**NA**	**NA**	**36.85**	**5.40**	**31.45**	**0.17**
S-4	03/29/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	39.06	8.37	30.69	NA
S-4	03/31/2000	20,900	5,780a	4,570	272	595	997	4,490	4,450c	NA	NA	NA	NA	39.06	8.92	30.14	1.8/1.2
S-4	06/20/2000	19,500	244a	4,590	309	723	1,290	3,740	NA	NA	NA	NA	NA	39.06	8.77	30.29	2.7/2.9
S-4	09/05/2000	5,760	1,670a	841	54.2	162	115	1,040	NA	NA	NA	NA	NA	39.06	10.57	28.49	1.3/0.3
S-4	12/04/2000	3,990	1,050a	949	<10.0	118	48.3	1,120	NA	NA	NA	NA	NA	39.06	10.67	28.39	1.1/1.0
S-4	12/12/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	39.06	10.64	28.42	NA
S-4	03/08/2001	20,100	5,840a	5,210	105	381	281	2,520	NA	NA	NA	NA	NA	39.06	8.44	30.62	1.0/0.9
S-4	06/07/2001	11,000	3,500	2,500	86	370	170	2,000	NA	NA	NA	NA	NA	39.06	10.57	28.49	0.7/0.6
S-4	09/13/2001	4,200	<800	790	14	110	48	NA	690	NA	NA	NA	NA	39.06	11.27	27.79	3.8/3.9
S-4	11/19/2001	2,300	<600	230	4.1	21	22	NA	590	NA	NA	NA	NA	39.06	10.83	28.23	3.6/1.6
S-4	03/18/2002	Unable to sample		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	39.06	8.75	30.31	NA
S-4	03/29/2002	14,000	NA	1,700	30	280	250	NA	960	NA	NA	NA	NA	39.06	8.85 g	30.21	3.0/3.1
S-4	06/19/2002	4,700	<1,500	620	9.5	84	37	NA	490	NA	NA	NA	NA	NA	10.37 h	NA	NA
S-4	09/11/2002	2,700	280	280	4.6	23	13	NA	410	NA	NA	NA	NA	NA	11.14	NA	0.6
S-4	12/11/2002	3,300	<900	320	5.7	24	15	NA	420	NA	NA	NA	NA	38.69	10.78	27.91	2.2
S-4	03/11/2003	12,000	<5,600	1,900	63	360	280	NA	930	NA	NA	NA	NA	38.69	9.31	29.38	1.5
S-4	06/10/2003	13,000	3,100 a	2,400	86	650	380	NA	1,100	NA	NA	NA	NA	38.69	9.77	28.92	0.8
S-4	09/09/2003	3,700	1,700 a	510	12	43	43	NA	650	NA	NA	NA	NA	38.69	10.78	27.91	0.9
S-4	12/09/2003	3,900	390 a	150	4.2	7.5	13	NA	510	NA	NA	NA	NA	38.69	10.20	28.49	0.1
S-4	03/09/2004	13,000	3,100 a	2,500	110	810	1,100	NA	1,100	NA	NA	NA	NA	38.69	7.67	31.02	0.7
S-4	06/08/2004	6,100	1,400 a	870	30	120	150	NA	420	NA	NA	NA	NA	38.69	10.27	28.42	0.3
S-4	09/07/2004	3,100	890 i	290	6.4	18	14	NA	250	<10	<10	<10	140	38.69	10.91	27.78	0.1
S-4	12/06/2004	4,900	670 i	520	9.9	38	24	NA	290	NA	NA	NA	NA	38.69	10.03	28.66	0.2
S-4	03/07/2005	28,000	2,900 i	2,300	130	690	770	NA	770	NA	NA	NA	NA	38.69	6.20	32.49	0.2
S-4	**06/10/2005**	**13,000**	**2,700 i**	**1,900**	**81**	**380**	**460**	**NA**	**890**	**NA**	**NA**	**NA**	**NA**	**38.69**	**8.90**	**29.79**	**0.15**
S-5	05/31/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.54	NA	NA
S-5	06/19/2002	16,000	<2,000	2,600	320	180	1,600	NA	5,300	NA	NA	NA	NA	NA	9.87	NA	NA

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Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
S-5	09/11/2002	8,800	<1,200	1,500	64	89	120	NA	5,600	NA	NA	NA	NA	NA	10.28	NA	0.9
S-5	12/11/2002	4,400	<1,000	280	61	130	130	NA	4,000	NA	NA	NA	NA	NA	9.87	NA	2.9
S-5	03/11/2003	2,300	<900	28	5.6	59	15	NA	2,400	NA	NA	NA	NA	38.05	8.26	29.79	1.6
S-5	06/10/2003	2,400	620 a	11	7.2	56	38	NA	1,100	NA	NA	NA	NA	38.05	8.51	29.54	0.1
S-5	09/09/2003	3,700	660 a	23	14	44	150	NA	440	NA	NA	NA	NA	38.05	9.44	28.61	0.1
S-5	12/09/2003	12,000	600 a	200	80	41	320	NA	580	NA	NA	NA	NA	38.05	9.50	28.55	0.4
S-5	03/09/2004	2,300	550 a	130	3.5	6.9	13	NA	250	NA	NA	NA	NA	38.05	7.04	31.01	0.2
S-5	06/08/2004	2,900	490 a	11	<2.5	8.9	18	NA	120	NA	NA	NA	NA	38.05	8.87	29.18	0.2
S-5	09/07/2004	3,600	650 i	17	11	12	30	NA	120	<10	<10	<10	3,700	38.05	9.45	28.60	0.1
S-5	12/06/2004	4,700	460 i	99	28	14	69	NA	180	NA	NA	NA	NA	38.05	8.75	29.30	0.1
S-5	03/07/2005	4,700	360 i	440	<2.5	<2.5	<5.0	NA	200	NA	NA	NA	NA	38.05	7.28	30.77	0.1
S-5	**06/10/2005**	**1,200**	**240 i**	**1.3**	**<0.50**	**<0.50**	**1.2**	**NA**	**80**	**NA**	**NA**	**NA**	**NA**	**38.05**	**7.26**	**30.79**	**0.25**
BW-A	09/30/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.55	NA	2.3
BW-A	12/22/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.52	NA	2.2
BW-A	03/09/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.99	NA	1.5
BW-A	06/20/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.69	NA	2.4
BW-A	09/05/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.43	NA	1.0
BW-A	12/04/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.96	NA	1.3
BW-A	12/12/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.71	NA	NA
BW-A	03/08/2001	<2,500	1,370a	46.6	<25.0	<25.0	<25.0	10,600	11,700	NA	NA	NA	NA	NA	6.38	NA	0.9/1.4
BW-A	06/07/2001	1,100	960	<10	<10	<10	17	7,200	NA	NA	NA	NA	NA	NA	9.82	NA	3.6/0.8
BW-A	09/13/2001	<2,000	460	<20	<20	<20	<50	NA	13,000	NA	NA	NA	NA	NA	10.49	NA	3.3/1.7
BW-A	11/19/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.89	NA	NA

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Abbreviations:
TPPH = Total petroleum hydrocarbons as gasoline by EPA Method 8260B; prior to September 13, 2001, analyzed by EPA Method 8015.
TEPH = Total petroleum hydrocarbons as diesel by modified EPA Method 8015.
BTEX = Benzene, toluene, ethylbenzene, xylenes by EPA Method 8260B; prior to September 13, 2001, analyzed by EPA Method 8020.
MTBE = Methyl tertiary butyl ether
DIPE = Di-isopropyl ether, analyzed by EPA Method 8260B
ETBE = Ethyl tertiary butyl ether, analyzed by EPA Method 8260B
TAME = Tertiary amyl methyl ether, analyzed by EPA Method 8260B
TBA = Tertiary butyl alcohol, analyzed by EPA Method 8260B
TOB = Top of Box Elevation
TOC = Top of Casing Elevation
GW = Groundwater
DO = Dissolved Oxygen
ug/L = Parts per billion
ppm = Parts per million
MSL = Mean sea level
ft. = Feet
<n = Below detection limit
(D) = Duplicate sample
n/n = Pre-purge/Post-purge
NA = Not applicable

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Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)

Notes:

a = Chromatogram pattern indicates an unidentified hydrocarbon/Hydrocarbon does not match pattern of laboratory's standard.

b = National Environmental Testing, Inc. (NET), analyzed within hold time but further dilutions were required and analyzed out of hold time. NET suggests that these should be considered minimum concentrations.

c = Sample analyzed outside the EPA recommended holding times.

d = Result reported was generated out of hold time.

e = Post-purge DO reading.

f = Pre-purge DO reading.

g = Estimated depth to water from top of box; TOB determined by using the survey data from February 3, 2000 for the difference between TOB and TOC.

h = Estimated depth to water from TOB. Wellbox was destroyed. No new survey.

i = Hydrocarbon reported is in the early Diesel range and does not match the laboratory's standard.

Wells S-1 through S-4 surveyed February 3, 2000 by Virgil Chavez Land Surveying of Vallejo, CA.

Wells S-1 through S-4 surveyed March 5, 2002 by Virgil Chavez Land Surveying of Vallejo, CA.

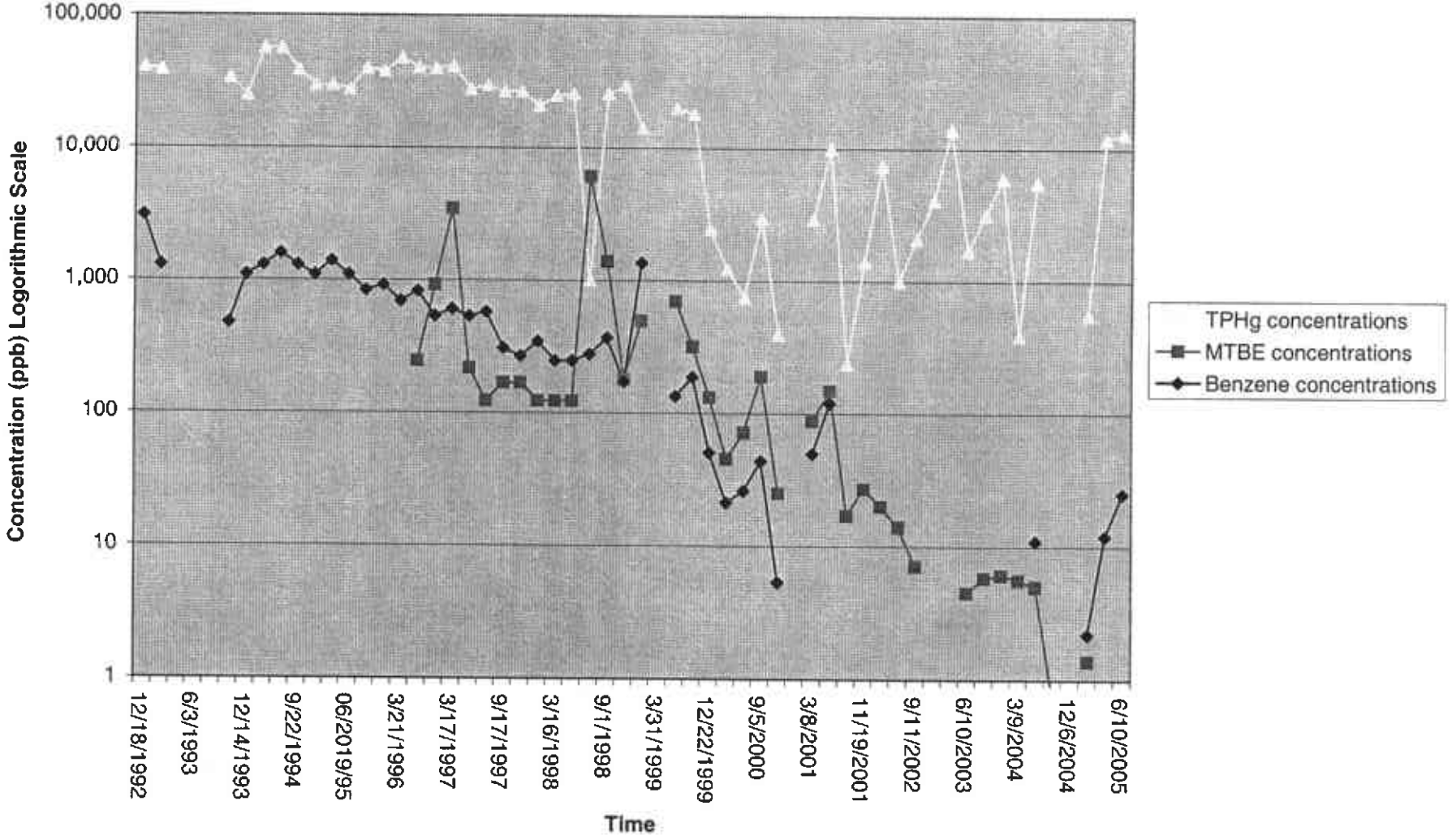
Beginning December 12, 2002, depth to water referenced to Top of Casing elevation.

Well S-5 surveyed May 29, 2003 by Virgil Chavez Land Surveying of Vallejo, CA.

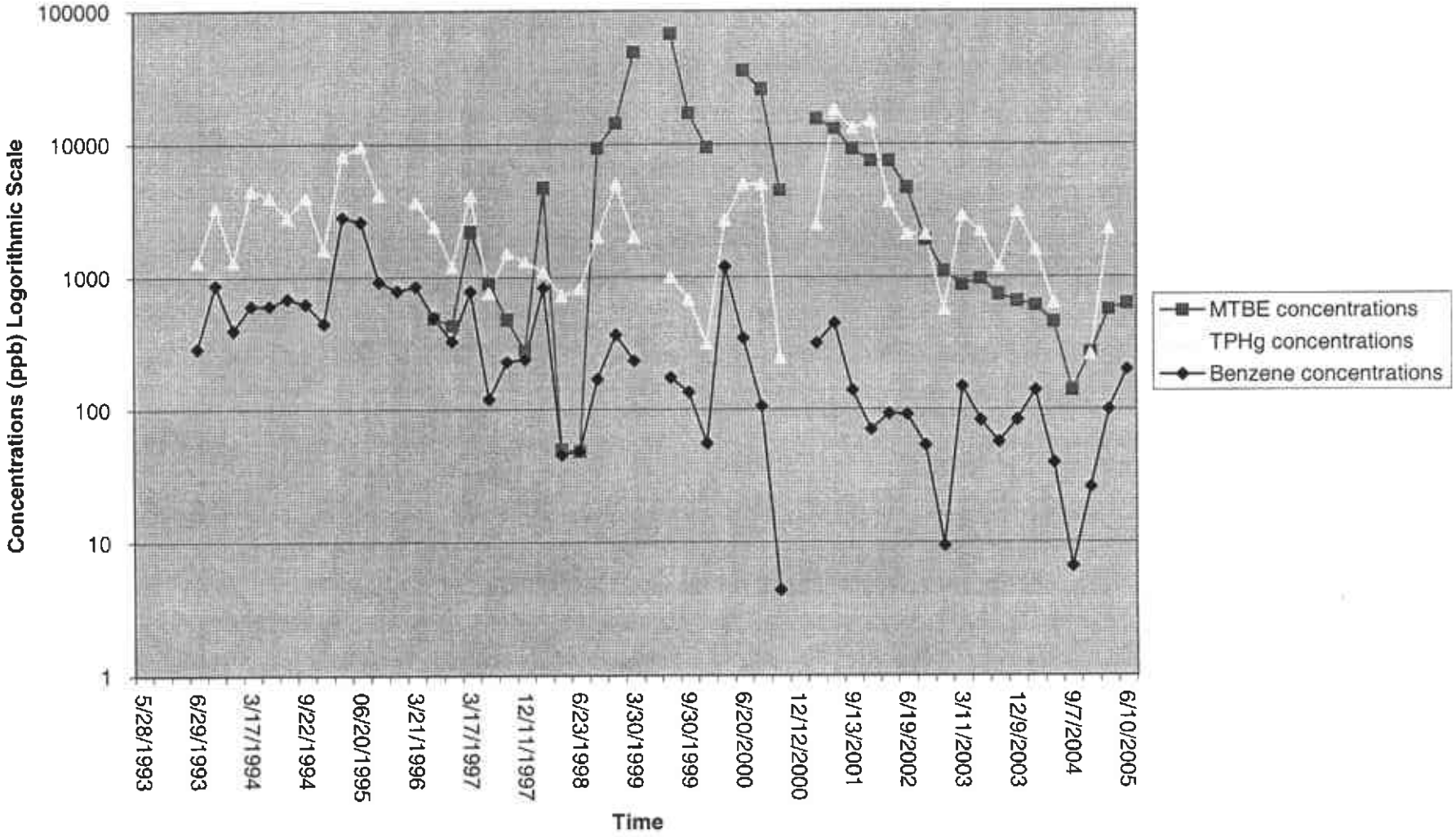
ATTACHMENT D-4

Plots of Groundwater Concentrations versus Time

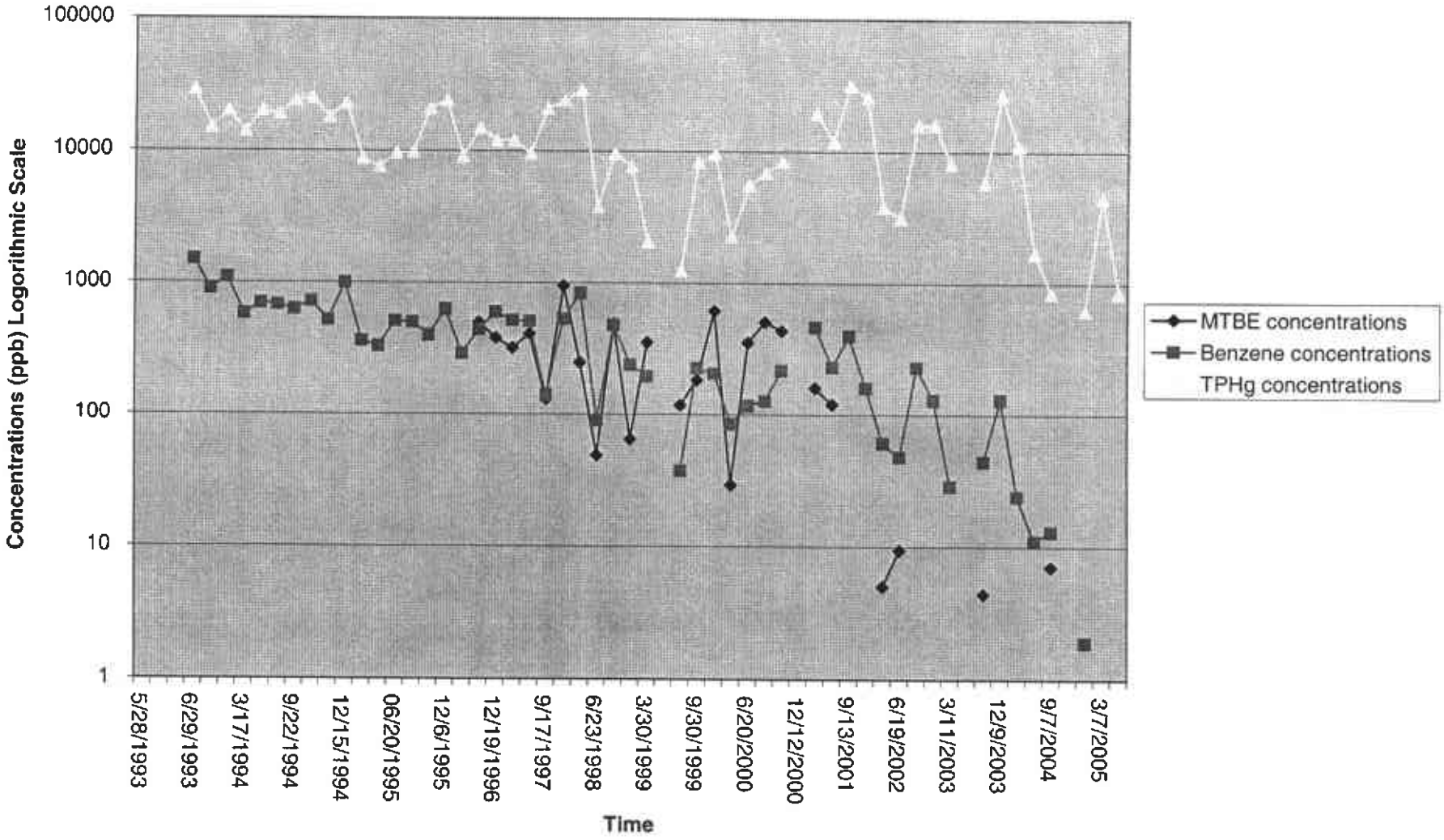
4411 Foothill Blvd., Oakland
Well S-1 - MTBE, Benzene, and TPHg concentrations vs. Time



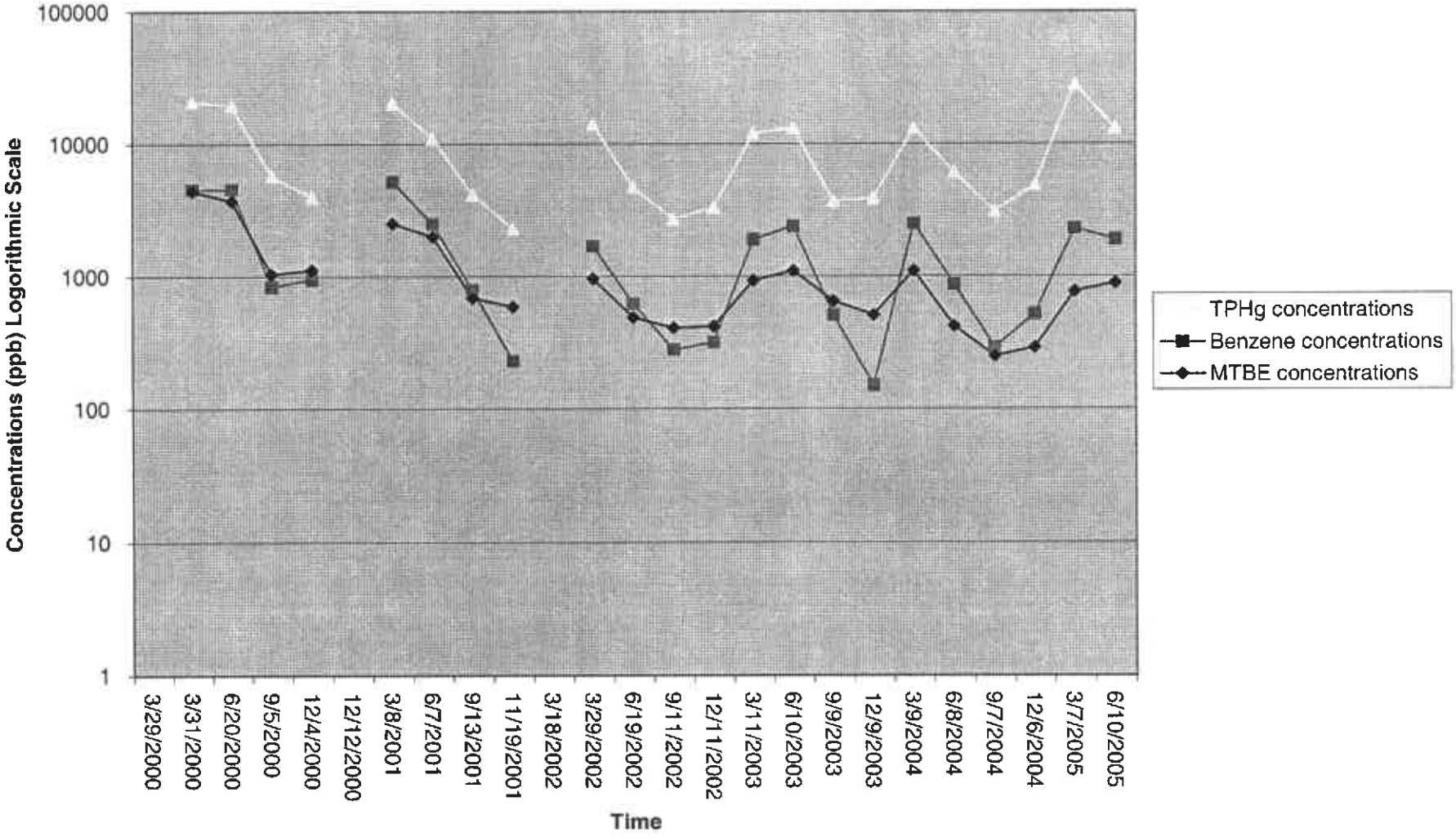
4411 Foothill Blvd., Oakland
Well S-2 - MTBE, Benzene, and TPHg concentrations vs. Time



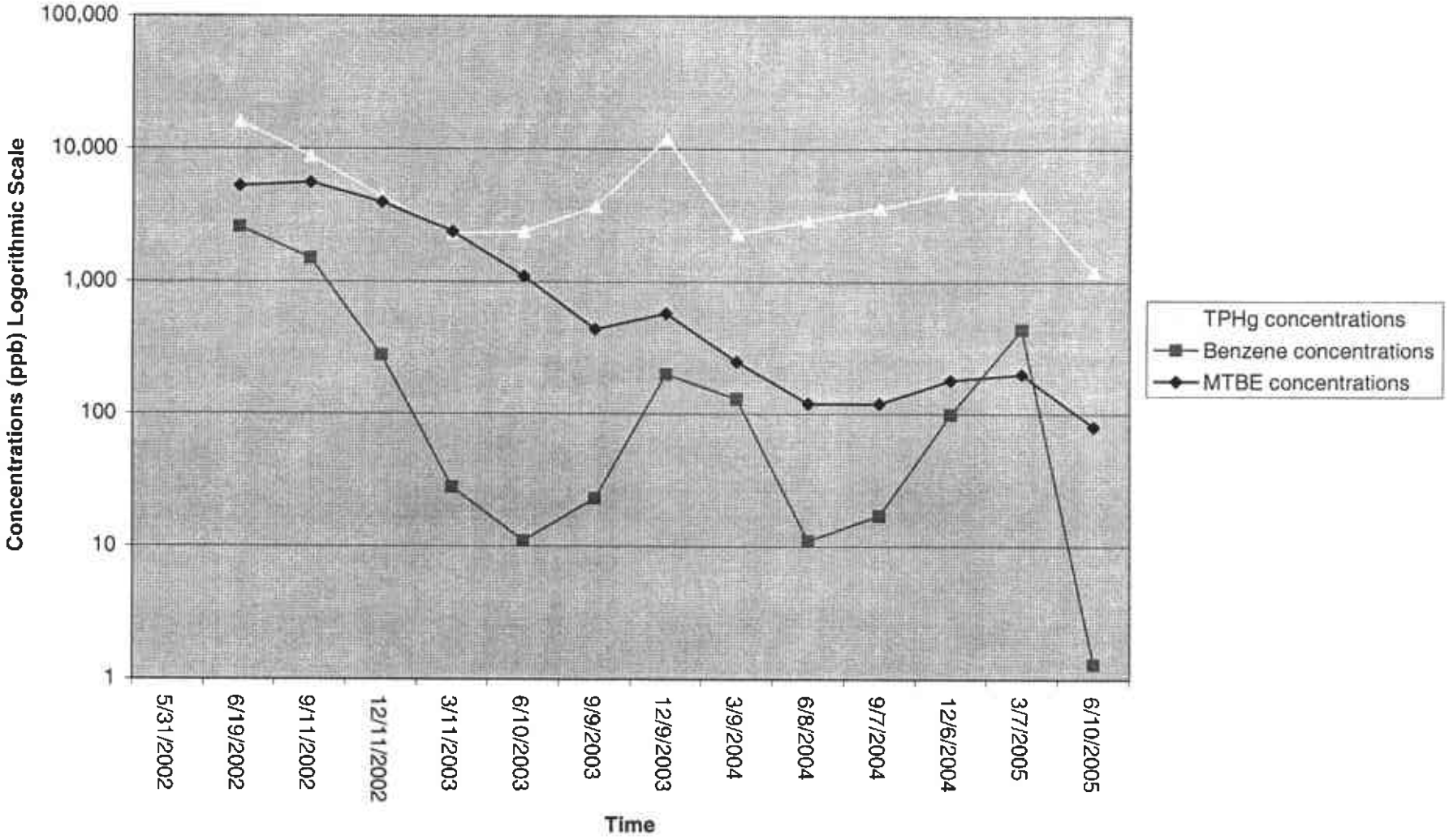
4411 Foothill Blvd., Oakland
Well S-3 - MTBE, Benzene, and TPHg concentrations vs. Time



4411 Foothill Blvd., Oakland
Well S-4 - MTBE, Benzene, and TPHg concentrations vs. Time



4411 Foothill Blvd., Oakland
Well S-5 - MTBE, Benzene, and TPHg concentrations vs. Time



ATTACHMENT D-5

Well Survey Table

Well Survey - Former Shell-branded Service Station - Incident# 98995746, 4411 Foothill Blvd., Oakland, California

Well #	Well ID (Soil Boring ID)	Installation Date	Use	Completed Depth (feet)	Screened Interval	Sealed Interval
1	2S3W 9D1	06/18/77	CATH	120	95-120	0-95
2	2S/3W-8C2	01/29/75	CATH	120	95-120	0-95
3	2S3W 8C1	03/23/90	MONT	34.5	14.5-35	0-14.5
4	2S/3W-8C1	07/26/77	IRR	30	10-30	0-10
5	2S3W-8E1	12/13/1973	CATH	120	95-120	0-95
6	2S3W-8E2	12/13/1973	MONT	30	10-30	0-10
7	2S3W-8f1	05/04/90	MONT	27	11-27	0-11
8	2S3W-8f2	05/04/90	MONT	29	9-29	0-9
9	2S3W-8f3	05/04/90	MONT	28	8-28	0-8
10	2S3W-8f4	06/24/92	MONT	25	5-25	0-5
11	2S3W-8D2	09/14/90	MONT	25	15-25	0-15
12	2S3W-8D3	09/14/90	MONT	26.5	15-25	0-15
13	2S3W-8E3	02/01/93	MONT	20.5	5-20	0-5
14	2S3W-8E4	02/01/93	MONT	20.5	5-20	0-5
15	2S/3W-8Q1	01/09/62	IND	776	2-776	0-2
16	2S/3W-8K2	03/30/89	TEST	25	7-25	0-7
17	2S/3W-8K3	03/30/89	TEST	27	7-27	0-7
18	2S/3W-8K4	03/31/89	TEST	25	7-25	0-7
19	2S/3W-8L2	07/23/82	TEST	235	115-145 & 205-235	0-115
20	02S03W8F80	*7/9/1996	DEST	15	N/A	0-15
21	2S/3W-8G6	04/19/89	TEST	30	20-30	0-20
22	2S/3W-8G7	04/19/89	TEST	30	20-30	0-20
23	2S/3W-8G8	04/19/89	TEST	30	20-30	0-20
24	2S/3W-8G9	04/19/89	TEST	30	20-30	0-20
25	2S/3W-8G10	01/29/90	TEST	32	20-32	0-20
26	2S/3W-8G11	01/29/90	TEST	27	20-27	0-20
27	2S/3W-8G25	04/14/93	MONT	45	30-45	0-30
28	2S/3W-8G26	04/15/93	MONT	45	30-45	0-30
29	2S/3W-8G27	04/15/93	MONT	45	31-45	0-31

Well Survey - Former Shell-branded Service Station - Incident# 98995746, 4411 Foothill Blvd., Oakland, California

Well #	Well ID (Soil Boring ID)	Installation Date	Use	Completed Depth (feet)	Screened Interval	Sealed Interval
30	2S/3W-8G31	08/28/92	MONT	43	33-43	0-33
31	2S/3W-8G28	04/14/93	MONT	42	30-42	0-30
32	2S/3W-8J1	10/05/92	MONT	15	5-15	0-5
33	2S/3W-8J2	10/05/92	MONT	15	5-15	0-5
34	2S/3W-8L3	09/21/82	TEST	244	135-155 & 179-234	0-135
35	2S/3W-8L4	08/05/82	TEST	20	10-20	0-10
36	2S/3W-8L5	09/21/82	TEST	25	10-25	0-10
37	2S/3W-8L6	08/06/82	TEST	20	10-20	0-10
38	2S/3W-8L7	10/18/82	TEST	20	10-20	0-10
39	2S/3W-8L8	08/09/82	TEST	20	10-20	0-10
40	2S/3W-8L9	07/28/82	TEST	85	40-80	0-40
41	2S/3W-8L10	07/30/82	TEST	85	40-80	0-40
42	2S/3W-8L11	08/05/82	TEST	75	30-70	0-30
43	2S/3W-8L12	08/10/82	TEST	20	10-20	0-10
44	2S/3W-8L13	08/10/82	TEST	75	30-70	0-30
45	2S/3W-8L14	08/03/82	TEST	85	40-80	0-40
46	2S/3W-8L27	09/22/86	MONT	29	13.5-23.5	0-13.5
47	2S/3W-8L28	09/17/86	MONT	28	13-23	0-13
48	2S/3W-8L29	09/17/86	MONT	25	12.5-22.5	0-12.5
49	2S/3W-8L30	09/12/86	MONT	27	11-21	0-11
50	2S/3W-8L31	09/11/86	MONT	25	10-20	0-10
51	2S/3W-8L32	09/23/86	MONT	29.75	13-23	0-13
52	2S/3W-8L26	10/03/86	MONT	55	37.5-52.5	0-37.5
53	2S/3W-8L22	10/24/86	MONT	11	5-11	0-5
54	2S/3W-8L23	10/24/86	MONT	11	5-11	0-5
55	2S/3W-8L24	10/24/86	MONT	11	5-11	0-5
56	2S/3W-8L25	10/24/86	MONT	11	5-11	0-5
57	2S/3W-8G29	03/15/93	MONT	22	7-22	0-7
58	2S/3W-8G30	03/15/93	MONT	20	7-20	0-7

Well Survey - Former Shell-branded Service Station - Incident# 98995746, 4411 Foothill Blvd., Oakland, California

Well #	Well ID (Soil Boring ID)	Installation Date	Use	Completed Depth (feet)	Screened Interval	Sealed Interval
59	2S/3W-8G35	11/17/92	MONT	25	9.5-25	0-9.5
60	2S/3W-8G38	01/08/92	MONT	43	33-43	0-33
61	2S/3W-8G16	09/19/90	MONT	51	36-51	0-36
62	2S/3W-8G17	09/19/90	MONT	51	35.5-51	0-35.5
63	2S/3W-8G18	09/19/90	MONT	51	33-51	0-33
64	2S/3W-8G19	03/04/92	MONT	50	30-50	0-30
65	2S/3W-8G32	04/08/93	MONT	12.5	3.5-11.5	0-3.5
66	2S/3W-8G33	04/08/93	MONT	12.5	3.5-11.5	0-3.5
67	2S/3W-8G34	04/08/93	MONT	11	3.5-11	0-3.5
68	2S/3W-8G36	11/19/92	MONT	50	29-49	0-29
69	2S/3W-8G37	11/19/92	MONT	49	29-49	0-29
70	2S/3W-8G2	08/13/87	MONT	40	15-40	0-15
71	2S/3W-8G3	08/13/87	MONT	40	15-40	0-15
72	2S/3W-8G4	08/13/87	MONT	40	15-40	0-15
73	2S/3W-8G5	08/13/87	MONT	40	15-40	0-15
74	2S/3W-8G12	09/01/90	MONT	45	25-45	0-25
75	2S/3W-8G13	09/01/90	MONT	55	35-55	0-35
76	2S/3W-8G14	07/31/90	MONT	55	35-55	0-35
77	2S/3W-8G15	11/01/90	MONT	59	39-59	0-39

Abbreviations:

UNK = Unknown
N/A = Not available
CATH= Cathodic Protection
MONIT = Monitoring Well
IND = Industrial well
DEST = Destroyed well
IRR = Irrigation well

Well Survey - Former Shell-branded Service Station - Incident# 98995746, 4411 Foothill Blvd., Oakland, California

Well #	Well ID (Soil Boring ID)	Installation Date	Use	Completed Depth (feet)	Screened Interval	Sealed Interval

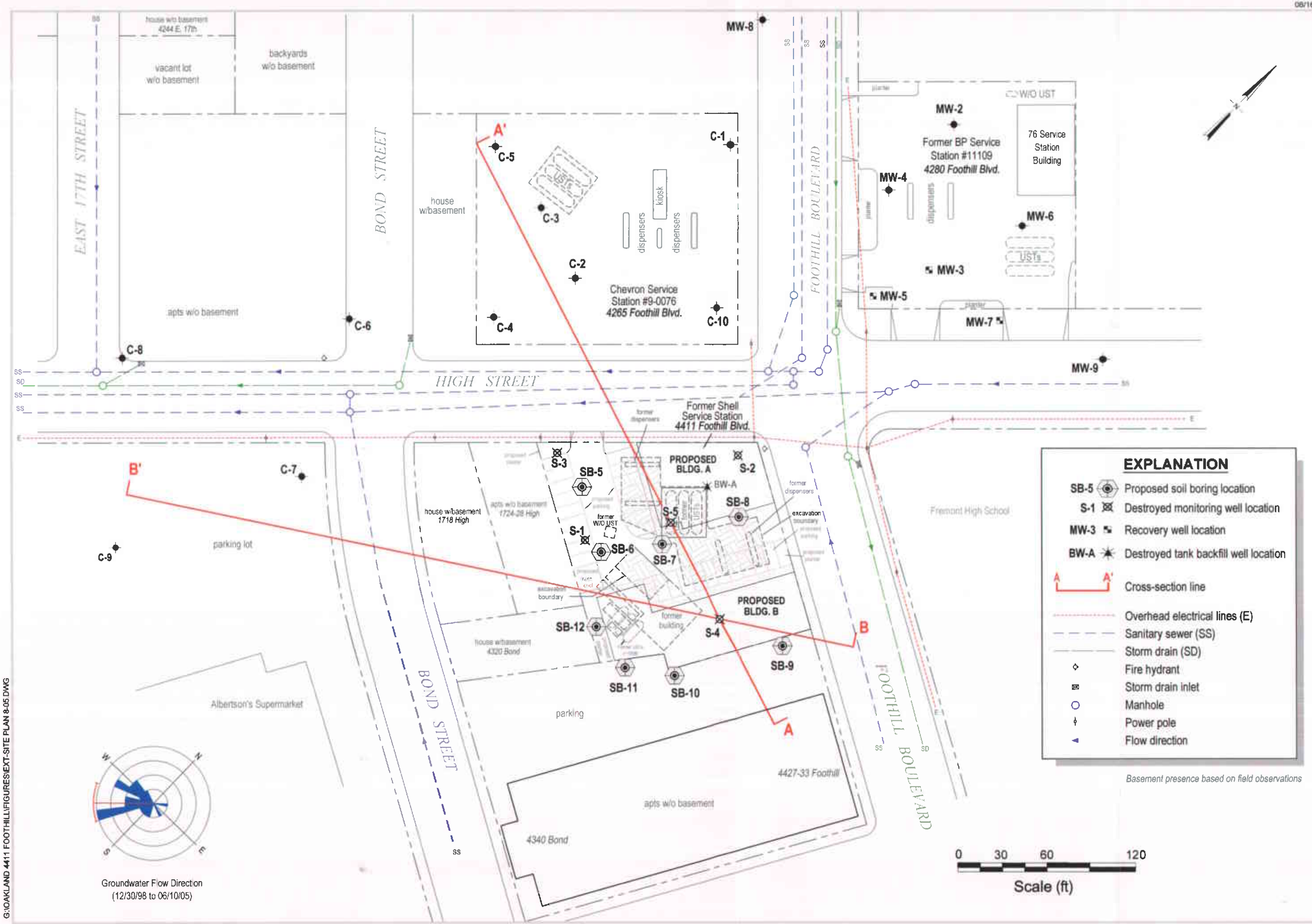
TEST = Test well
MUNI = Municipal supply well
* = Well destruction date

ATTACHMENT D-6

Site Conceptual Figures

08/16/05

Site Plan



EXPLANATION

- SB-5 — Proposed soil boring location
- S-1 — Destroyed monitoring well location
- MW-3 — Recovery well location
- BW-A — Destroyed tank backfill well location
- A — A' — Cross-section line
- Overhead electrical lines (E)
- Sanitary sewer (SS)
- Storm drain (SD)
- Fire hydrant
- Storm drain inlet
- Manhole
- Power pole
- Flow direction

Basement presence based on field observations

CAMBRIA

Former Shell Service Station
4411 Foothill Boulevard
Oakland, California
Incident No.98995746

G:\OAKLAND 4411 FOOTHILL\FIGURES\EXT-SITE PLAN 8-05.DWG

A' West-Northwest — East-Southeast A

Chevron Station
4265 Foothill

Former Shell Station
4411 Foothill

Apartments
4340 Bond & 4427-33 Foothill

C-5
TOC = 38.50'
(proj. 10.4' SSW)

C-3
TOC = 38.37'
(proj. 19.0' SSW)

C-2
TOC = 37.47'
(proj. 17.7' SSW)

S-5
TOC = 38.05'

S-4
TOC = 38.69'

PL

HIGH STREET

sidewalk

former Shell dispensers

Silty Gravel

Chevron USTs

Clay and Sand

Groundwater Flow Direction

? Sand

Fill

former Shell USTs

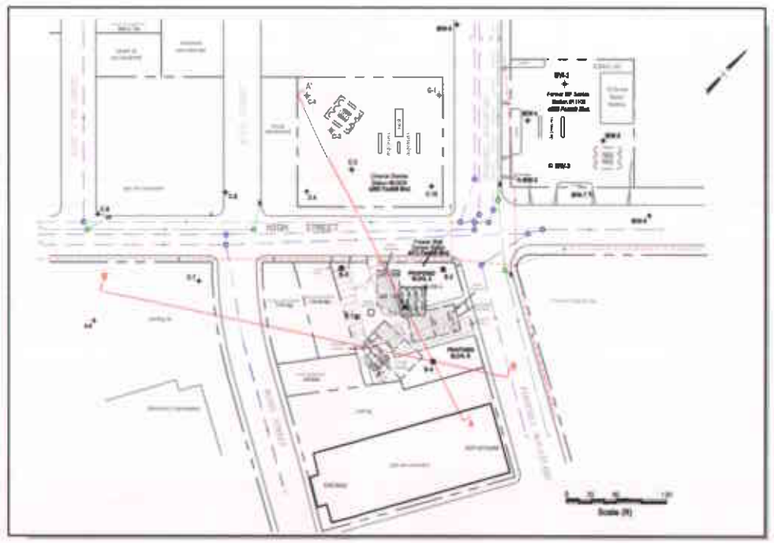
Sand

Clay

Clay and Sandy Clay

Elevation, in feet above msl

40
35
30
25
20
15
10
5
0
-5
-10
-15



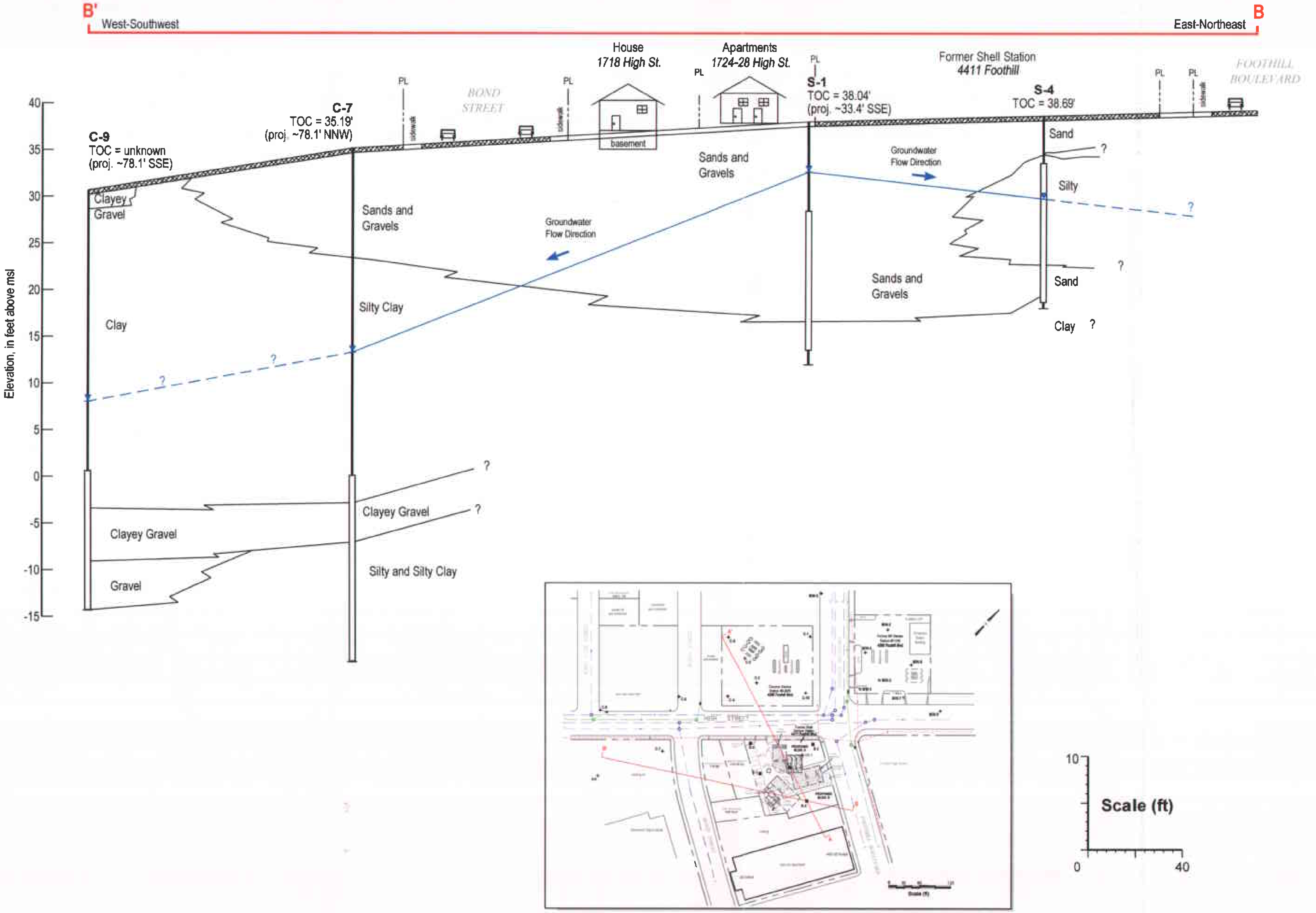
10
Scale (ft)
0
40

Site Conceptual Figure
A-A'

CAMBRIA

Shell-branded Service Station
4411 Foothill Boulevard
Oakland, California

G:\OAKLAND 4411 FOOTHILL\FIGURES\CAD\7-05 A-A' (DW)



Site Conceptual Figure B-B'

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Shell-branded Service Station
4411 Foothill Boulevard
Oakland, California