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April 27, 2009
(date)

Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: Chevron Facility #_9-2506_____

Address: 2630 Broadway, Oakland, California_____

I have reviewed the attached report titled *Additional Investigation Work Plan*_____
and dated April 27, 2009.

I agree with the conclusions and recommendations presented in the referenced report. The information in this report is accurate to the best of my knowledge and all local Agency/Regional Board guidelines have been followed. This report was prepared by Conestoga-Rovers & Associates, upon whose assistance and advice I have relied.

This letter is submitted pursuant to the requirements of California Water Code Section 13267(b)(1) and the regulating implementation entitled Appendix A pertaining thereto.

I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,

SH Frerichs

Stacie H. Frerichs
Project Manager

Enclosure: Report

CONESTOGA-ROVERS
& ASSOCIATES

2000 Opportunity Dr, Suite 110, Roseville, California 95678
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www.CRAworld.com

April 27, 2009 Reference No. 611962

Mr. Steven Plunkett
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: Additional Investigation Work Plan
Former Chevron Service Station No. 9-2506
2630 Broadway
Oakland, California
LOP Case No. RO0000146

Dear Mr. Plunkett:

Conestoga-Rovers & Associates (CRA) has prepared this *Additional Investigation Work Plan* on behalf of Chevron Environmental Management Company (Chevron) for the site referenced above. CRA previously submitted a *Subsurface Investigation Report* (report), dated September 11, 2007, which documented the (attempted) drilling of nine borings (B-13 through B-21) at and in the vicinity of the site in June 2007.

In a letter dated January 30, 2009 (Attachment A), Alameda County Environmental Health (ACEH) requested additional investigation to further evaluate the extent of impacted soil and groundwater at the site; specifically in the former source area and to the east-southeast of the former underground storage tanks (USTs) and dispensers (area of attempted boring B-13). To meet this objective, CRA proposes the drilling of two additional borings at the site. The letter also included several technical comments regarding the previous investigation and site conditions that warranted further explanation.

The site description and background, CRA's responses to the technical comments, and the proposed scope of work are presented in the following sections. The goal of the proposed investigation is to provide additional information for a comprehensive site conceptual model to support low-risk case closure.

SITE DESCRIPTION AND BACKGROUND

The site is located on the southeast corner of Broadway and 27th Street in Oakland, California (Figure 1), and is currently a paved parking lot occupied by a used car sales facility. Land use in the site vicinity is primarily commercial. The site is bounded by 27th Street to the northeast, Broadway to the northwest, 26th Street to the southwest, and an auto dealership to the southeast. The site

appears to have been used as a service station from the early 1960s to 1998. The first service station UST reportedly was installed at the site in 1962. Based on historical Sanborn maps, the site previously was occupied by a hospital (Sisters of Providence) from at least 1903 through 1911. Sanborn maps dated 1950 and 1952 showed the site as occupied by a used car sales/service facility. Copies of the Sanborn maps are included as Attachment B. In 1982, four steel USTs (two 7,500-gallon and one 4,000-gallon gasoline, and one 550-gallon used-oil) reportedly were replaced with new fiberglass tanks (three 10,000-gallon gasoline and one 1,000-gallon used-oil) and product lines. Reportedly, the steel tanks had been installed in 1962, 1971, 1974, and 1981. The most recent station facilities also included four dispenser islands and a station building with two hydraulic hoists. The station and all aboveground and belowground facilities were removed in 1998, and the site has since remained a paved lot. The former site facilities are presented on Figure 2. Please note that previous correspondence indicated that the property owner was planning to sell the site and the proposed new owners were going to redevelop the property including the excavation of an underground parking garage. As such, a previously proposed boring (SB-1) in the area of the former southwestern dispenser islands (November 11, 2005 *Investigation Workplan [Revised]* prepared by Cambria Environmental Technology, Inc. [now CRA]) was not completed. However, based on recent conversations with the potential buyers, their proposed purchase and subsequent redevelopment of the site is on hold due to the current economic conditions. Therefore, it can no longer be assumed that significant excavation at the site will occur in the near future.

Environmental work at the site began in 1982. To date, 12 monitoring wells (B-1 through B-12) have been installed and nine exploratory borings (B-13 through B-21) have been advanced; however, drilling refusal was encountered in three of the borings (B-13, B-15, and B-16) due to subsurface concrete slabs. Remedial activities performed at the site have consisted of soil over-excavation (approximately 180 cubic yards), groundwater extraction (approximately 6,000 gallons), and groundwater oxygenation. Groundwater monitoring is currently performed on a semi-annual basis. A summary of the environmental work performed at the site to date is included as Attachment C. The approximate well and boring locations are presented on Figure 2; the over-excavation areas and confirmation soil sampling locations are presented on Figure 3.

RESPONSE TO COMMENTS

***Technical Comment No. 1*:** In Technical Comment No. 1 of the letter, ACEH requested explanation of why a groundwater sample was not collected and analyzed from boring B-21 during the previous investigation, when groundwater was reported as encountered at 10 feet below grade (fbg) in the boring. However, after discussion with the CRA field staff that performed the work and review of the field notes and the field boring log, it appears that the identification of groundwater at 10 fbg on the boring log for B-21 included with the report, and as stated on page 4 of the report, was an error. Free groundwater was not encountered in this boring to the total depth of approximately 30.5 fbg. Upon reaching 30.5 fbg, temporary slotted PVC casing was placed in the borehole and periodically observed to see if water would eventually enter the borehole. However, water did not enter the

borehole and therefore no sample was collected. Although a groundwater sample was not collected from this boring, monitoring well B-9 is in close proximity (approximately 25 feet) and petroleum hydrocarbons generally were not detected in the six soil samples collected from boring B-21 with the exception of trace concentrations of toluene and methyl tertiary butyl ether (MTBE) in two of the samples. Therefore, we do not consider the lack of a groundwater sample at this location to be a significant data gap.

ACEH also requested justification that the groundwater samples collected during the recent investigation were in fact representative of first-encountered groundwater. CRA reviewed all the available historical data to evaluate groundwater conditions at the site. In the borings for wells B-1 through B-8 drilled in 1982, groundwater was initially encountered at depths of 8 or 9 fbg, with the exception of B-1 (25 fbg) and B-6 (15 fbg) located in the northwest corner of the site; following drilling, groundwater levels rose to approximately 4 to 8 fbg. In the borings for perimeter wells B-9 through B-12 drilled in 1994, groundwater was initially encountered at depths of 17 to 18 fbg; and groundwater levels in the completed wells were approximately 6.5 to 11.5 feet below top of casing (btoc). During UST removal and over-excavation activities in 1998, groundwater was encountered in the fuel UST excavation at approximately 11 fbg, and in the southwestern dispenser over-excavation at approximately 9 fbg. During the most recent investigation, the reported depth to first-encountered groundwater ranged from 10 (B-14) to 28 fbg (B-17 and B-18). It should be noted that although first-encountered groundwater was reported at 10 fbg in boring B-14, the boring was advanced to 15 fbg and slotted casing was placed in the borehole, but a groundwater sample was unable to be collected and the boring was further advanced to 22 fbg before a groundwater sample could be collected. As the approximate thickness of saturated soil at 10 fbg in boring B-14 was only 1 foot, this may have been a small, localized perched zone. Similar conditions have been observed at the adjacent property to the northeast across 27th Street (Broadway Volkswagen at 2740 Broadway). The depth to water in the site wells has ranged from 2.08 (B-12) to 13.2 feet btoc (B-1), but has generally fluctuated between approximately 5 and 11 feet btoc. There was no groundwater monitoring event performed around the time of the 2007 investigation. However, based on an average of the depth to water measured in the wells during the monitoring events performed before and after the investigation (February and September 2007, respectively), the depth to water in the site wells around the time of the investigation likely ranged from approximately 4.5 to 10.5 feet btoc; but generally 8 or 9 feet btoc. Geologic cross-sections are presented on Figures 4 and 5, and copies of the historical boring logs are included as Attachment D.

As described above, the depth to first-encountered groundwater has historically been variable across the site; similar variability was also experienced during the most recent investigation. The water-bearing zone beneath the site does not appear to be continuous. Based on the previously documented rise in groundwater levels following drilling, the shallow groundwater beneath the site appears to at least be partially confined. In the March 26, 1982 *Groundwater Monitoring Well Installation Report* prepared by J.H. Kleinfelder & Associates that documented the installation of wells B-1 through B-8, it was noted that the observed rise in groundwater levels indicated "the presence of an artesian condition". It is this phenomenon that likely explains the shallower depth to

water historically observed in the site wells compared to those observed in the borings. Based on the above information, it is CRA's opinion that the groundwater samples collected during the most recent investigation were from first-encountered groundwater and adequately represent groundwater conditions in those areas.

ACEH also requested explanation of why deeper groundwater samples (10 to 15 feet below first-encountered groundwater) were not collected during the investigation as was originally proposed in the September 28, 2006 *Work Plan for Additional Investigation*. The borings were advanced using direct-push equipment, and groundwater generally was encountered in the borings at depths of 17 to 28 fbg. However, due to difficult drilling conditions, and the limitations of the direct-push technology, refusal was encountered in the borings before a depth at least 10 feet below first-encountered groundwater could be reached. Therefore, deeper groundwater samples were not collected. However, although deeper groundwater samples were not able to be collected, significant concentrations of petroleum hydrocarbons were not detected in the groundwater samples collected from the borings, and the collection of deeper groundwater samples does not appear warranted.

Technical Comment No. 3: In Technical Comment No. 3 of the letter, ACEH stated that it was not clear why "step-out" locations were not installed in the area of attempted boring B-13, in which a concrete slab was encountered at approximately 5 fbg. Although it was not discussed in the report, please note that based on the field notes and discussions with the field staff, a step-out location was indeed attempted approximately 13 feet from the original boring; however, a concrete slab was again encountered at a similar depth. Therefore, this boring location was aborted as access was limited in this area due to the presence of a fence and portable office trailer. The concrete slab(s) are possible remnants of the hospital that formerly occupied the site as pieces of floor tiles were observed. Basement floor slabs were also encountered at approximately 8 fbg in the former used-oil tank area during the tank removal and over-excavation work in 1998. Please note that two additional attempts were also made to clear step-out locations in the area of boring B-16 located in 26th Street, in which a concrete slab was encountered at approximately 6 fbg; however, similar conditions were encountered. CRA concurs that additional investigation to further evaluate the extent of impacted soil and groundwater is warranted in the area of previously attempted boring B-13. Therefore, the drilling of one boring in this area is proposed, as will be further discussed in the following section.

Technical Comment No. 4: In Technical Comment No. 4 of the letter, ACEH stated that the vertical and lateral extent of contamination in the former source areas remains undefined. In particular, in the area of over-excavation confirmation sample PX7 collected at 9 fbg in 1998, in which total petroleum hydrocarbons as gasoline (TPHg) was detected at 1,190 milligrams per kilogram (mg/kg). Please note that ACEH identified the reporting limit for benzene in sample PX7 as 2.0 mg/kg; however, the actual reporting limit for benzene in this sample was 0.5 mg/kg (non-detect). Please note that we discovered a few inconsistencies in the previously submitted historical soil sample analytical table; an updated table including all analytes and detected constituents is included as Attachment E. The historical TPHg, benzene, and MTBE analytical results in soil are presented on

Figure 6. CRA concurs that additional investigation to evaluate current concentrations and to further evaluate the vertical extent of impacted soil is warranted in this area. As previously mentioned, one boring was previously proposed in this area, but was not completed as the proposed redevelopment of the site would have removed the majority of any residual impacted soil in the source area. However, as mentioned above, the proposed redevelopment of the site is on hold indefinitely and the completion of this boring now appears warranted. Therefore, the completion of this boring is proposed, as will be further discussed in the following section.

ACEH also identifies the area of previous sample UO2-8 as an area where the extent of contamination remains undefined due to an elevated lead concentration. Sample UO2-8 was collected in 1998 at 8 fbg from the used-oil UST excavation. Only low concentrations of petroleum hydrocarbons (TPH as diesel [TPHd] and oil and grease at 4.8 mg/kg and 91 mg/kg, respectively) were detected in this sample; however, an elevated concentration of lead (6,800 mg/kg) was detected. An elevated concentration of zinc (1,400 mg/kg) was also detected. Details of the tank removal and over-excavation work in this area were presented in Touchstone Developments' (Touchstone) *UST and Product Piping Removal and Sampling Report* dated June 12, 1998, and *Soil Overexcavation/Remediation Report* dated March 24, 1999. As documented in these reports, fill material including burnt wood, bricks, ash, and concrete was encountered in this area that appeared to be associated with demolition of the former hospital (see Attachment B) as concrete footings, foundations, and basement floor slabs were also encountered. The debris likely was placed to bring the site back to grade. Fill material including trash was also reported in previous borings B-3 through B-6. Based on the low concentrations of petroleum hydrocarbons in sample UO2-8, and the significantly elevated lead concentration, the detected lead appears to be the result of impacted fill material present beneath the site and not former service station operations. Similar fill material was observed in the area of sample P5, in which lead was detected at 5,000 mg/kg while petroleum hydrocarbons were not detected with the exception of a trace concentration of xylenes (0.0057 mg/kg). Touchstone reached a similar conclusion regarding the source of the elevated lead. Elevated lead concentrations are commonly detected in historical demolition debris due to the presence of lead-based paint, etc. Based on this information, impacted fill material is present beneath the site; however, the material appears to have been placed well before Chevron first occupied the site, and is not the result of former service station operations. Therefore, additional investigation in the area of the former used-oil tank by Chevron does not appear warranted.

Status of Site Assessment: Based on the analytical results and the information presented above, the dissolved-phase hydrocarbon plume appears to be adequately defined except in the area of attempted boring B-13 to the southeast of the former USTs and dispensers, as identified in the ACEH letter. Additionally, further evaluation of the vertical extent of impacted soil in the area of previous sample PX7 appears warranted. Once these two areas are addressed, assessment activities at the site should be complete. The proposed scope of work to complete the assessment activities is presented below.

PROPOSED SCOPE OF WORK

To evaluate vertical soil quality in the area of previous sample PX7, CRA proposes to drill one boring in this area. To evaluate soil and groundwater quality in the area of previously attempted boring B-13, CRA proposes to also drill one boring in this area. The proposed boring locations are shown on Figure 2. The proposed boring location to the southeast of B-13 is believed to be outside the footprint of the former hospital based on the historical Sanborn maps. However, a more powerful direct-push rig will be utilized in case any subsurface impediments are encountered. The details of the proposed investigation are presented below.

***Permits and Access Agreements*:** CRA will obtain all necessary permits and access agreements for the proposed borings prior to beginning field operations. A minimum of 72 hours written notification will be given to ACEH before initiation of drilling activities.

Site Health and Safety Plan: CRA will prepare a site-specific health and safety plan (HASP) to inform site workers of known hazards and to provide health and safety guidance. The plan will be reviewed and signed by all site workers and visitors and will be kept onsite during field activities.

Underground Utility Location: At least 48 hours prior to the start of drilling activities, CRA will notify Underground Service Alert to clear the proposed boring locations with local public utility companies. A private utility locator will also be retained to additionally clear the boring locations of utility lines prior to drilling; ground-penetrating radar will be used to attempt to avoid significant subsurface debris, if present. Additionally, the upper 8 feet of each boring will be cleared for utilities using an air-knife or a hand auger in accordance with Chevron and CRA safety protocols.

Drilling: Below approximately 8 fbg, the borings will be advanced using a truck-mounted drill rig with direct-push equipment to approximately 25 to 30 fbg. The final locations and depths of the borings will be based on field conditions.

***Soil Sampling and Laboratory Analysis*:** Soil samples will be continuously collected the entire length of each boring for logging and observation purposes. The soil encountered in the borings will be logged in accordance with the modified Unified Soil Classification System (USCS). Soil samples from each boring will be screened in the field for volatile organic vapors using a photo-ionization detector (PID). Samples that return PID readings of 100 parts per million by volume (ppmv) or greater, or those in which evidence of contamination is observed, may be retained for laboratory analysis. In the boring drilled in the area of previous sample PX7, CRA anticipates collecting soil samples for analysis at 5-foot intervals starting at 5 fbg. Soil samples retained for laboratory analysis will be collected in acetate, brass, or stainless steel liners, capped using Teflon tape and plastic end caps, labeled, placed in an ice-chilled cooler, and transported under chain of custody to Lancaster Laboratories, Inc. (Lancaster) in Lancaster, Pennsylvania, for analysis. CRA's standard field procedures for direct-push borings are included as Attachment F. The soil samples will be analyzed for the following constituents:

- TPHg by EPA Method 8015M; and,
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) and MTBE by EPA Method 8260B.

Groundwater Sampling and Laboratory Analysis: If encountered, grab-groundwater samples will be collected from each boring and analyzed for the same constituents as the soil samples.

Soil and Water Disposal: Soil cuttings and decontamination rinsate generated during field activities will be temporarily stored onsite in 55-gallon steel drums and sampled for disposal purposes. Once profiled, the drums will be transported to a Chevron-approved facility for disposal.

Reporting: After receipt of the analytical results, CRA will prepare an investigation report that includes the following:

- A description of field activities;
- A figure illustrating the boring locations;
- Boring logs;
- Tabulated soil and groundwater analytical results;
- Analytical reports and chain-of-custody forms; and
- Our conclusions and recommendations.

SCHEDULE AND CLOSING

CRA will perform this investigation upon receiving written approval from ACEH, or 60 days following submittal of this work plan. We will submit our investigation report approximately six weeks after completion of field activities.

CONESTOGA-ROVERS
& ASSOCIATES

April 27, 2009 Reference No. 611962

We appreciate your assistance on this project and look forward to your reply. We apologize for the inconsistencies in the investigation report. Please contact Mr. James Kiernan at (916) 751-4102 if you have any questions or comments regarding this work plan.

Sincerely,

CONESTOGA-ROVERS & ASSOCIATES

James P. Kiernan, PE #C68498

FOR David W. Herzog, PG #7211

REGISTERED PROFESSIONAL ENGINEER
JAMES P. KIERNAN
No. 68498
Exp. 9/30/09
CIVIL
STATE OF CALIFORNIA

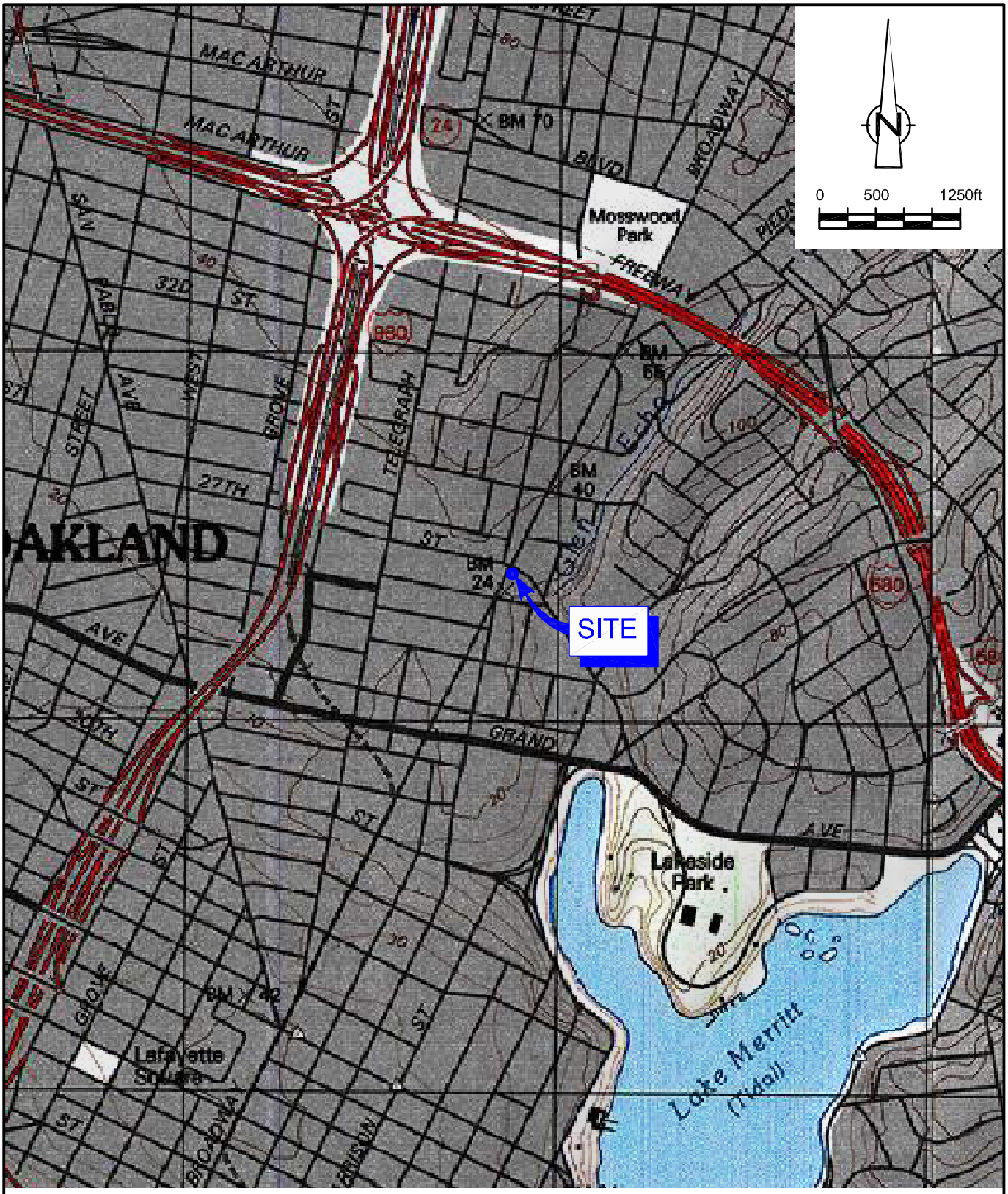
JPK/kw/3
Encl.

Figure 1	Vicinity Map
Figure 2	Site Plan
Figure 3	Detailed Site Plan
Figure 4	Geologic Cross-Section A-A'
Figure 5	Geologic Cross-Section B-B'
Figure 6	Historical TPHg, Benzene, and MTBE Soil Concentration Map

Attachment A	ACEH Letter Dated January 30, 2009
Attachment B	Historical Sanborn Maps
Attachment C	Summary of Previous Environmental Work
Attachment D	Historical Boring Logs
Attachment E	Updated Historical Soil Table
Attachment F	Standard Field Procedures

cc: Ms. Stacie Frerichs, Chevron Environmental Management Company
Steve and Cecilia Simi, Steve & Cecilia Simi Trust

FIGURES



SOURCE: TOPO! MAPS.

figure 1

VICINITY MAP
FORMER CHEVRON STATION 9-2506
2630 BROADWAY
Oakland, California

611962-400(PRES001)GN-WA001 AUG 14/2008

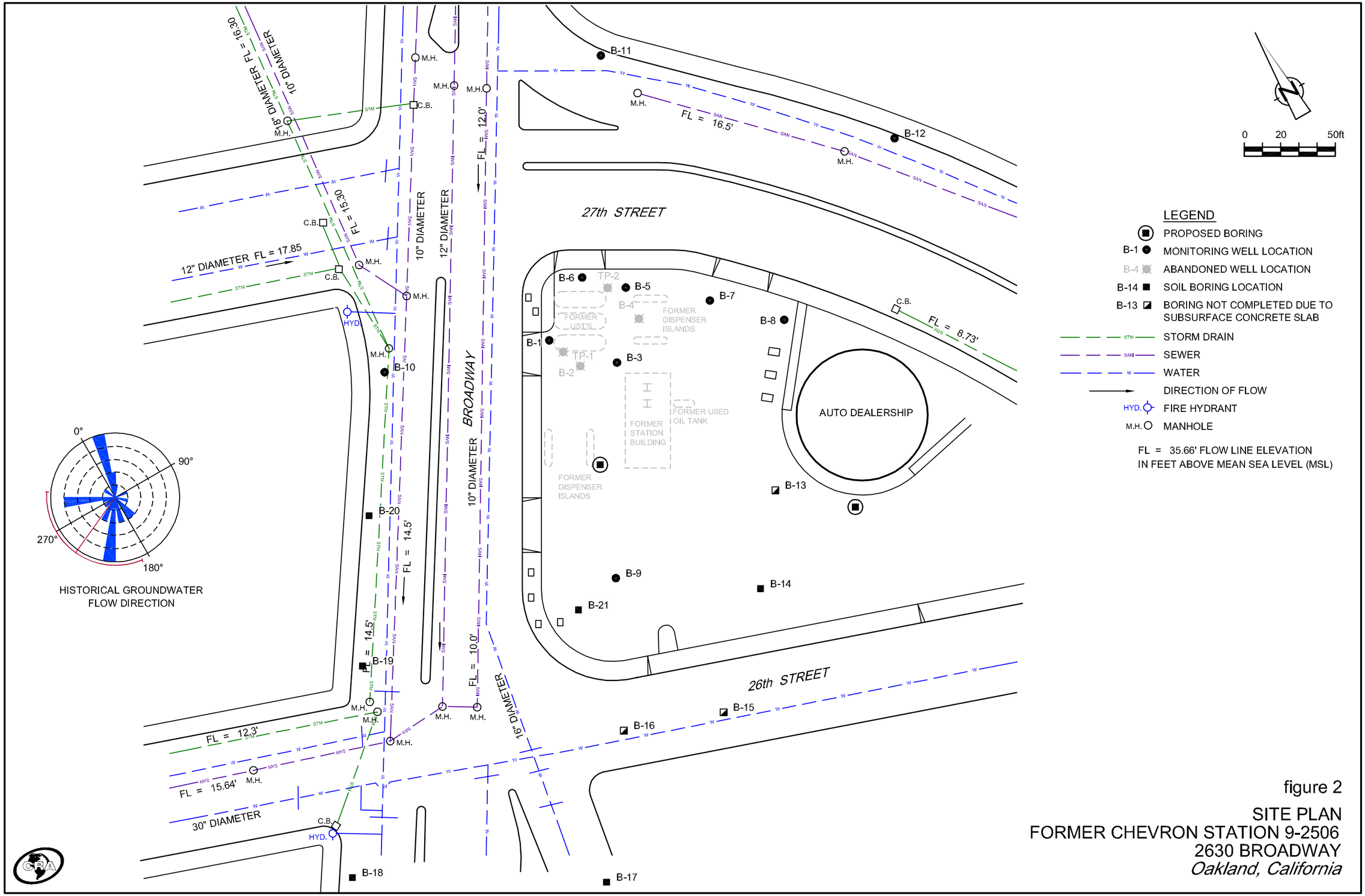


figure 2

SITE PLAN
FORMER CHEVRON STATION 9-2506
2630 BROADWAY
Oakland, California

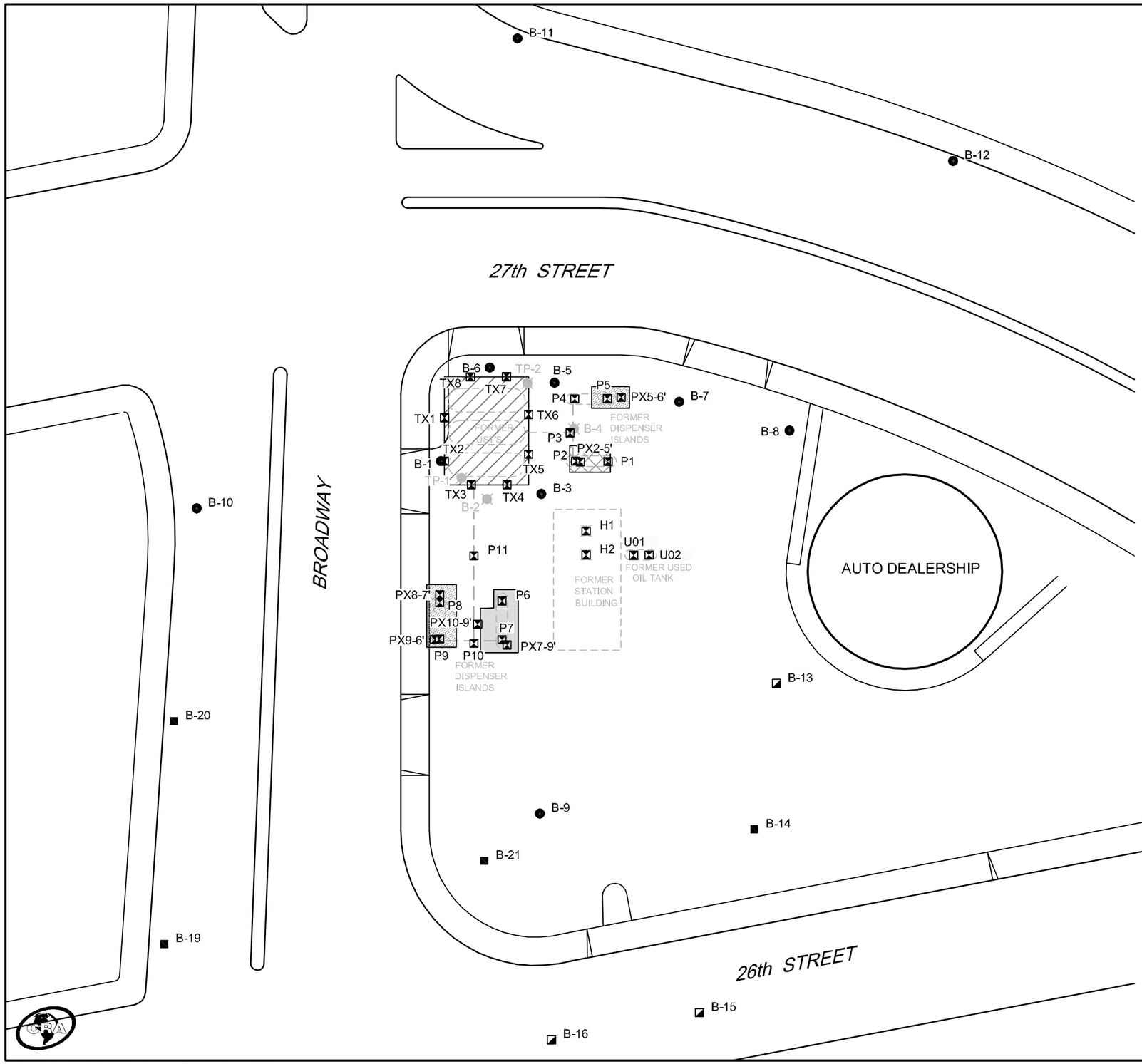
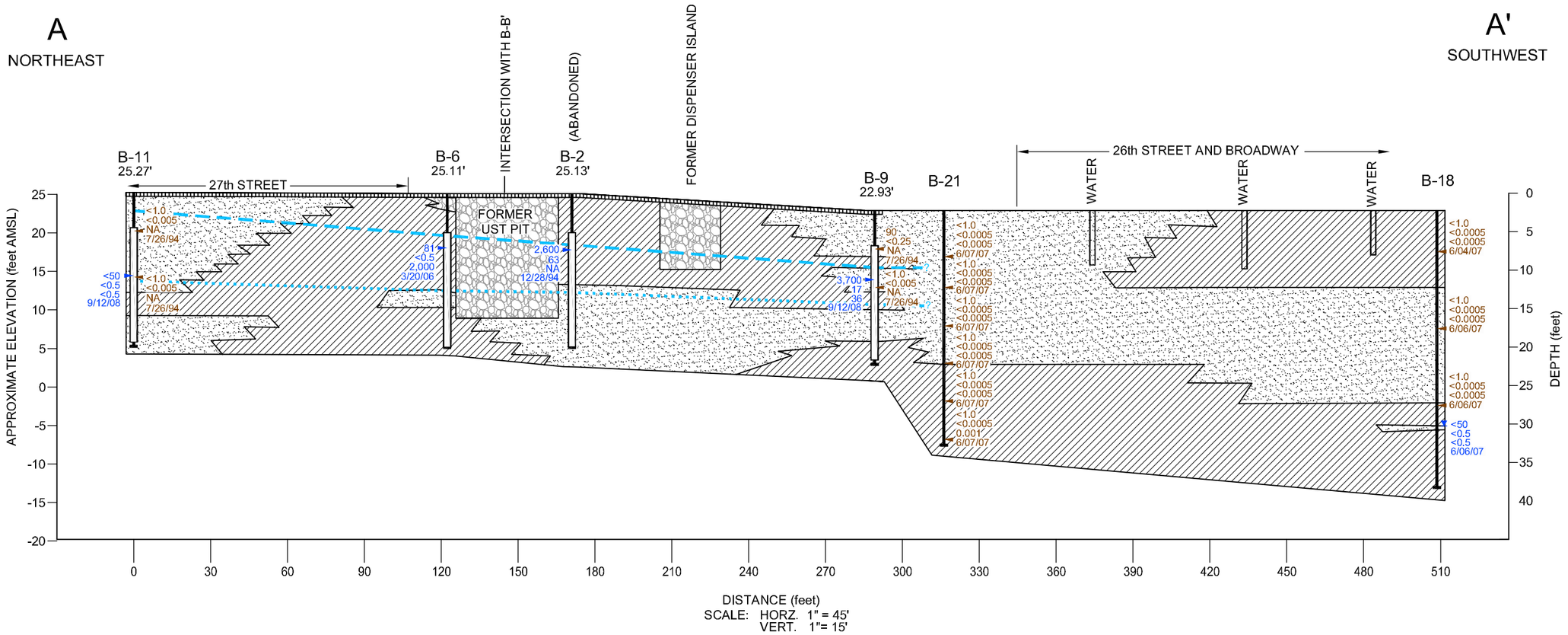
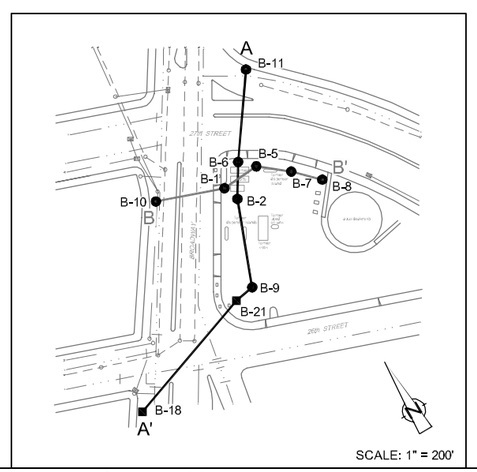


figure 3

DETAILED SITE PLAN
FORMER CHEVRON STATION 9-2506
2630 BROADWAY
Oakland, California

611962-400(PRES001)GN-WA003 DEC 11/2008



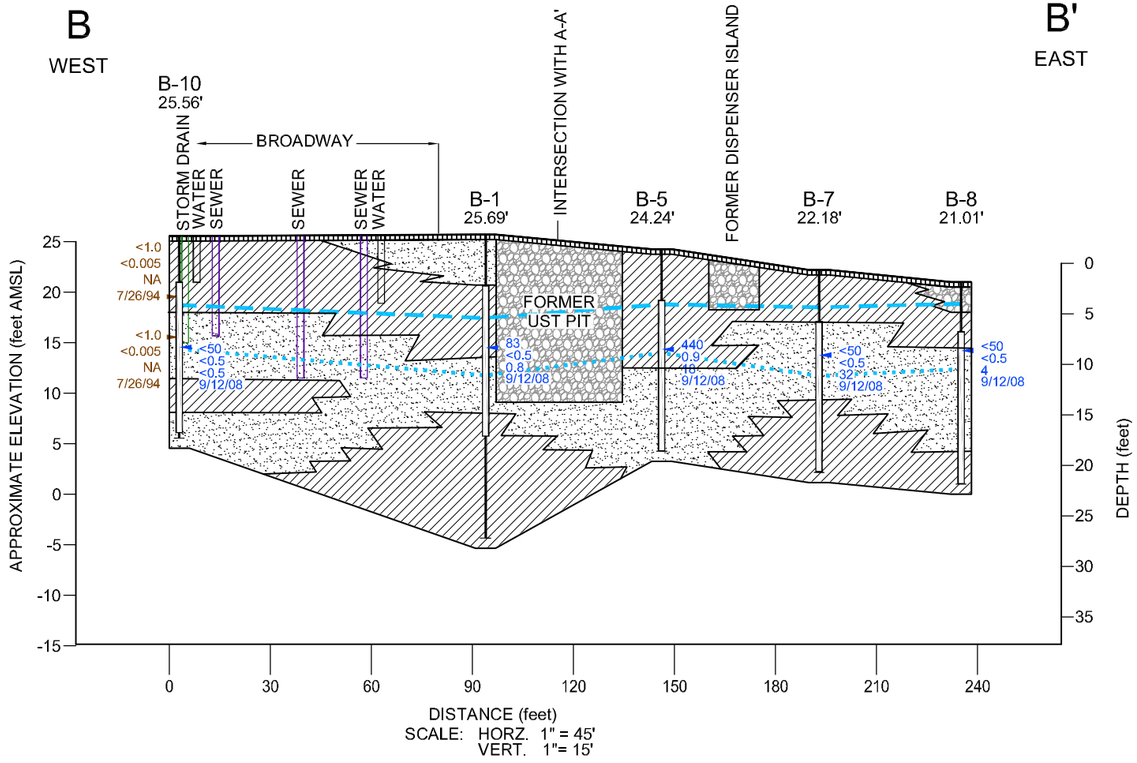


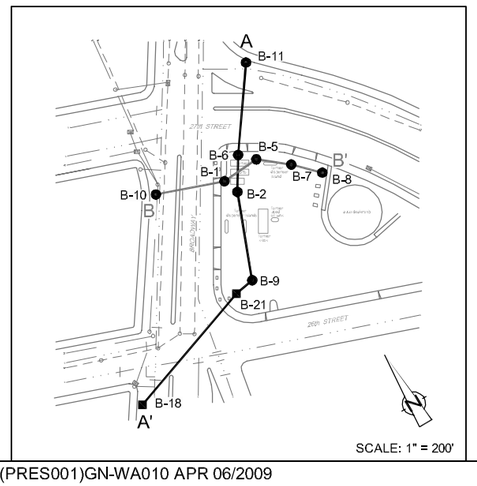
LEGEND

- ASPHALT
- FINE GRAINED SOILS
  - *CH/CL* - CLAY
  - *ML* - SILT
- COARSE GRAINED SOILS
  - *SP/SW* - GRAVELY SAND
  - *SM* - SILTY SAND
  - *SC* - CLAYEY SAND
- FILL
- APPROXIMATE SOIL SAMPLE LOCATION
- TPHg / BENZENE / MTBE / DATE — HYDROCARBON CONCENTRATIONS IN SOIL, IN mg/kg
- NA — NOT ANALYZED
- < — NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMIT
- WELL ID — WELL OR BORING IDENTIFICATION
- ELEV. — TOP OF CASING ELEVATION
- GROUNDWATER MONITORING WELL OR BORING
- WELL SCREEN INTERVAL
- BOTTOM OF BORING
- APPROXIMATE GROUNDWATER SAMPLE LOCATION
- TPHg / BENZENE / MTBE / DATE — MOST RECENT HYDROCARBON CONCENTRATIONS IN GROUNDWATER, IN µg/L
- LOWEST GROUNDWATER ELEVATION (MSL)
- HIGHEST GROUNDWATER ELEVATION (MSL)

figure 4

GEOLOGIC CROSS SECTION A-A'
FORMER CHEVRON SERVICE STATION 9-2506
2630 BROADWAY
Oakland, California





LEGEND

- ASPHALT
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  - *ML* - SILT
- COARSE GRAINED SOILS
  - *SP/SW* - GRAVELY SAND
  - *SM* - SILTY SAND
  - *SC* - CLAYEY SAND
- FILL
- APPROXIMATE SOIL SAMPLE LOCATION
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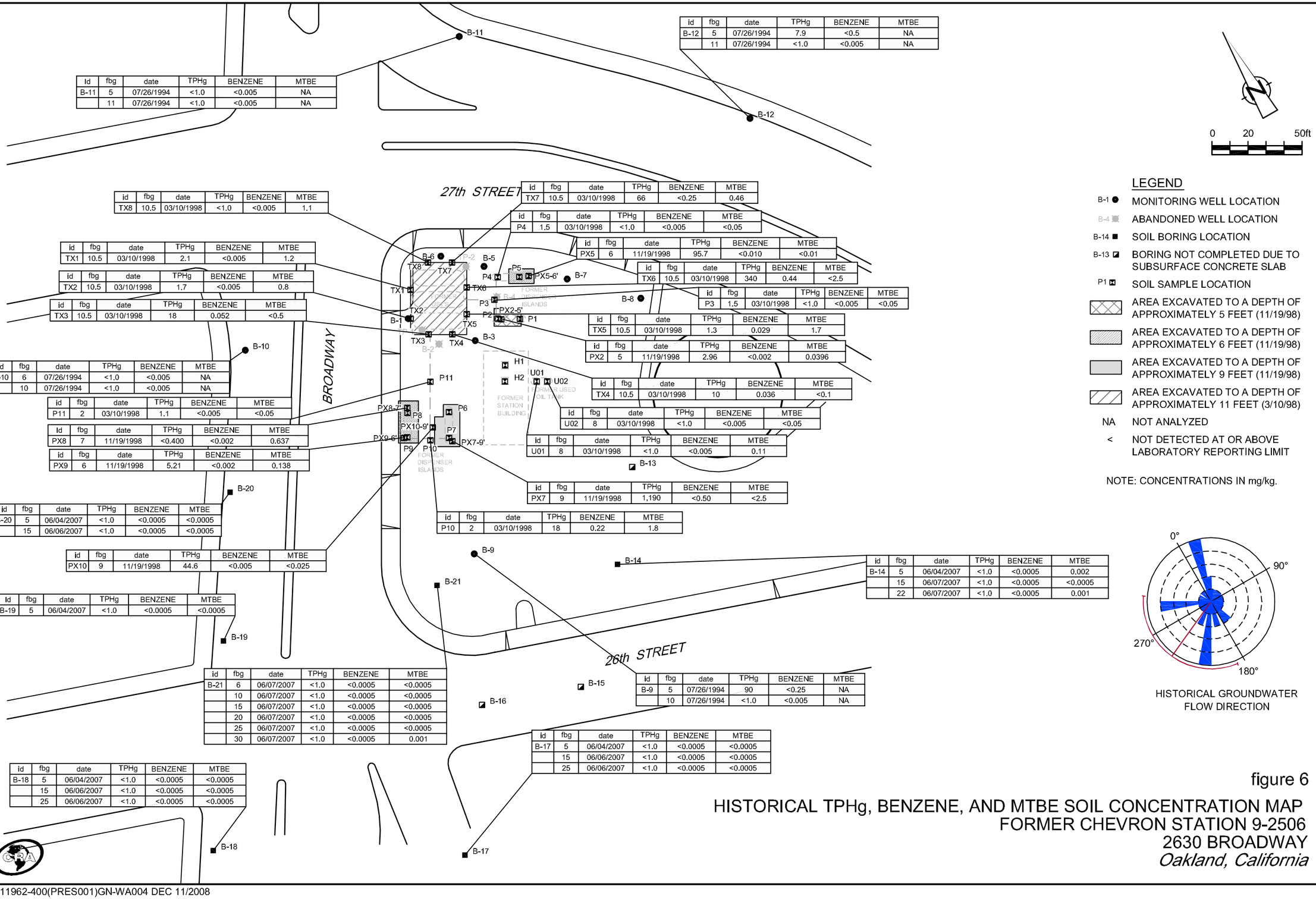
- ELEV. — TOP OF CASING ELEVATION
- GROUNDWATER MONITORING WELL OR BORING
- WELL SCREEN INTERVAL
- BOTTOM OF BORING
- APPROXIMATE GROUNDWATER SAMPLE LOCATION
- TPHg / BENZENE / MTBE / DATE — MOST RECENT HYDROCARBON CONCENTRATIONS IN GROUNDWATER, IN µg/L
- LOWEST GROUNDWATER ELEVATION (MSL)
- HIGHEST GROUNDWATER ELEVATION (MSL)

figure 5

GEOLOGIC CROSS SECTION B-B'
FORMER CHEVRON SERVICE STATION 9-2506
2630 BROADWAY
Oakland, California



Id	fbg	date	TPHg	BENZENE	MTBE
B-11	5	07/26/1994	<1.0	<0.005	NA
	11	07/26/1994	<1.0	<0.005	NA

id	fbg	date	TPHg	BENZENE	MTBE
B-12	5	07/26/1994	7.9	<0.5	NA
	11	07/26/1994	<1.0	<0.005	NA

id	fbg	date	TPHg	BENZENE	MTBE
TX8	10.5	03/10/1998	<1.0	<0.005	1.1

id	fbg	date	TPHg	BENZENE	MTBE
TX7	10.5	03/10/1998	66	<0.25	0.46

id	fbg	date	TPHg	BENZENE	MTBE
P4	1.5	03/10/1998	<1.0	<0.005	<0.05

id	fbg	date	TPHg	BENZENE	MTBE
PX5	6	11/19/1998	95.7	<0.010	<0.01

id	fbg	date	TPHg	BENZENE	MTBE
TX1	10.5	03/10/1998	2.1	<0.005	1.2

id	fbg	date	TPHg	BENZENE	MTBE
TX6	10.5	03/10/1998	340	0.44	<2.5

id	fbg	date	TPHg	BENZENE	MTBE
TX2	10.5	03/10/1998	1.7	<0.005	0.8

id	fbg	date	TPHg	BENZENE	MTBE
P3	1.5	03/10/1998	<1.0	<0.005	<0.05

id	fbg	date	TPHg	BENZENE	MTBE
TX3	10.5	03/10/1998	18	0.052	<0.5

id	fbg	date	TPHg	BENZENE	MTBE
TX5	10.5	03/10/1998	1.3	0.029	1.7

id	fbg	date	TPHg	BENZENE	MTBE
PX2	5	11/19/1998	2.96	<0.002	0.0396

id	fbg	date	TPHg	BENZENE	MTBE
B-10	6	07/26/1994	<1.0	<0.005	NA
	10	07/26/1994	<1.0	<0.005	NA

id	fbg	date	TPHg	BENZENE	MTBE
TX4	10.5	03/10/1998	10	0.036	<0.1

id	fbg	date	TPHg	BENZENE	MTBE
P11	2	03/10/1998	1.1	<0.005	<0.05

id	fbg	date	TPHg	BENZENE	MTBE
U02	8	03/10/1998	<1.0	<0.005	<0.05

Id	fbg	date	TPHg	BENZENE	MTBE
PX8	7	11/19/1998	<0.400	<0.002	0.637

id	fbg	date	TPHg	BENZENE	MTBE
U01	8	03/10/1998	<1.0	<0.005	0.11

id	fbg	date	TPHg	BENZENE	MTBE
PX9	6	11/19/1998	5.21	<0.002	0.138

id	fbg	date	TPHg	BENZENE	MTBE
PX7	9	11/19/1998	1,190	<0.50	<2.5

id	fbg	date	TPHg	BENZENE	MTBE
P10	2	03/10/1998	18	0.22	1.8

id	fbg	date	TPHg	BENZENE	MTBE
B-20	5	06/04/2007	<1.0	<0.0005	<0.0005
	15	06/06/2007	<1.0	<0.0005	<0.0005

id	fbg	date	TPHg	BENZENE	MTBE
PX10	9	11/19/1998	44.6	<0.005	<0.025

id	fbg	date	TPHg	BENZENE	MTBE
B-14	5	06/04/2007	<1.0	<0.0005	0.002
	15	06/07/2007	<1.0	<0.0005	<0.0005
	22	06/07/2007	<1.0	<0.0005	0.001

Id	fbg	date	TPHg	BENZENE	MTBE
B-19	5	06/04/2007	<1.0	<0.0005	<0.0005

id	fbg	date	TPHg	BENZENE	MTBE
B-21	6	06/07/2007	<1.0	<0.0005	<0.0005
	10	06/07/2007	<1.0	<0.0005	<0.0005
	15	06/07/2007	<1.0	<0.0005	<0.0005
	20	06/07/2007	<1.0	<0.0005	<0.0005
	25	06/07/2007	<1.0	<0.0005	<0.0005
	30	06/07/2007	<1.0	<0.0005	0.001

id	fbg	date	TPHg	BENZENE	MTBE
B-9	5	07/26/1994	90	<0.25	NA
	10	07/26/1994	<1.0	<0.005	NA

id	fbg	date	TPHg	BENZENE	MTBE
B-17	5	06/04/2007	<1.0	<0.0005	<0.0005
	15	06/06/2007	<1.0	<0.0005	<0.0005
	25	06/06/2007	<1.0	<0.0005	<0.0005

id	fbg	date	TPHg	BENZENE	MTBE
B-18	5	06/04/2007	<1.0	<0.0005	<0.0005
	15	06/06/2007	<1.0	<0.0005	<0.0005
	25	06/06/2007	<1.0	<0.0005	<0.0005

figure 6

HISTORICAL TPHg, BENZENE, AND MTBE SOIL CONCENTRATION MAP
FORMER CHEVRON STATION 9-2506
2630 BROADWAY
Oakland, California

ATTACHMENT A

ACEH LETTER DATED JANUARY 30, 2009

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

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

January 30, 2009

Stacie Harting-Frerichs
Chevron Corporation
6111 Bollinger Canyon Rd, RM 3596
San Ramon, CA 94583

Steve & Cecilia Simi
Steve & Cecilia Simi Trust
4270 Silverado Trail
Napa, CA 94558-1117

Subject: Fuel Leak Case No. RO0000146 and GeoTracker Global ID T0600101812, Chevron #9-2506, 2630 Broadway, Oakland, CA 94612

Dear Ms. Harting-Frerichs and Mr. & Mrs. Simi:

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the above-referenced site including the document entitled, "Subsurface Investigation Report," dated September 11, 2007, which was prepared by Conestoga-Rovers & Associates (CRA) for the subject site. CRA installed eight borings (B-13 through B-21) to further define the extent of petroleum hydrocarbons is soil and groundwater. CRA also evaluated the depths of utilities in the vicinity of the site to determine whether utility trenches could facilitate preferential groundwater flow for groundwater contaminants.

Based on our review of the above-mentioned report and case file, ACEH requests that you address the following technical comments and send us the technical work plan and reports requested below.

TECHNICAL COMMENTS

1. **Regional Geologic and Hydrogeologic Setting** – As mentioned above, CRA installed eight borings to delineate soil and groundwater contamination. In the September 28, 2006, "Work Plan for Additional Investigation," CRA proposed to collect a groundwater sample "from each boring at first encountered groundwater, and a second sample will be collected at approximately 10 to 15 feet below first encountered water," as approved by ACEH in our October 16, 2006 directive letter. However, it appears that one "grab" groundwater sample was collected from borings B-14, B-17, B-19, and B-20. Although groundwater was encountered at 10 feet bgs in boring B-21 (as stated on Page 4 of the Subsurface Investigation Report), it is not clear why a groundwater sample was not collected or analyzed from boring B-21.

   Depth to groundwater, measured in site groundwater monitoring wells, has ranged from approximately 2 to 12 feet bgs. Groundwater was initially encountered at approximately 10 feet bgs in borings B-14 and B-21. According to CRA, groundwater was encountered at 28 feet bgs in borings B-17 and B-18, 17 feet bgs in boring B-19, and 25 feet bgs in boring B-20. According to boring logs for B-17, B-18, and B-20, a permeable sandy layer is encountered between 10 to 15 feet bgs, underlain by a fine-grain unit from approximately 15 to 20 feet bgs. The fine-grain unit is underlain by a permeable sandy unit from approximately 20 to 30

feet bgs, where CRA reported first encountered water. Based on the boring logs and depth to groundwater measurements collected at the site over the last several years, it appears that the first encountered water, reported by CRA, may not be the actual first, shallow water-bearing unit. Please justify that the water samples collected during the subsurface investigation adequately represent groundwater conditions in the first water-bearing zone or submit a scope of work to address the above-mentioned concerns and submit a work plan due by the date specified below. Also, please describe and detail why only one water sample was collected from each boring when the CRA proposed to collect two water samples at distinct depths.

2. **Preferential Pathway Study** – Although the sanitary sewer on Broadway is located below depth to water at the site, CRA believes that due to the primary GW flow direction to the southwest parallel to the utility trenches beneath Broadway, the two 15-foot deep sanitary sewer trenches may have limited roles as preferential pathways. Subsurface utilities on 26th Street and intersection of 26th Street and Broadway are above depth to water measured at the site. Therefore, CRA states that it is unlikely that utilities there act as preferential pathways. ACEH concurs with CRA conclusions.

3. **Soil and Groundwater Characterization** – Currently, soil contamination to the east of the former USTs and dispenser islands remain undefined. Similarly, the dissolved phase hydrocarbon plume remains undefined to the east and southeast of the former USTs and dispenser islands. The intent of the soil and groundwater investigation was to define the extent of soil and groundwater at the site. Specifically, soil and groundwater data obtained from the boring B-13 location could have addressed the above-mentioned data gaps. However, according to CRA, concrete was encountered at 4.9 feet bgs, the boring was not installed, and subsequently, the data gaps remain unaddressed. It is not clear why "step-out" locations were not installed to obtain the data necessary to address the data gaps. Please propose a scope of work to address the above-mentioned concerns and submit a work plan due by the date specified below.

4. **Contaminant Source Area Characterization** – In March 1998, three 10,000-gallon single-wall fiberglass gasoline USTs and one 1,000-gallon single-wall fiberglass waste oil UST were removed from the site. Soil sample analytical results detected TPH-g at a concentration of 1,200 mg/kg in soil sample P-7, benzene at a concentration of 1.4 mg/kg in soil sample P-8. Additionally lead was detected in soil samples P-5 and UO2-8 at significantly elevated concentrations of 5,000 mg/kg and 6,800 mg/kg, respectively.

   In November 1998, over-excavation was conducted in the vicinity of soil sample P-5 and P-7 in an attempt to remove the elevated soil contamination at the site. Confirmation soil sample PX-5 did not detect lead above the laboratory detection limit of <7.5 mg/kg. However, confirmation soil sample PX-7 detected TPH-g and benzene at concentrations of 1,190 mg/kg and <2.0 mg/kg respectively, indicating that the site poses a risk to human health and the environment. Although the lead concentration at the P-5 location was significantly reduced as a result of the over-excavation, no excavation occurred in the vicinity of soil sample UO2-8 and TPH-g concentrations remained essentially unchanged in soil sample PX-7. Therefore, the vertical and lateral extent of contamination in the former source areas remains undefined.

Please propose a scope of work to address the above-mentioned concerns and submit a work plan due by the date specified below.

5. **Groundwater Contaminant Plume Monitoring** – Groundwater sample analytical results indicate an increasing contaminant concentration trend in groundwater monitoring well B-9. At this time, please continue semi-annual groundwater monitoring of all wells at the site. Please submit reports by the date specified below.

   Please note that the "Second Semi-Annual Groundwater Monitoring Report," dated November 7, 2008, contains analytical tables and laboratory data for a Former Texaco Service Station (Site #211270), located 712 G Street, Davis, California. Please upload the correct report to ACEH and GeoTracker within fifteen (15) days from the date of this letter.

NOTIFICATION OF FIELDWORK ACTIVITIES

Please schedule and complete the fieldwork activities by the date specified below and provide ACEH with at least three (3) business days notification prior to conducting the fieldwork including routine groundwater sampling.

TECHNICAL REPORT REQUEST

Please submit technical reports to ACEH (Attention: Steven Plunkett), according to the following schedule:

- **February 27, 2009** – Re-submit Quarterly Monitoring Report (3rd Quarter 2008)
- **March 27, 2009** – Soil and Water Investigation Work Plan
- **April 30, 2009** – Quarterly Monitoring Report (1st Quarter 2009)
- **October 30, 2009** – Quarterly Monitoring Report (3rd Quarter 2009)

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload

Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) GeoTracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the GeoTracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in GeoTracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/electronic_submittal/report_rqmts.shtml.

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety

Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

If you have any questions, please call me at (510) 383-1767 or send me an electronic mail message at Steven.Plunkett@acgov.org.

Sincerely,

Steven Plunkett
Hazardous Materials Specialist

Paresh C. Khatri
Hazardous Materials Specialist

Donna L. Drogos, PE
Supervising Hazardous Materials Specialist

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Conestoga Rovers & Associates, 2000 Opportunity Drive, Suite 110, Roseville, CA 95678
Leroy Griffin, Oakland Fire Department, 250 Frank H. Ogawa Plaza, Ste. 3341, Oakland, CA 94612-2032
Donna Drogos, ACEH
Steven Plunkett, ACEH
File

Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC)	**ISSUE DATE:** July 5, 2005
	REVISION DATE: December 16, 2005
	PREVIOUS REVISIONS: October 31, 2005
SECTION: Miscellaneous Administrative Topics & Procedures	**SUBJECT:** Electronic Report Upload (ftp) Instructions

Effective **January 31, 2006**, the Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

- Entire report including cover letter must be submitted to the ftp site as **a single portable document format (PDF) with no password protection.** (Please do not submit reports as attachments to electronic mail.)
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- Signature pages and perjury statements **must** be included and have either original or electronic signature.
- **Do not password protect the document.** Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted.**
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:
  RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

Additional Recommendations

- A separate copy of the tables in the document should be submitted by e-mail to your Caseworker in **Excel** format. These are for use by assigned Caseworker only.

Submission Instructions

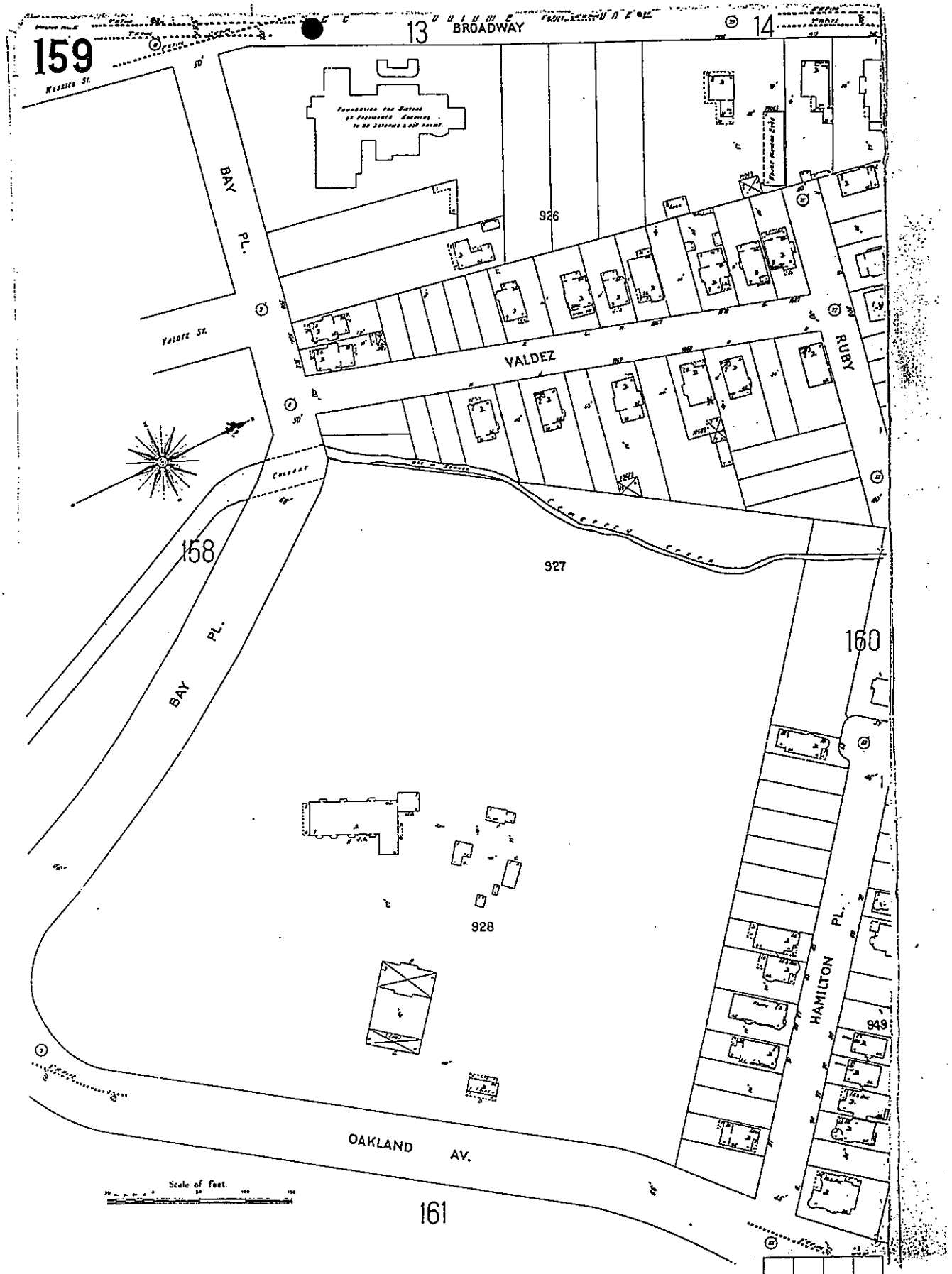
1) Obtain User Name and Password:
   a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
      i) Send an e-mail to dehloptoxic@acgov.org
         or
      ii) Send a fax on company letterhead to (510) 337-9335, to the attention of Alicia Lam-Finneke.
   b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses,** and the **Case Numbers (RO# available in Geotracker) you will be posting for.**

2) Upload Files to the ftp Site
   a) Using Internet Explorer (IE4+), go to ftp://alcoftp1.acgov.org
      (i) Note: Netscape and Firefox browsers will not open the FTP site.
   b) Click on File, then on Login As.
   c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
   d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
   e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.

3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
   a) Send email to dehloptoxic@acgov.org notify us that you have placed a report on our ftp site.
   b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name at acgov.org. (e.g., firstname.lastname@acgov.org)
   c) The subject line of the e-mail must start with the RO# followed by **Report Upload.** (e.g., Subject: RO1234 Report Upload)

ATTACHMENT B

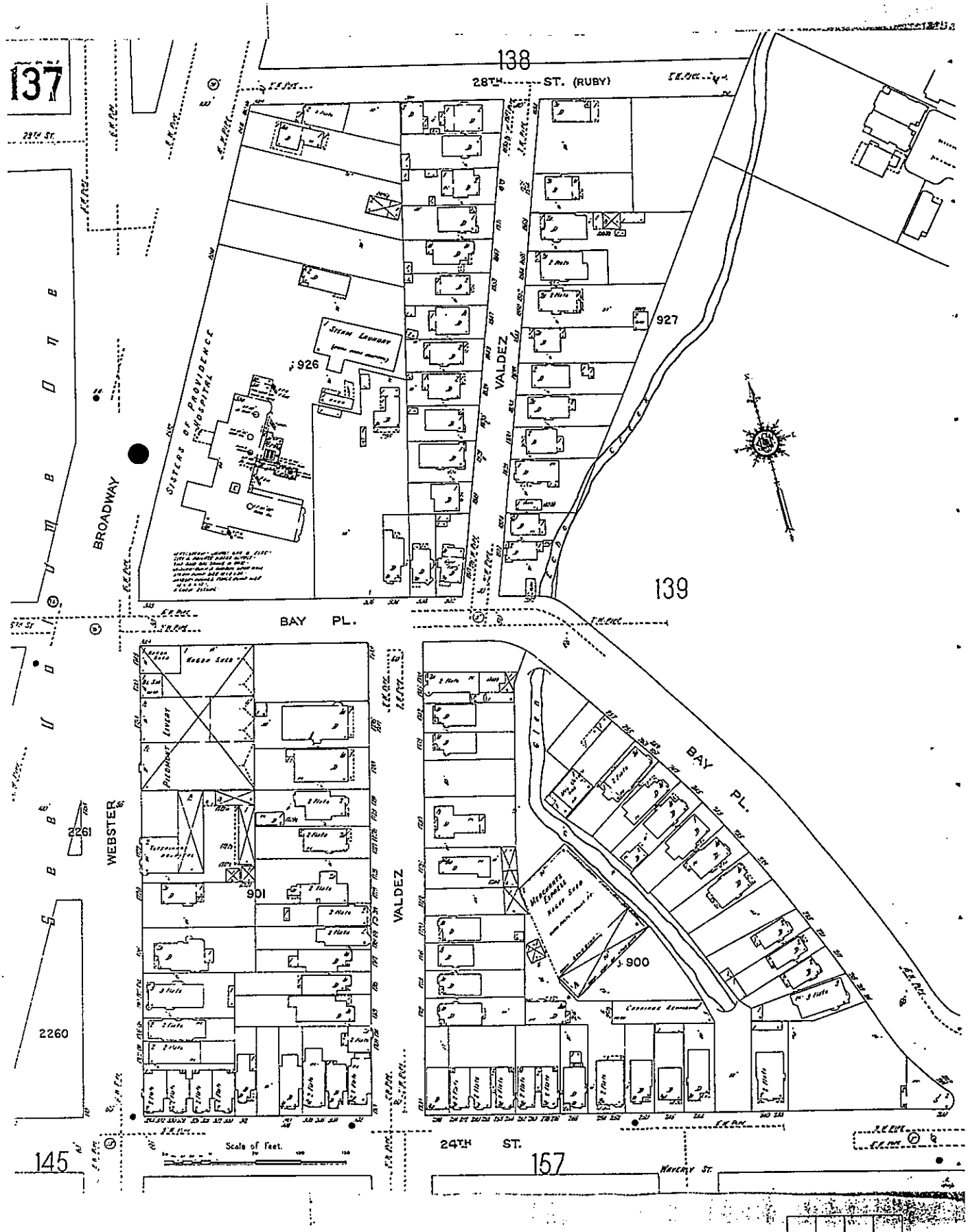
HISTORICAL SANBORN MAPS



Environmental Risk Information & Imaging Services
1421 Prince Street ■ Suite 230 ■ Alexandria, VA 22314 ■ (703) 836-0402 ■ FAX (703) 836-0468

SANBORN MAPS™ by ERIS

1903



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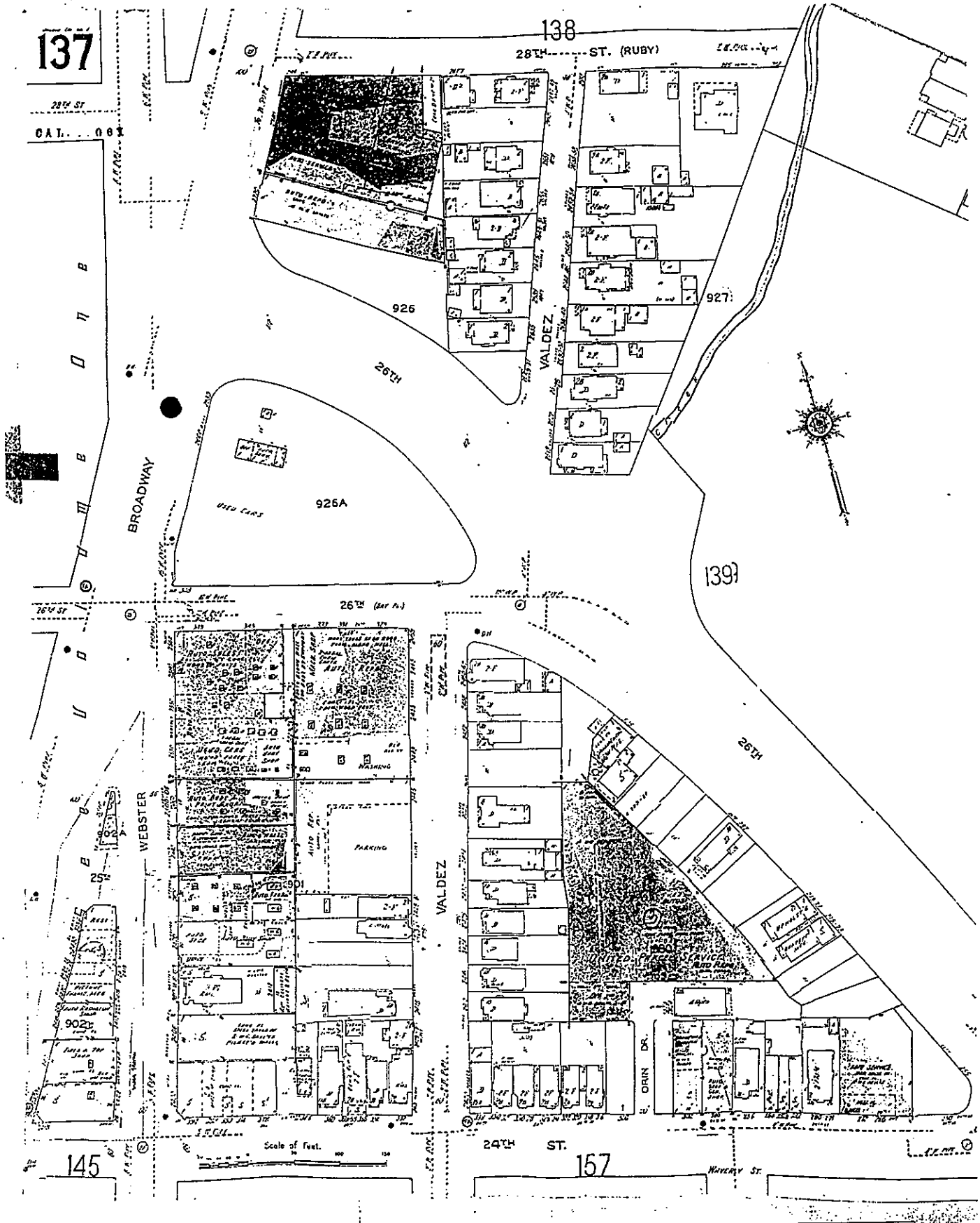
SANBORN MAPS™ by ERIS

1911



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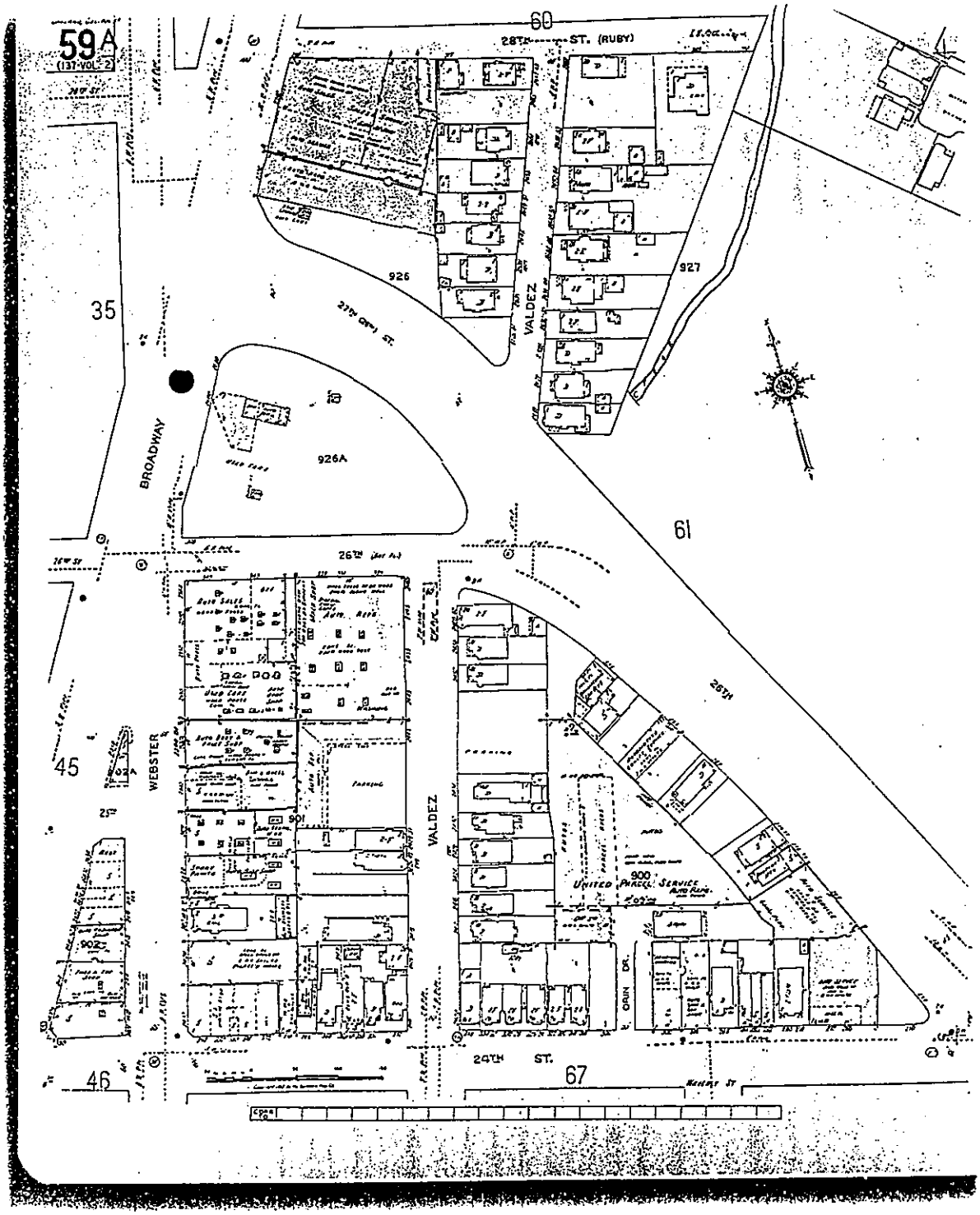
SANBORN MAPS™ by ERIS

1950



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SANBORN MAPS™ by ERIS

1952

ATTACHMENT C

SUMMARY OF PREVIOUS ENVIRONMENTAL WORK

SUMMARY OF PREVIOUS ENVIRONMENTAL WORK

1982 Leak Detection, Tank Removal, and Monitoring Well Installation: In early 1982, a leak was detected at the underground storage tank (UST) system located in the northwest corner of the site. In March 1982, J.H. Kleinfelder & Associates (Kleinfelder), under the supervision of IT Enviroscience (IT), installed eight groundwater monitoring wells (B-1 through B-8) at the site to evaluate whether soil and groundwater had been impacted by petroleum hydrocarbons. Groundwater was encountered in the well borings at depths ranging from 8 to 25 feet below grade (fbg). No soil samples were collected for laboratory analysis. Groundwater samples from the wells were field screened for combustible gases using a portable meter; which were detected up to 400 parts per million (ppm). In April 1982, the existing four steel USTs (two 7,500-gallon and one 4,000-gallon gasoline, and one 550-gallon used-oil) reportedly were replaced with new fiberglass tanks (three 10,000-gallon gasoline and one 1,000-gallon used-oil) and product lines. Reportedly, the steel tanks had been installed at the site in 1962, 1971, 1974, and 1981. No information was available regarding the condition of the tanks upon removal or the underlying soil. Approximately 20 cubic yards of impacted soil and 2,000 gallons of impacted groundwater were removed and disposed offsite during the work. Two observation wells (TP-1 and TP-2) were installed in the new tank backfill. In May 1982, sampling of wells B-1 through B-8 detected approximately 2.5 feet of light non-aqueous phase liquid (LNAPL) (gasoline) in B-4. By June 1982, the LNAPL thickness in well B-4 had decreased to approximately 0.5 feet. Details of the investigations were presented in Kleinfelder's *Groundwater Monitoring Well Installation Report* dated March 26, 1982, and IT's *Progress Report #1, Gasoline Leakage* dated April 6, 1982 and *Progress Report #2 (Final), Gasoline Leakage* dated August 2, 1982.

1982-1983 LNAPL Removal: From August 1982 to February 1983, LNAPL was removed from well B-4 on a weekly basis, and was discontinued when it was no longer observed in the well.

***1993 UST Leak Detection and Monitoring Well Sampling*:** In September 1993, a leak was detected in the mid-grade product line located to the east of the USTs. The product line was repaired the following day. According to the dealer's inventory records, the estimated loss was approximately 20 gallons or less. As a result, in September 1993 Sierra Environmental Services (SES) collected groundwater samples from wells B-1 through B-8 and TP-1 and TP-2; LNAPL was not detected in any of the wells. The samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg), and benzene, toluene, ethylbenzene, and xylenes (BTEX). TPHg was detected in all the wells, with the exception of B-8, at concentrations ranging from 230 to 110,000 micrograms per liter (µg/L). Benzene was detected in all the wells, with the exception of B-6, at concentrations ranging from 1.3 to 3,200 µg/L. Toluene, ethylbenzene, and xylenes were also detected in all the wells except B-6 and B-8 at concentrations up to 25,000 µg/L. Details of the investigation were presented in SES's *Groundwater Sampling Report*, dated October 1, 1993, and a letter from Chevron to the Alameda County Health Care Services Agency, Environmental Health Services (ACEH) dated October 7, 1993.

1994 Monitoring Well Installation: In July 1994, one additional onsite monitoring well (B-9) and three offsite monitoring wells (B-10 through B-12) were installed by RESNA Industries (RESNA). Two soil samples were collected from each of the well borings and analyzed for TPHg and BTEX. TPHg was only detected in the samples collected at 5 fbg from the borings for wells B-9 (90 milligrams per kilogram [mg/kg]) and B-12 (7.9 mg/kg). Benzene was not detected in any of the soil samples. Low concentrations of toluene, ethylbenzene, and xylenes (up to 2.2 mg/kg) were detected in several of the soil samples. The initial groundwater sample collected from well B-9 contained TPHg and benzene at 650 µg/L and 4.4 µg/L, respectively. TPHg and BTEX were not detected in the initial groundwater samples collected from wells B-10, B-11, and B-12. Details were presented in RESNA's *Environmental Assessment Report* dated December 1, 1994.

1998 UST and Product Piping Removal and Sampling: In March 1998, Touchstone Developments (TD) observed the removal of the three 10,000-gallon gasoline USTs, the 1,000-gallon used-oil UST, product piping, and two hydraulic hoists from the site. No holes were observed in the USTs or product piping upon removal. Groundwater was encountered in the gasoline UST excavation at approximately 11 fbg. After removal of the gasoline USTs, approximately 4,000 gallons of impacted groundwater was pumped from the excavation and disposed offsite. Eight soil samples (TX1 through TX8) were collected from the sidewalls of the excavation at 10.5 fbg. TPHg was detected in the majority of the samples at concentrations up to 340 mg/kg (TX6). Benzene, methyl tertiary butyl ether (MTBE), and lead were detected in several of the samples at concentrations up to 0.44 mg/kg, 1.7 mg/kg, and 6.3 mg/kg, respectively. Eleven soil samples (P1 through P11) were collected beneath the product dispensers and piping at depths of 1.5 or 2 fbg. TPHg was detected in the majority of the samples at concentrations up to 1,200 mg/kg (P7); benzene and MTBE were detected in several of the samples at concentrations up to 1.4 mg/kg and 8.0 mg/kg, respectively (P8). Lead was detected in all the samples at concentrations up to 5,000 mg/kg (P5). Two soil samples (UO1 and UO2) were collected beneath the used-oil UST at approximately 8 fbg. TPHg and BTEX were not detected in the two samples. TPH as diesel (TPHd) was only detected in sample UO2 (4.8 mg/kg). A low concentration of MTBE (0.11 mg/kg) was detected in sample UO1. Oil and grease were detected in the two samples at 110 mg/kg and 91 mg/kg. Halogenated volatile organic compounds (HVOCs) were not detected in the two samples; and semi-VOCs generally were not detected with the exception of Bis(2-ethylhexyl)phthalate at 1.1 mg/kg and 2.3 mg/kg. Cadmium (1.7 mg/kg), chromium (18 mg/kg and 45 mg/kg), lead (430 mg/kg and 6,800 mg/kg), nickel (13 mg/kg and 11 mg/kg), and zinc (380 mg/kg and 1,400 mg/kg) were also detected in one or both of the samples. Soil samples (H1 and H2) were also collected beneath each hoist at approximately 7 fbg. Oil and grease was detected in samples H1 and H2 at 110 mg/kg and 310 mg/kg, respectively.

Two composite samples (SP-1 [a-d] and SP2 [a-d]) were collected of the stockpiled soil from the gasoline UST and piping excavation. TPHg, BTEX, and MTBE generally were not detected in the samples with the exception of xylenes at 0.0054 mg/kg in sample SP-1(a-d). Therefore, this

material was used as backfill in the former gasoline UST excavation. A composite sample (UOSP-1[a-d]) was also collected of the stockpiled soil from the used-oil UST excavation. TPHg, BTEX, MTBE, and HVOCs were not detected in the sample. TPHd and oil and grease were detected in the sample at 3.9 mg/kg and 52 mg/kg, respectively. Several semi-VOCs were detected in the sample (benzo[k]fluoranthene at 0.23 mg/kg, benzo[a]pyrene at 0.19 mg/kg, bis[2-ethylhexyl]phthalate at 1.2 mg/kg, chrysene at 0.21 mg/kg, fluoranthene at 0.28 mg/kg, and pyrene at 0.33 mg/kg). The metals chromium, lead, nickel, and zinc were detected in the sample at 17 mg/kg, 1,500 mg/kg, 20 mg/kg, and 360 mg/kg, respectively. This material was subsequently used to backfill the used-oil UST excavation. Details of the work were presented in TD's *UST and Product Piping Removal and Sampling Report* dated June 12, 1998.

Although there is no documentation available, it appears that observation wells TP-1 and TP-2, and well B-2, were removed during the excavation work.

1998 Dispenser and Former Used-Oil Tank Over-Excavation: In November 1998, soil was over-excavated in the area of the four former dispenser islands to depths of 5 to 9 fbg. Groundwater was encountered at approximately 9 fbg; preventing deeper excavation. Six soil samples (PX2, PX5, and PX7 through PX10) were collected from the bottom of the excavation areas. TPHg was detected in all the samples except PX8 at concentrations up to 1,190 mg/kg (PX7). Benzene was not detected in any of the samples. MTBE was only detected in three of the samples at concentrations up to 0.64 mg/kg (PX8). Toluene, ethylbenzene, and xylenes were detected in several of the samples at concentrations up to 149 mg/kg. Samples PX2 and PX5 were additionally analyzed for total lead and organic lead; which were not detected. Approximately 160 cubic yards of impacted soil was removed from the former dispenser areas and disposed offsite during the work. Fill material consisting of burnt wood, bricks, ashes, and concrete was encountered in the northern excavation areas.

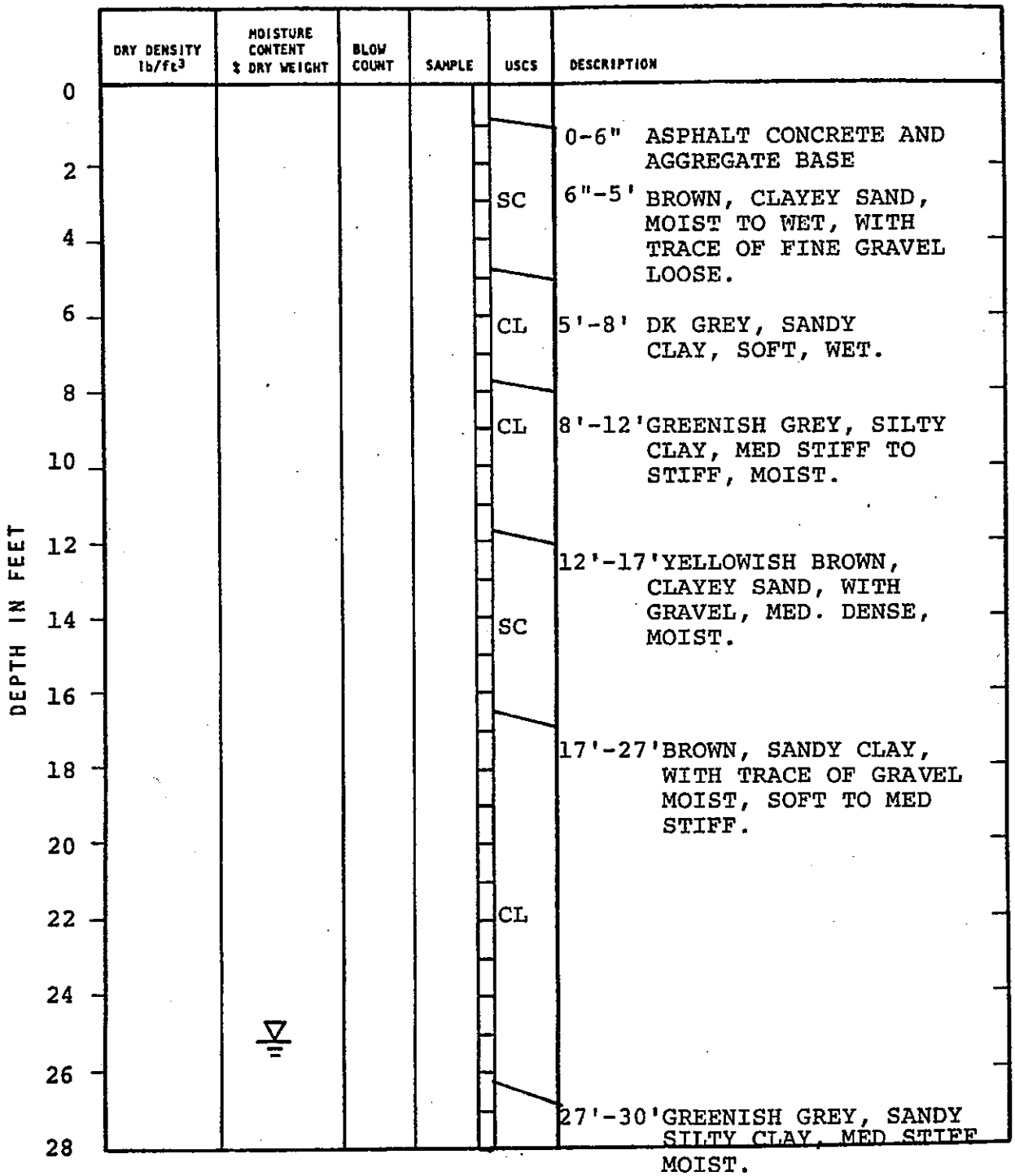
The former used-oil tank area was also re-excavated to remove any possible hydrocarbon-impacted soil. Fill material consisting of burnt wood, bricks, ashes, and concrete was encountered in the excavation. Concrete footings, foundations, and basement floor slabs were also encountered. These materials appeared to be associated with the former hospital that previously occupied the site. A composite sample (UOSP-3[a&b]) was collected of the fill material, and the material was then placed back in the excavation. TPHg, BTEX, MTBE, and organic lead were not detected in the sample; total lead was detected at 1,790 mg/kg. It appeared that the elevated lead concentrations detected in the former used-oil tank excavation and in the northern dispenser island excavation (previous samples P3, P4, and P5); and likely the detections of semi-VOCs, were associated with the fill material observed in these areas and were unrelated to the former service station activities. The impacted fill material likely was placed during demolition of the former hospital. Details of the work were presented in TD's *Soil Overexcavation/Remediation Report* dated March 24, 1999.

1999 Oxygen Releasing Compound® (ORC®) Installation: In September 1999, Blaine Tech Services, Inc. installed filter socks containing Oxygen Releasing Compound® (ORC®) into wells B-1, B-3, B-5, B-6, B-7, and B-9 in an attempt to reduce petroleum hydrocarbon concentrations. Nine to sixteen socks were installed in each of the wells. Subsequent groundwater monitoring events indicated a significant decrease in TPHg, benzene, and MTBE concentrations in these wells.

2007 Subsurface Investigation: In June 2007, CRA advanced six soil borings (B-14 and B-17 through B-21) both on and offsite to further evaluate the extent of petroleum hydrocarbons in soil and groundwater. Three proposed borings (B-13, B-15, and B-16) were unable to be completed due to the presence of an underlying concrete slab encountered between 4 and 6 fbg. Soil samples were collected at various depths from the six borings (beginning at approximately 5 fbg) for laboratory analysis. TPHg and BTEX generally were not detected in any of the soil samples with the exception of toluene at 0.001 mg/kg in the sample collected at 10 fbg from boring B-21. Fuel oxygenates generally were not detected in the soil samples with the exception of MTBE (up to 0.002 mg/kg) in three of the samples. Groundwater was encountered in the borings at depths of 10 to 28 fbg. Grab-groundwater samples were collected from borings B-14 and B-17 through B-20. TPHg and BTEX were not detected in any of the groundwater samples. Fuel oxygenates generally were not detected in the groundwater samples with the exception of MTBE in the samples collected from borings B-14 (1.0 µg/L) and B-17 (2.0 µg/L), and tertiary butyl alcohol (TBA) in the samples collected from borings B-14 (14 µg/L) and B-19 (3.0 µg/L). Based on the analytical results, the dissolved hydrocarbon plume appeared to be laterally defined except to the east (upgradient) due to a site building that prevented further assessment in this direction. Details of the investigation were presented in CRA's *Subsurface Investigation Report* dated September 11, 2007.

ATTACHMENT D

HISTORICAL BORING LOGS



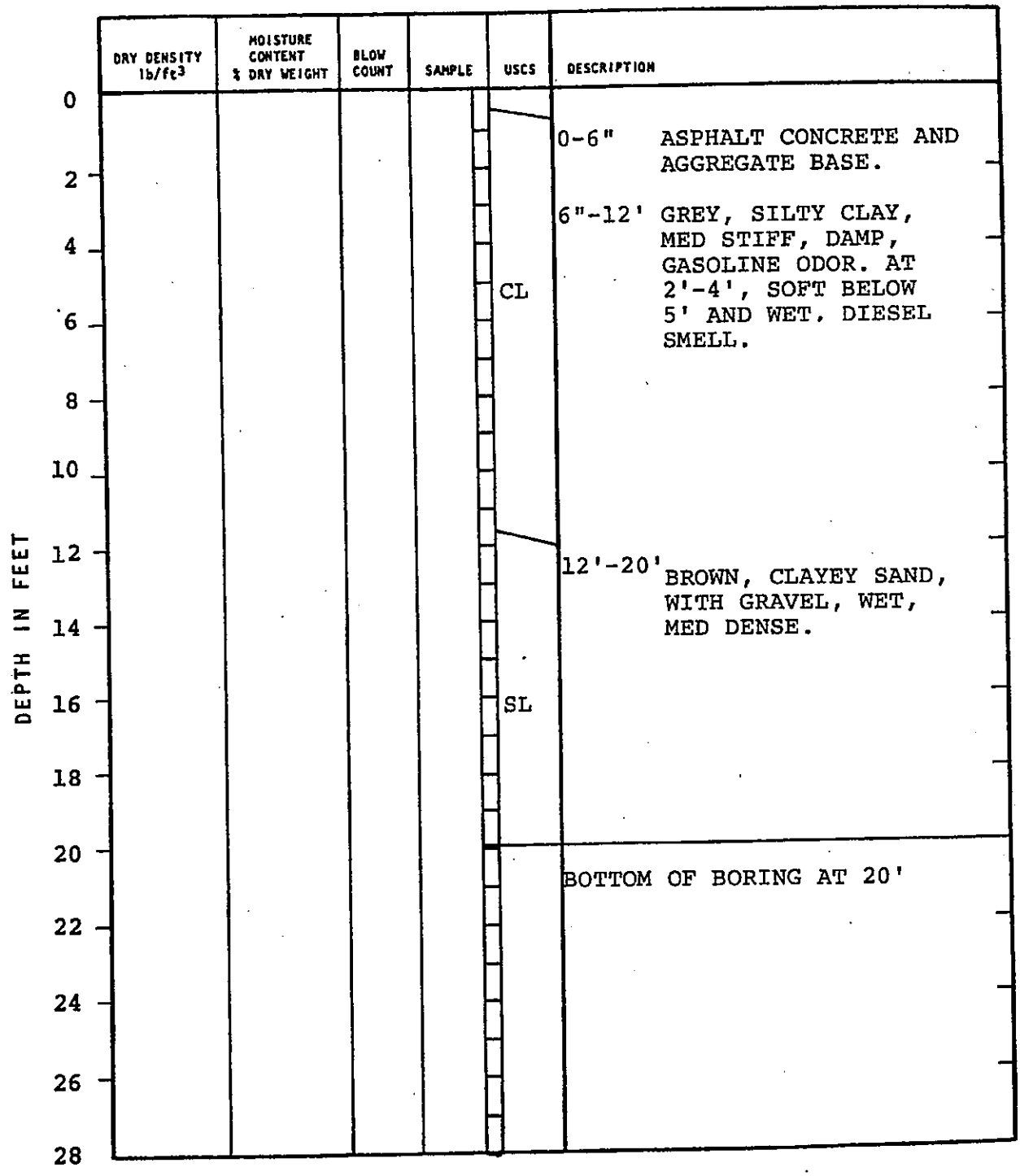
J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PREPARED BY: PLC DATE: 3/82
CHECKED BY: DCM DATE: 3/82

IT ENVIROSCIENCE/CHEVRON
OAKLAND, CALIFORNIA
LOG OF BORING NO. B-1

PROJECT NO. B-1189-1

PLATE
4



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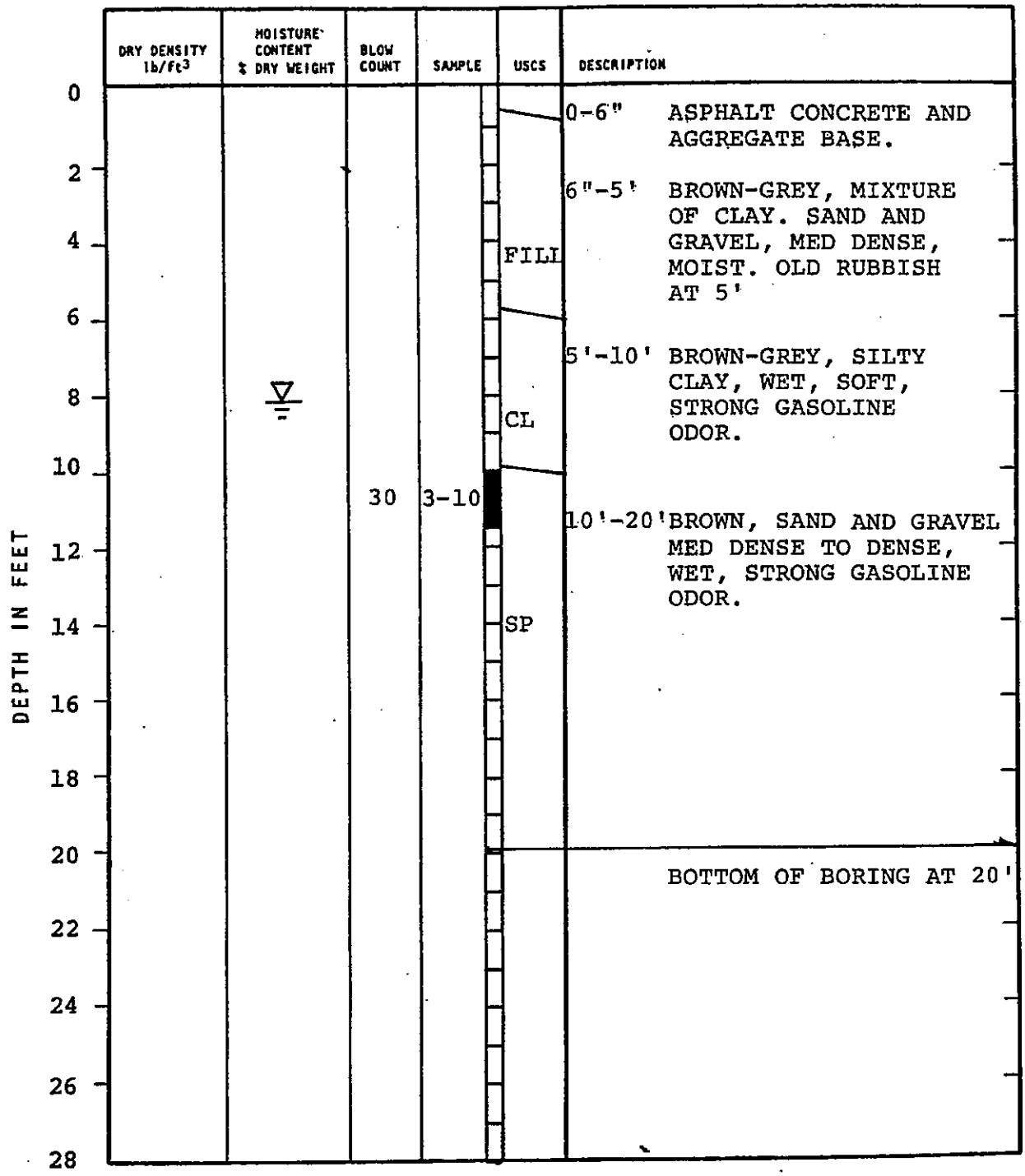
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

IT ENVIROSCIENCE/CHEVRON
OAKLAND, CALIFORNIA
LOG OF BORING NO. B-2

PLATE
5

PREPARED BY: PLC DATE: 3/82
CHECKED BY: DCM DATE: 3/82

PROJECT NO. B-1189-1



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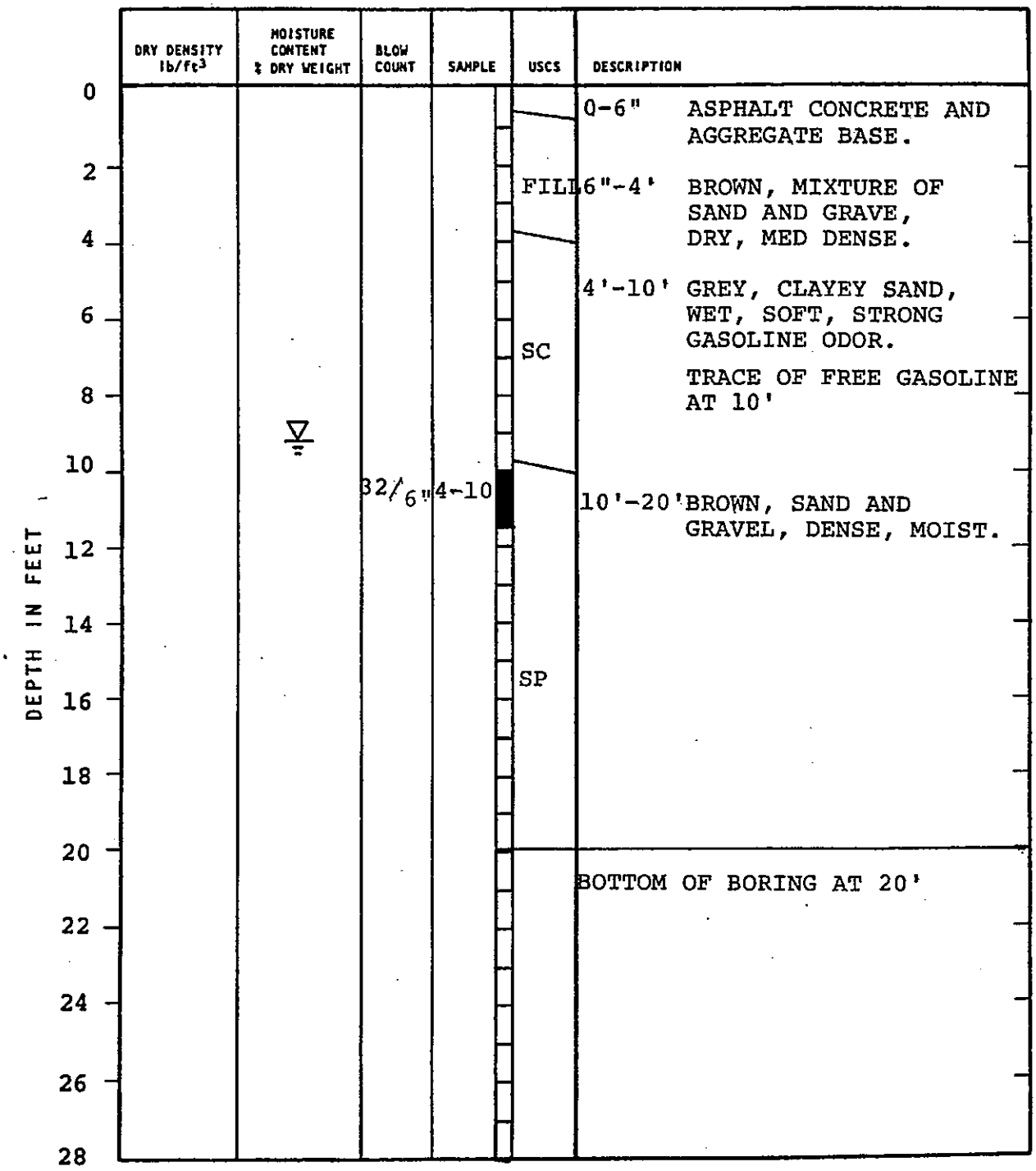
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PREPARED BY: PLC DATE: 3/82
CHECKED BY: DCM DATE: 3/82

IT ENVIROSCIENCE/CHEVRON
OAKLAND, CALIFORNIA
LOG OF BORING NO. B-3

PROJECT NO. B-1189-1

PLATE
6



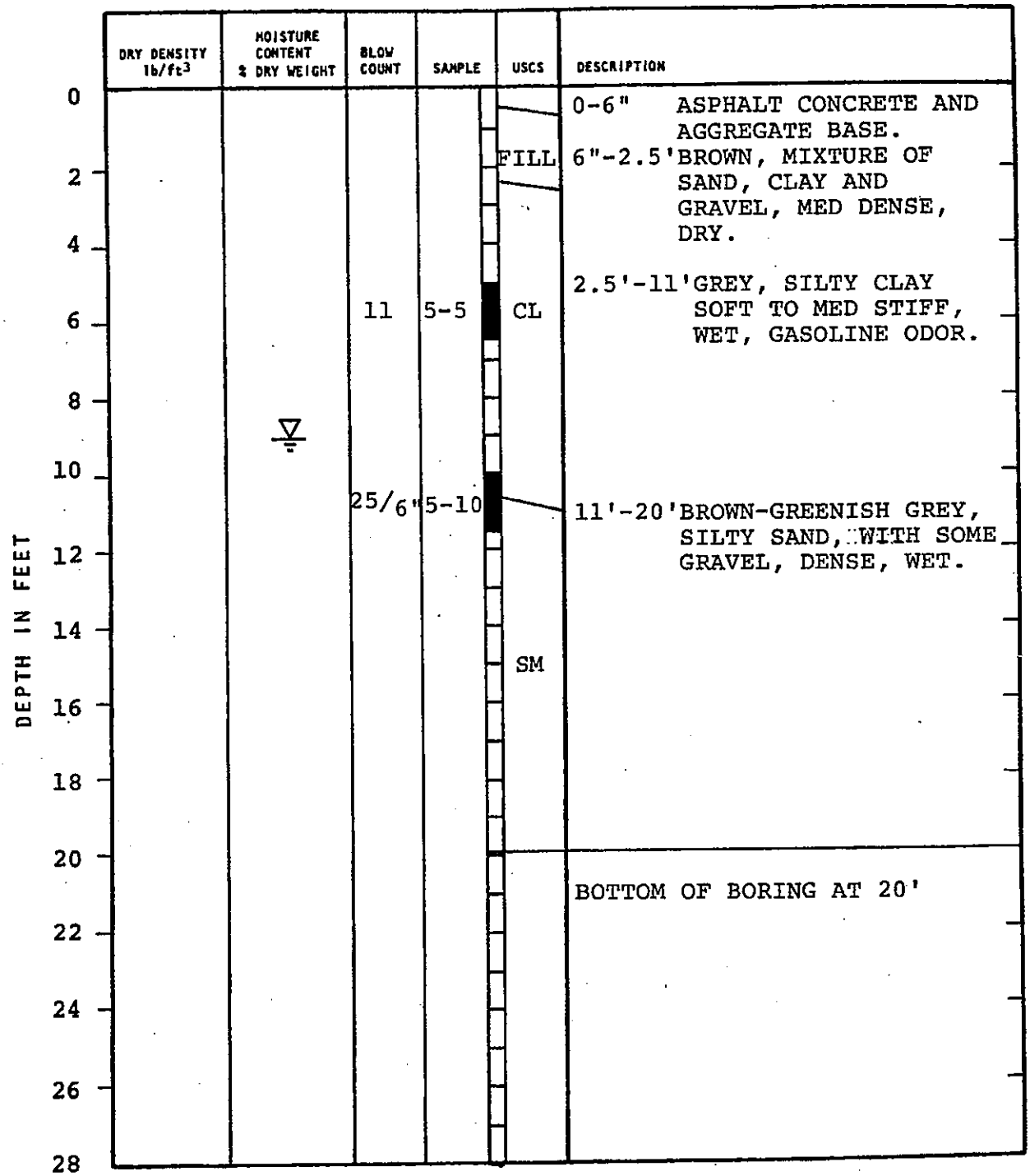
J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PREPARED BY: PLC DATE: 3/82
CHECKED BY: DCM DATE: 3/82

IT ENVIROSCIENCE/CHEVRON
OAKLAND, CALIFORNIA
LOG OF BORING NO. B-4

PROJECT NO. B-1189-1

PLATE
7



J.H. KLEINFELDER & ASSOCIATES
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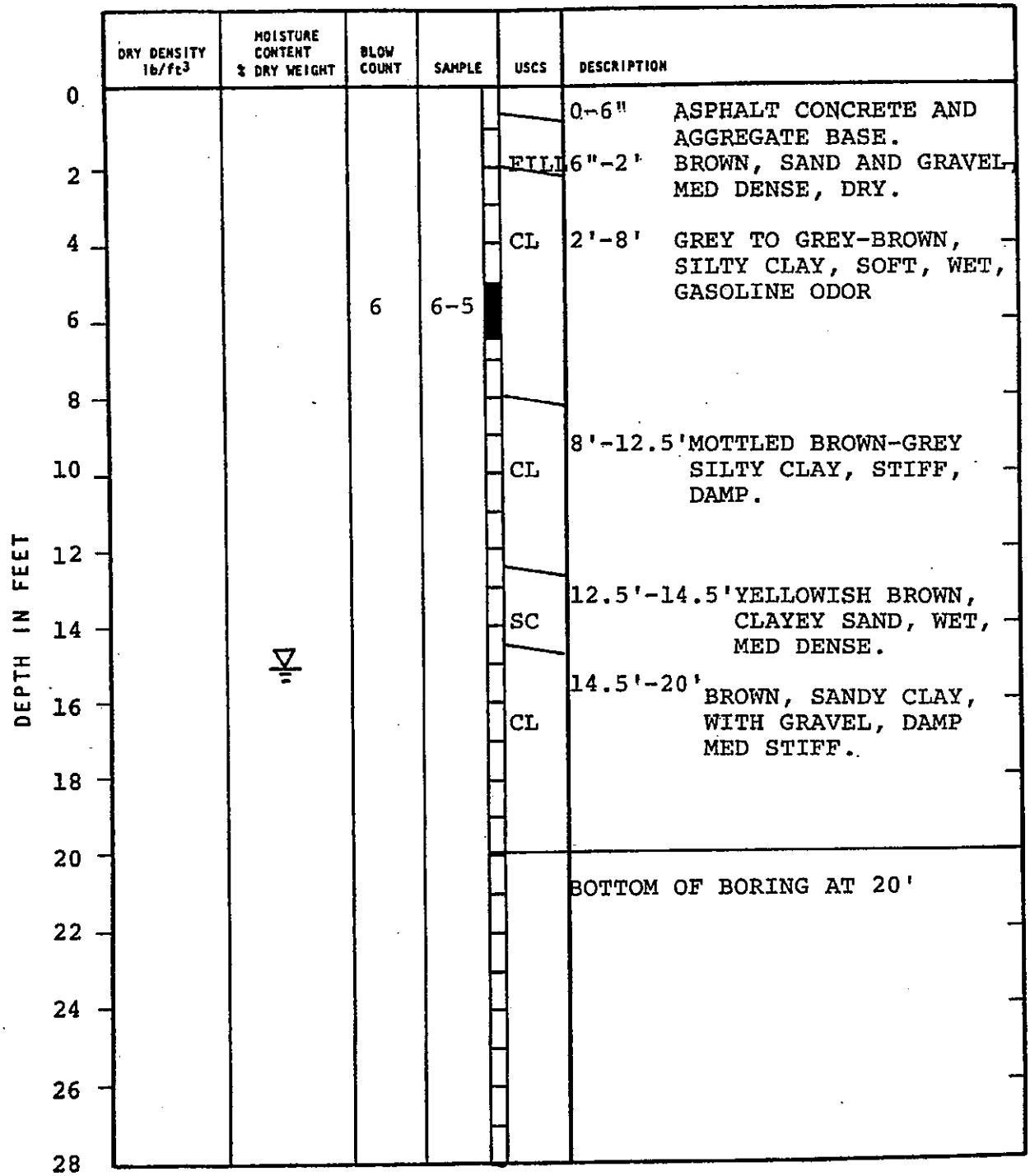
PREPARED BY: PLC DATE: 3/82
CHECKED BY: DCM DATE: 3/82

IT ENVIROSCIENCE/CHEVRON
OAKLAND, CALIFORNIA
LOG OF BORING NO. B-5

PROJECT NO. B-1189-1

PLATE
8



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GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

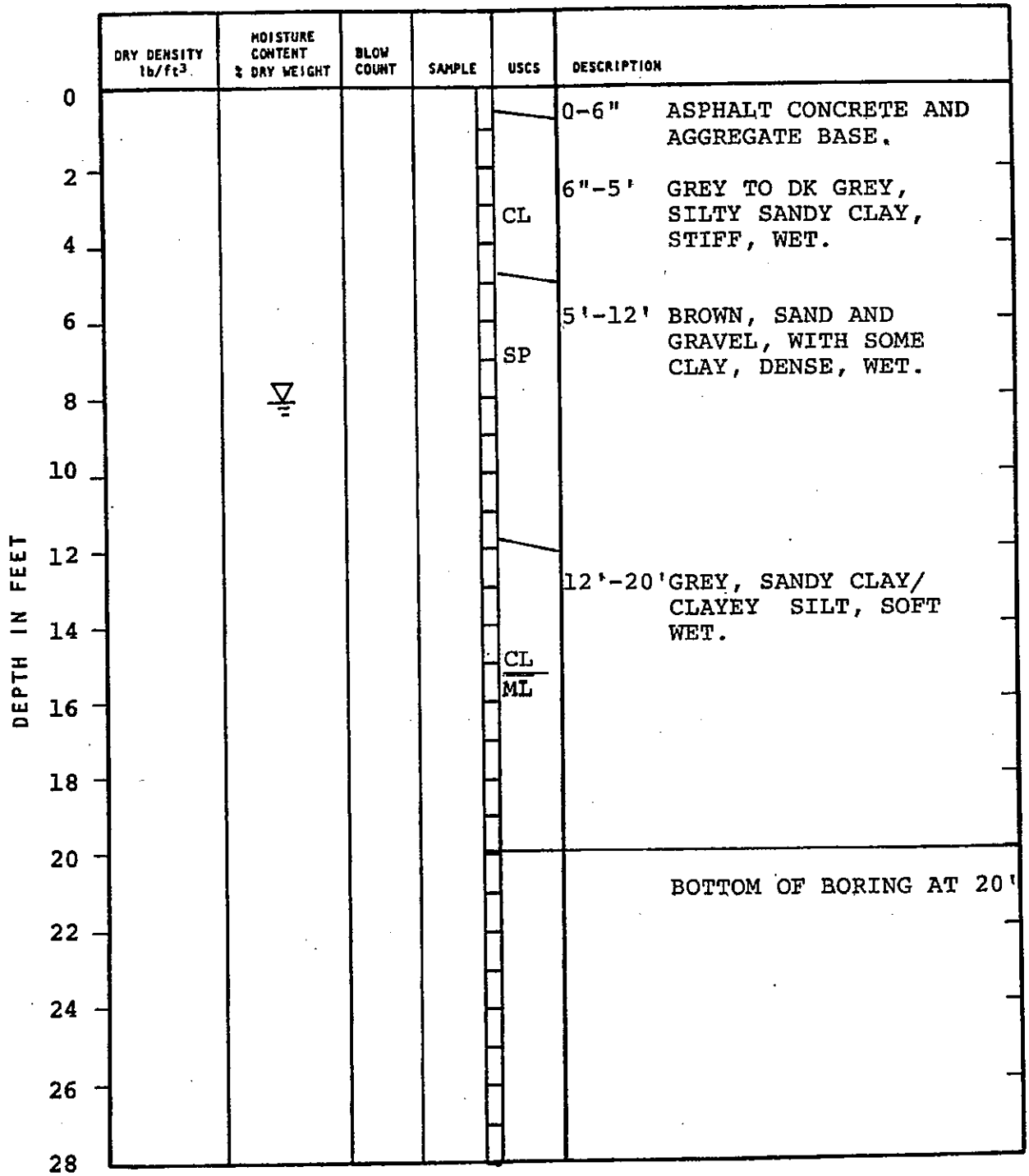
PREPARED BY: PLC DATE: 3/82

CHECKED BY: DCM DATE: 3/82

IT ENVIROSCIENCE/CHEVRON
OAKLAND, CALIFORNIA
LOG OF BORING NO. B-6

PROJECT NO. B-1189-1

PLATE
9

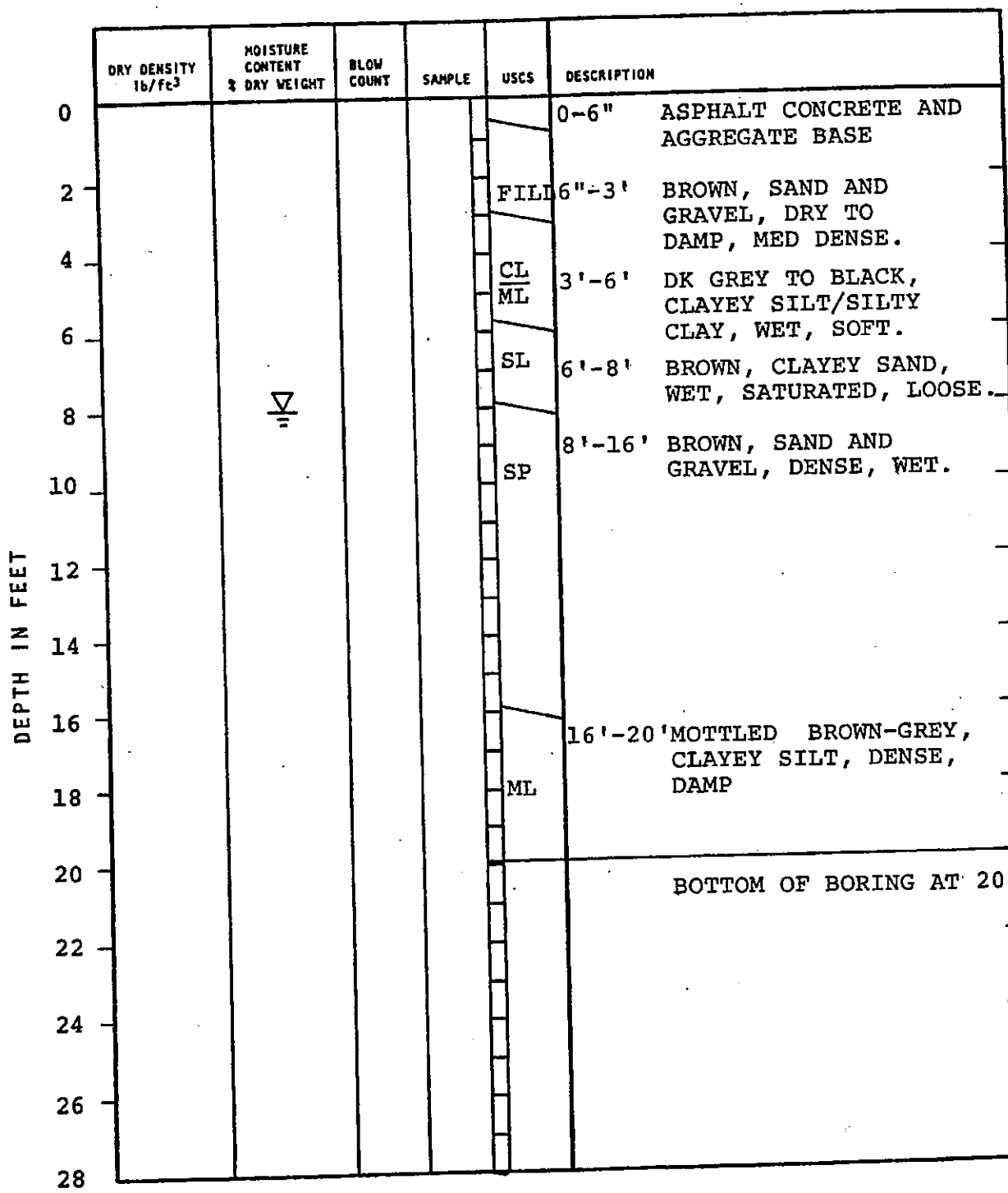


J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

IT ENVIROSCIENCE/CHEVRON
OAKLAND, CALIFORNIA
LOG OF BORING NO. B-7

PLATE
10

PREPARED BY: PLC DATE: 3/82
CHECKED BY: DCM DATE: 3/82
PROJECT NO. B-1189-1



J.H. KLEINFELDER & ASSOCIATES
GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PREPARED BY: PLC DATE: 3/82
CHECKED BY: DCM DATE: 3/82

IT ENVIROSCIENCE/CHEVRON
OAKLAND, CALIFORNIA
LOG OF BORING NO. B-8

PROJECT NO. B-1189-1

PLATE
11

Total depth of boring: 20 feet
Diameter of boring: 8 inches
Date drilled: 7-26-94
Drilling Company: West Hazmat
Driller: Gene
Drilling method: Hollow-Stem Auger

Casing diameter: 2 inches
Casing material: Sch 40 PVC
Slot size: 0.020-inch
Sand size: No. 3 sand
Screen Interval: 4-1/2 feet to 19-1/2 feet
Field Geologist: Zbigniew Ignatowicz

Signature of Registered Professional:
Registration No.: 5023 State: CA

P.I.D.	Sample No.	Blows	Depth	USCS Code	Description	Well Const.
					Asphalt over base rock.	
			2	SC	Clayey sand, medium-grained, brown, medium dense, moist.	
			4			
2152	S-5	7 4 6	6	CL	Sandy clay, black and bluish-black, medium plasticity, stiff, moist.	
			8	SW	Gravelly sand, brown and olive-gray, very dense, damp.	
909	S-10	25 30 20	10	CL	Sandy-gravelly clay, brown-gray, medium plasticity, hard, moist.	
			12			
			14	SW/GW	Gravelly sand/sandy gravel, reddish-brown, very dense, damp.	
	S-15	50 50/3	16			
			18	CL	Silty clay, black-brown, medium plasticity, hard, damp.	
14	S-19	12 20 35	20		Total Depth = 20 feet.	
			22			
			24			
			26			
			28			
			30			
			32			
			34			
			36			
			38			
			40			

RESNA
Working to Restore Nature

PROJECT: 130069.01

LOG OF BORING/MONITORING WELL B-9

Chevron Station 9-2506
2630 Broadway,
Oakland, California

Total depth of boring: 20 feet
Diameter of boring: 8 inches
Date drilled: 7-27-94
Drilling Company: West Hazmat
Driller: Gene
Drilling method: Hollow-Stem Auger

Casing diameter: 2 inches
Casing material: Sch 40 PVC
Slot size: 0.020-inch
Sand size: No. 3 sand
Screen Interval: 4-1/2 feet to 19-1/2 feet
Field Geologist: Zbigniew Ignatowicz

Signature of Registered Professional:
Registration No.: 5723 State: CA

P.I.D.	Sample No.	Blows	Depth	USCS Code	Description	Well Const.
					Asphalt over base rock.	
			2	CL	Silty clay, black, low plasticity, medium stiff, damp; pieces of concrete, backfill.	
			4	CL	Silty clay, dark and light brown, low plasticity, very stiff, moist.	
4.9	S-6	4 6 11	6			
			8	SW/GW	Gravelly sand/sandy gravel, medium-grained sand to medium gravel, brown, very dense, moist.	
13.3	S-10	40 50/6"	10		▼	
			12			
			14	CL	Sandy clay, brown, low plasticity, hard, moist.	
12.4	S-15	12 15 20	16			
			18	SM	▽ Silty sand, medium-grained sand, brown, dense, saturated.	
14.6	S-19	11 20 22	20		Total Depth = 20 feet.	
			22			
			24			
			26			
			28			
			30			
			32			
			34			
			36			
			38			
			40			

RESNA
Working to Restore Nature

PROJECT: 130069.01

LOG OF BORING/MONITORING WELL B-10

Chevron Station 9-2506
2630 Broadway,
Oakland, California

Total depth of boring: 20 feet
Diameter of boring: 8 inches
Date drilled: 7-26-94
Drilling Company: West Hazmat
Driller: Gene
Drilling method: Hollow-Stem Auger

Casing diameter: 2 inches
Casing material: Sch 40 PVC
Slot size: 0.020-inch
Sand size: No. 3 sand
Screen Interval: 4-1/2 feet to 19-1/2 feet
Field Geologist: Zbigniew Ignatowicz

Signature of Registered Professional:
Registration No.: 5023 State: CA

P.I.D.	Sample No.	Blows	Depth	USCS Code	Description	Well Const.
					Concrete over base rock.	
			2	SC	Clayey sand, fine-grained sand, light brown, medium dense, very moist.	
7.2	S-5	16 7 12	4 6			
			8	SW	Gravelly sand, fine-grained sand and fine gravel, brown, very dense, moist.	
3.7	S-11	17 30 35	10 12			
			14	CL	Silty clay, light brown, medium plasticity, very stiff, moist.	
2.2	S-16	12 20 22	16	SC	Clayey sand, brown, dense, saturated.	
4.9	S-20	15 25 22	18 20		Total Depth = 20 feet.	
			22 24 26 28 30 32 34 36 38 40			

RESNA
Working to Restore Nature

PROJECT: 130069.01

LOG OF BORING/MONITORING WELL B-11

Chevron Station 9-2506
2630 Broadway,
Oakland, California

Total depth of boring: 20 feet
Diameter of boring: 8 inches
Date drilled: 7-26-94
Drilling Company: West Hazmat
Driller: Gene
Drilling method: Hollow-Stem Auger

Casing diameter: 2 inches
Casing material: Sch 40 PVC
Slot size: 0.020-inch
Sand size: No. 3 sand
Screen Interval: 4-1/2 feet to 19-1/2 feet
Field Geologist: Zbigniew Ignatowicz

Signature of Registered Professional:
Registration No.: 5023 State: CA

P.I.D.	Sample No.	Blows	Depth	USCS Code	Description	Well Const.
					Concrete over base rock.	
548			2	CL	Sandy clay, greenish-gray, medium plasticity, very stiff, damp.	
			4			
14	S-5	20 16 12	6		Color change to dark brown.	
			8			
			10	CL	Silty clay, yellowish-brown, medium plasticity, hard, damp.	
7.8	S-11	10 20 30	12			
			14			
5.2	S-16	12 16 22	16		Very moist.	
			18			
1.7	S-20	14 20 35	20			
			22		Total Depth = 20 feet.	
			24			
			26			
			28			
			30			
			32			
			34			
			36			
			38			
			40			

RESNA
Working to Restore Nature

PROJECT: 130069.01

LOG OF BORING/MONITORING WELL B-12

Chevron Station 9-2506
2630 Broadway,
Oakland, California

Conestoga-Rovers & Associates
2000 Opportunity Drive, Suite 110
Roseville, CA 95678
Telephone: (916) 677-3407
Fax: (916) 677-3687

BORING/WELL LOG

CLIENT NAME	Chevron Environmental Management Co.	BORING/WELL NAME	B-13
JOB/SITE NAME	9-2506 Oakland	DRILLING STARTED	04-Jun-07
LOCATION	2630 Broadway, Oakland, CA	DRILLING COMPLETED	04-Jun-07
PROJECT NUMBER	611962	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Gregg Drilling & Testing, Inc.	GROUND SURFACE ELEVATION	Not Surveyed
DRILLING METHOD	Hydraulic push	TOP OF CASING ELEVATION	Not Surveyed
BORING DIAMETER	2"	SCREENED INTERVAL	NA
LOGGED BY	J. Bostick	DEPTH TO WATER (First Encountered)	NA
REVIEWED BY	B. Carey P.G# 7820	DEPTH TO WATER (Static)	NA
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							Asphalt (4") No samples collected.	0.3	
							Concrete slab encountered at 4.9'. No sample recovered.	4.9	Bottom of Boring @ 4.9 fbg

WELL LOG (PID) R:\ROCKL~1.CHE\9-2506~1\GINT\9-2506.GPJ DEFAULT.GDT 8/8/07

Conestoga-Rovers & Associates
2000 Opportunity Drive, Suite 110
Roseville, CA 95678
Telephone: (916) 677-3407
Fax: (916) 677-3687

BORING/WELL LOG

CLIENT NAME	Chevron Environmental Management Co.	BORING/WELL NAME	B-14
JOB/SITE NAME	9-2506 Oakland	DRILLING STARTED	04-Jun-07
LOCATION	2630 Broadway, Oakland, CA	DRILLING COMPLETED	07-Jun-07
PROJECT NUMBER	611962	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Gregg Drilling & Testing, Inc.	GROUND SURFACE ELEVATION	Not Surveyed
DRILLING METHOD	Hydraulic push	TOP OF CASING ELEVATION	Not Surveyed
BORING DIAMETER	2"	SCREENED INTERVAL	NA
LOGGED BY	J. Bostick	DEPTH TO WATER (First Encountered)	10.0 fbg (07-Jun-07) ▽
REVIEWED BY	B. Carey P.G#7820	DEPTH TO WATER (Static)	NA ▼
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							Asphalt (5")	0.4	
		B-14@ 5		5	SM		SILTY SAND (SM) - brown; moist; 15% clay, 25% silt, 60% fine sand; low plasticity; high estimated permeability.		
		B-14@ 10		10	SM		SILTY SAND (SM) - brown; saturated; 20% clay, 20% silt, 60% fine sand; low plasticity, moderate estimated permeability.	10.0 ▽ 11.0	
					SM		SILTY SAND with GRAVEL (SM) - brown; moist; 10% clay, 10% silt, 50% fine sand, 30% gravel; moderate estimated permeability.	13.0	
					CL		CLAY with SAND (CL) - brown; moist; 65% clay, 10% silt, 25% fine sand; moderate plasticity; moderate estimated permeability.		
		B-14@ 15		15	CL		CLAY (CL) - brown; moist; 70% clay, 20% silt, 10% fine sand; high plasticity; high estimated permeability.	15.0	
		B-14@ 20		20	SC		CLAYEY SAND (SC) - brown; moist; 20% clay, 10% silt, 70% fine sand; low plasticity; high estimated permeability.	20.0 21.5	
		B-14@ 22			SM		SILTY SAND (SM) - brown; moist; 10% clay, 10% silt, 70% fine sand, 10% gravel; high estimated permeability.	22.0	Bottom of Boring @ 22 fbg

WELL LOG (PID) R:\ROCKL~1.CHE\9-2506~1\GINT\9-2506.GPJ DEFAULT.GDT 8/8/07

Conestoga-Rovers & Associates
2000 Opportunity Drive, Suite 110
Roseville, CA 95678
Telephone: (916) 677-3407
Fax: (916) 677-3687

BORING/WELL LOG

CLIENT NAME	Chevron Environmental Management Co.	BORING/WELL NAME	B-15
JOB/SITE NAME	9-2506 Oakland	DRILLING STARTED	04-Jun-07
LOCATION	2630 Broadway, Oakland, CA	DRILLING COMPLETED	04-Jun-07
PROJECT NUMBER	611962	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Gregg Drilling & Testing, Inc.	GROUND SURFACE ELEVATION	Not Surveyed
DRILLING METHOD	Hydraulic push	TOP OF CASING ELEVATION	Not Surveyed
BORING DIAMETER	2"	SCREENED INTERVAL	NA
LOGGED BY	J. Bostick	DEPTH TO WATER (First Encountered)	NA
REVIEWED BY	B. Carey P.G# 7820	DEPTH TO WATER (Static)	NA
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							Asphalt (7")	0.6	
					CL		SANDY CLAY (CL) - brown; 50% clay, 15% silt, 30% sand, 5% gravel; moderate plasticity; moderate estimated permeability.		
		B-15@4						4.0	Bottom of Boring @ 4 fbg
							Concrete slab.		

WELL LOG (PID) R:\ROCKU~1.CHE\9-2506~1\GINT\9-2506.GPJ DEFAULT.GDT 8/8/07

Conestoga-Rovers & Associates
2000 Opportunity Drive, Suite 110
Roseville, CA 95678
Telephone: (916) 677-3407
Fax: (916) 677-3687

BORING/WELL LOG

CLIENT NAME	Chevron Environmental Management Co.	BORING/WELL NAME	B-16
JOB/SITE NAME	9-2506 Oakland	DRILLING STARTED	04-Jun-07
LOCATION	2630 Broadway, Oakland, CA	DRILLING COMPLETED	04-Jun-07
PROJECT NUMBER	611962	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Gregg Drilling & Testing, Inc.	GROUND SURFACE ELEVATION	Not Surveyed
DRILLING METHOD	Hydraulic push	TOP OF CASING ELEVATION	Not Surveyed
BORING DIAMETER	2"	SCREENED INTERVAL	NA
LOGGED BY	J. Bostick	DEPTH TO WATER (First Encountered)	NA
REVIEWED BY	B. Carey P.G#7820	DEPTH TO WATER (Static)	NA
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							Asphalt (7")	0.6	
					CH		CLAY with SAND (CH) - brown; 50% clay, 30% silt, 20% sand; high plasticity; low estimated permeability.		
		B-16@5		5				5.0	
					CL		CLAY with SAND (CL) - brown; 40% clay, 20% silt, 20% sand, 20% gravel; moderate plasticity; moderate estimated permeability.	6.0	Bottom of Boring @ 6 fbg
							Concrete slab.		

WELL LOG (PID) R:\ROCKLI~1.CHE\9-2506~1\GINT\9-2506.GPJ DEFAULT.GDT 8/8/07

Conestoga-Rovers & Associates
2000 Opportunity Drive, Suite 110
Roseville, CA 95678
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Fax: (916) 677-3687

BORING/WELL LOG

CLIENT NAME	Chevron Environmental Management Co.	BORING/WELL NAME	B-17
JOB/SITE NAME	9-2506 Oakland	DRILLING STARTED	04-Jun-07
LOCATION	2630 Broadway, Oakland, CA	DRILLING COMPLETED	06-Jun-07
PROJECT NUMBER	611962	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Gregg Drilling & Testing, Inc.	GROUND SURFACE ELEVATION	Not Surveyed
DRILLING METHOD	Hydraulic push	TOP OF CASING ELEVATION	Not Surveyed
BORING DIAMETER	2"	SCREENED INTERVAL	NA
LOGGED BY	J. Bostick	DEPTH TO WATER (First Encountered)	28.0 fbg (06-Jun-07) ▽
REVIEWED BY	B. Carey P.G# 7820	DEPTH TO WATER (Static)	NA ▼
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							Concrete (12")	1.0	
							Road base (6")	1.5	
		B-17@5		5	CH		CLAY (CH) - brown; 50% clay, 40% silt, 10% sand; high plasticity; low estimated permeability.	8.0	
		B-17@10		10	ML		SILT (ML) - brown; 10% clay, 80% silt, 10% fine sand; high plasticity; low estimated permeability.	10.0	
					SP		SAND (SP) - tan; damp; 100% fine-grained sand; no plasticity; moderate estimated permeability.	11.5	
							Rock layer.	12.0	
					SP		SAND (SP) - tan; damp; 100% fine-grained sand; no plasticity; moderate estimated permeability.	13.0	
		B-17@15		15	ML		SILT (ML) - gray; damp; 5% clay; 95% silt; high plasticity; low estimated permeability.	15.0	
					ML		SILT (ML) - gray; damp; 10% clay, 90% silt; high plasticity; low estimated permeability.	16.0	
		B-17@19			SP		SAND (SP) - gray; medium dense; 5% silt, 95% sand.	19.0	
				20	SP		SAND (SP) - gray; damp; 5% silt, 90% sand, 5% gravel; no plasticity; moderate estimated permeability.	20.0	
							Rock layer; red.	21.0	
					SM		SILTY SAND (SM) - gray-brown; 20% silt, 80% sand; moderate plasticity; moderate estimated permeability.	23.0	
					SM		SILTY SAND (SM) - red-brown; 40% silt, 60% sand; high plasticity; low permeability.	24.0	
		B-17@25		25	ML		SILT (ML) - red-brown; 40% cay, 60% silt; high plasticity; low permeability.	26.0	
					SP		SAND (SP) - damp; red-brown; 5% silt, 95% medium to fine sand; no plasticity; moderate estimated permeability. ▽	28.0	
		B-17@29					Saturated at 28'.		
				30				30.0	Bottom of Boring @ 30 fbg

WELL LOG (PID) R:\ROCKLI~1.CHE\9-2506~1\GINT\9-2506.GPJ DEFAULT.GDT 8/8/07

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BORING/WELL LOG

CLIENT NAME	Chevron Environmental Management Co.	BORING/WELL NAME	B-18
JOB/SITE NAME	9-2506 Oakland	DRILLING STARTED	04-Jun-07
LOCATION	2630 Broadway, Oakland, CA	DRILLING COMPLETED	06-Jun-07
PROJECT NUMBER	611962	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Gregg Drilling & Testing, Inc.	GROUND SURFACE ELEVATION	Not Surveyed
DRILLING METHOD	Hydraulic push	TOP OF CASING ELEVATION	Not Surveyed
BORING DIAMETER	2"	SCREENED INTERVAL	NA
LOGGED BY	J. Bostick	DEPTH TO WATER (First Encountered)	28.0 fbg (06-Jun-07) ▽
REVIEWED BY	B. Carey P.G# 7820	DEPTH TO WATER (Static)	NA ▼
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							Concrete (8")	0.7	
					CH		CLAY (CH) - brown; dry; 50% clay, 40% silt, 10% sand; high plasticity; low estimated permeability.		
		B-18@ 5		5					
		B-18@ 10		10	SM		SILTY SAND (SM) - brown; moist; 20% clay, 20% silt, 50% sand, 10% gravel; moderate plasticity; moderate estimated permeability.	10.0	
		B-18@ 15		15	SC		CLAYEY SAND (SC) - brown; moist; 35% clay, 15% silt, 50% fine sand; moderate plasticity; moderate estimated permeability.	15.0 16.0	
					SC		CLAYEY SAND (SC) - gray-brown; moist; 40% clay, 20% silt, 40% fine sand.	17.0	
		B-18@ 20		20	SM		SILTY SAND with GRAVEL (SM) - red-brown; moist; 10% clay, 10% silt, 60% fine sand, 20% gravel; moderate plasticity; moderate estimated permeability.		
		B-18@ 25		25	CH		SANDY CLAY (CH) - brown; moist; 50% clay, 20% silt, 30% fine sand; high plasticity; moderate estimated permeability.	25.0	
							▽	28.0	
					SC		CLAYEY SAND (SC) - brown; saturated; 20% clay, 10% silt, 70% fine sand; high estimated permeability.	28.5	
		B-18@ 30		30	CH		CLAY with SAND (CH) - brown; moist; 60% clay, 20% silt, 20% fine sand; high plasticity; low estimated permeability.		
		B-18@ 35		35				35.0	

WELL LOG (PID) R:\ROCKLI~1.CHE\9-2506~1\GINT\9-2506.GPJ DEFAULT.GDT 8/8/07

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BORING/WELL LOG

CLIENT NAME	Chevron Environmental Management Co.	**BORING/WELL NAME**	B-18
JOB/SITE NAME	9-2506 Oakland	**DRILLING STARTED**	04-Jun-07
LOCATION	2630 Broadway, Oakland, CA	**DRILLING COMPLETED**	06-Jun-07

Continued from Previous Page

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
					CH		CLAY (CH) - dark brown; moist; 75% clay, 15% silt, 10% fine sand; high plasticity; low estimated permeability.	36.0	Bottom of Boring @ 36 fbg

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BORING/WELL LOG

CLIENT NAME	Chevron Environmental Management Co.	BORING/WELL NAME	B-19
JOB/SITE NAME	9-2506 Oakland	DRILLING STARTED	04-Jun-07
LOCATION	2630 Broadway, Oakland, CA	DRILLING COMPLETED	06-Jun-07
PROJECT NUMBER	611962	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Gregg Drilling & Testing, Inc.	GROUND SURFACE ELEVATION	Not Surveyed
DRILLING METHOD	Hydraulic push	TOP OF CASING ELEVATION	Not Surveyed
BORING DIAMETER	2"	SCREENED INTERVAL	NA
LOGGED BY	J. Bostick	DEPTH TO WATER (First Encountered)	17.0 fbg (06-Jun-07) ▽
REVIEWED BY	B. Carey P.G# 7820	DEPTH TO WATER (Static)	NA ▼
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							Asphalt (8")	0.7	
							Concrete (8")	1.3	
					CL		SANDY CLAY (CL) - brown-green; dry; 40% clay, 30% silt, 30% fine sand; moderate plasticity; moderate estimated permeability.		
		B-19@ 5		5					
							Color change to brown.	7.5	
		B-19@ 10		10	SP		SAND (SP) - brown to greenish gray; dry; 10% silt, 80% medium to large grained sand, 10 % gravel.	10.0	
					SM		SILTY SAND with GRAVEL (SM) - brown; saturated; 10% clay, 10% silt, 60% medium sand, 20% gravel; low plasticity; moderate estimated permeability.	13.0	
		B-19@ 15		15	SM		SILTY SAND with GRAVEL (SM) - brown; saturated; 10% clay, 10% silt, 50% medium to coarse grained sand, 30% gravel; no plasticity; moderate estimated permeability. ▽	15.0	
					SM		SILTY SAND (SM) - brown; saturated; 10% clay, 10% silt, 70% medium sand, 10% gravel; no plasticity; high estimated permeability.	18.0	
				20	CL		CLAY with SAND (CL) - 60% clay, 20% silt, 20% sand; moderate plasticity; moderate estimated permeability.	19.0	
							Refusal at 21' - hard rock.	21.0	Bottom of Boring @ 21 fbg

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BORING/WELL LOG

CLIENT NAME	Chevron Environmental Management Co.	BORING/WELL NAME	B-20
JOB/SITE NAME	9-2506 Oakland	DRILLING STARTED	04-Jun-07
LOCATION	2630 Broadway, Oakland, CA	DRILLING COMPLETED	06-Jun-07
PROJECT NUMBER	611962	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Gregg Drilling & Testing, Inc.	GROUND SURFACE ELEVATION	Not Surveyed
DRILLING METHOD	Hydraulic push	TOP OF CASING ELEVATION	Not Surveyed
BORING DIAMETER	2"	SCREENED INTERVAL	NA
LOGGED BY	J. Bostick	DEPTH TO WATER (First Encountered)	25.0 fbg (06-Jun-07) ▽
REVIEWED BY	B. Carey P.G# 7820	DEPTH TO WATER (Static)	NA ▼
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							Asphalt (8")	0.7	
							Concrete (8")	1.3	
					CL		CLAY with SAND (CL) - brown; dry; 60% clay, 25% silt, 15% fine sand; moderate plasticity; moderate estimated permeability.		
		B-20@ 5		5				5.0	
					SM		SILTY SAND (SM) - brown; dry; 15% clay, 25% silt, 60% fine sand; low plasticity; moderate estimated permeability.		
		B-20@ 10		10				10.0	
					SM		SILTY SAND (SM) - brown; dry; 5% clay, 25% silt, 70% fine sand; no plasticity; moderate estimated permeability.	11.0	
							Cherty rock layer.	13.0	
					SP		SAND (SP) - brown; dry; 10% silt, 80% sand, 10% gravel; no plasticity; moderate estimated permeability.	14.0	
		B-20@ 15		15	SM		SILTY SAND (SM) - brown; dry; 30% silt, 70% fine sand; no plasticity; moderate estimated permeability.	16.0	
					CH		SANDY CLAY (CH) - brown; 60% clay, 40% sand; high plasticity; low estimated permeability.	19.0	
		B-20@ 19.5		20	SM		SILTY SAND (SM) - brown; moist; 20% silt, 80% fine sand.	21.0	
					SM		SAND with SILT (SM) - brown; 10% silt, 90% fine sand.	23.0	
		B-20@ 25		25	SP		SAND with SILT and GRAVEL (SP) - brown; 10% silt, 70% sand, 20% gravel; no plasticity; moderate estimated permeability. ▽	25.5	
					ML		SILT (ML) - brown; saturated; 30% clay, 70% silt.	27.0	
					ML		SILT (ML) - brown; moist; 5% clay, 95% silt.	30.0	Bottom of Boring @ 30 fbg
				30					

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BORING/WELL LOG

CLIENT NAME	Chevron Environmental Management Co.	BORING/WELL NAME	B-21
JOB/SITE NAME	9-2506 Oakland	DRILLING STARTED	07-Jun-07
LOCATION	2630 Broadway, Oakland, CA	DRILLING COMPLETED	07-Jun-07
PROJECT NUMBER	611962	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Gregg Drilling & Testing, Inc.	GROUND SURFACE ELEVATION	Not Surveyed
DRILLING METHOD	Hydraulic push	TOP OF CASING ELEVATION	Not Surveyed
BORING DIAMETER	2"	SCREENED INTERVAL	NA
LOGGED BY	J. Bostick	DEPTH TO WATER (First Encountered)	10.0 fbg (07-Jun-07)
REVIEWED BY	B. Carey P.G#7820	DEPTH TO WATER (Static)	NA
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
		B-21@ 5		5					
					SM		SILTY SAND (SM) - brown; moist; 10% clay, 30% silt, 60% sand; low plasticity; moderate estimated permeability.	6.0	
		B-21@ 10		10			SILTY SAND (SM) - green-brown; moist; 20% clay, 20% silt, 60% sand; moderate plasticity; moderate estimated permeability.	9.0	
					SM		Color change to brown.	11.0	
		B-21@ 15		15			CLAYEY SAND (SC) - brown; moist; 30% clay, 10% silt, 50% sand; 10% gravel; moderate plasticity; moderate estimated permeability.	15.0	
					SC				
		B-21@ 20		20			CLAY with SAND (CL) - brown; moist; 60% clay, 20% silt, 20% sand; moderate plasticity; moderate estimated permeability.	20.0	
					CL				
		B-21@ 25		25			CLAY (CL) - brown; moist; 60% clay, 30% silt, 10% sand; moderate plasticity; low estimated permeability.	25.0	
					CL				
		B-21@ 30		30				30.0	
					CL		CLAY with SAND (CL) - brown; moist; 50% clay, 30% silt, 20% sand; moderate plasticity; low estimated permeability. Refusal at 30.5'.	30.5	Bottom of Boring @ 30.5 fbg

WELL LOG (PID) R:\ROCKL~1.CHE\9-2506~1\GINT\9-2506.GPJ DEFAULT.GDT 8/8/07

ATTACHMENT E

UPDATED HISTORICAL SOIL TABLE

Table 1

Historical Soil Sample Analytical Results
Former Chevron Service Station 9-2506
2630 Broadway, Oakland, California

Boring/ Sample ID	*Depth (fbg)*	*Date*	*TPHd*	*TPHg*	*Benzene*	*Toluene*	*Ethylbenzene*	*Xylenes*	*MTBE*	*Oxygenates*	*Total Lead*	*Organic Lead*	*Cadmium*	*Chromium*	*Nickel*	*Zinc*	*HVOCs*	*Semi-VOCs*	*Oil & Grease*
			← *concentrations in milligrams per killogram (mg/kg)* →																
Well Borings																			
B-9	5	7/26/1994	-	**90**	<0.25	**0.76**	**0.75**	**2.2**	-	-	-	-	-	-	-	-	-	-	-
	10	7/26/1994	-	<1.0	<0.005	**0.01**	**0.005**	**0.007**	-	-	-	-	-	-	-	-	-	-	-
B-10	6	7/26/1994	-	<1.0	<0.005	<0.005	<0.005	**0.006**	-	-	-	-	-	-	-	-	-	-	-
	10	7/26/1994	-	<1.0	<0.005	<0.005	<0.005	**0.005**	-	-	-	-	-	-	-	-	-	-	-
B-11	5	7/26/1994	-	<1.0	<0.005	<0.005	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-
	11	7/26/1994	-	<1.0	<0.005	**0.007**	<0.005	**0.021**	-	-	-	-	-	-	-	-	-	-	-
B-12	5	7/26/1994	-	**7.9**	<0.5	**0.13**	**0.16**	**0.7**	-	-	-	-	-	-	-	-	-	-	-
	11	7/26/1994	-	<1.0	<0.005	<0.005	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-
UST Excavation																			
TX1	10.5	3/10/1998	-	**2.1**	<0.005	<0.005	<0.005	<0.005	**1.2**	-	**6.3**	-	-	-	-	-	-	-	-
TX2	10.5	3/10/1998	-	**1.7**	<0.005	<0.005	<0.005	<0.005	**0.8**	-	**3**	-	-	-	-	-	-	-	-
TX3	10.5	3/10/1998	-	**18**	**0.052**	**0.081**	**0.43**	**1.7**	<0.5	-	<2.5	-	-	-	-	-	-	-	-
TX4	10.5	3/10/1998	-	**10**	**0.036**	**0.043**	**0.052**	**0.044**	<0.1	-	<2.5	-	-	-	-	-	-	-	-
TX5	10.5	3/10/1998	-	**1.3**	**0.029**	**0.16**	**0.005**	**0.12**	**1.7**	-	**3.9**	-	-	-	-	-	-	-	-
TX6	10.5	3/10/1998	-	**340**	**0.44**	**0.9**	**3.3**	**15**	<2.5	-	**4**	-	-	-	-	-	-	-	-
TX7	10.5	3/10/1998	-	**66**	<0.25	**0.086**	**0.12**	**0.94**	**0.46**	-	**6.2**	-	-	-	-	-	-	-	-
TX8	10.5	3/10/1998	-	<1.0	<0.005	<0.005	<0.005	<0.005	**1.1**	-	**5**	-	-	-	-	-	-	-	-
SP-1(a-d)	Stockpiles	3/10/1998	-	<1.0	<0.005	<0.005	<0.005	**0.0054**	<0.05	-	**4.4**	-	-	-	-	-	-	-	-
SP-2(a-d)	Stockpiles	3/10/1998	-	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05	-	**7.8**	-	-	-	-	-	-	-	-
Product Piping Trench Samples																			
P1	2	~~3/10/1998~~	-	~~<1.0~~	~~<0.005~~	~~<0.005~~	~~<0.005~~	~~<0.005~~	~~<0.05~~	-	~~**6.7**~~	-	-	-	-	-	-	-	-
P2	1.5	~~3/10/1998~~	-	~~**45**~~	~~**0.062**~~	~~**0.72**~~	~~**0.56**~~	~~**4.7**~~	~~**0.52**~~	-	~~**30**~~	-	-	-	-	-	-	-	-
P3	1.5	3/10/1998	-	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05	-	**130**	-	-	-	-	-	-	-	-
P4	1.5	3/10/1998	-	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05	-	**200**	-	-	-	-	-	-	-	-
P5	2	~~3/10/1998~~	-	~~<1.0~~	~~<0.005~~	<0.005	<0.005	**0.0057**	~~<0.05~~	-	~~**5,000**~~	-	-	-	-	-	-	-	-
P6	2	~~3/10/1998~~	-	~~**5.7**~~	~~**0.051**~~	~~**0.017**~~	~~**0.041**~~	~~**0.16**~~	~~**0.057**~~	-	~~**14**~~	-	-	-	-	-	-	-	-
P7	2	~~3/10/1998~~	-	~~**1,200**~~	~~<1.25~~	~~**2.3**~~	~~**24**~~	~~**55**~~	~~<12.5~~	-	~~**50**~~	-	-	-	-	-	-	-	-
P8	2	~~3/10/1998~~	-	~~**16**~~	~~**1.4**~~	~~**0.069**~~	~~**0.26**~~	~~**0.37**~~	~~**8**~~	-	~~**21**~~	-	-	-	-	-	-	-	-
P9	2	~~3/10/1998~~	-	~~**15**~~	~~**0.19**~~	~~**0.032**~~	~~**0.34**~~	~~**1.1**~~	~~**0.3**~~	-	~~**5.5**~~	-	-	-	-	-	-	-	-
P10	2	3/10/1998	-	**18**	**0.22**	**0.037**	**0.33**	**1**	**1.8**	-	**23**	-	-	-	-	-	-	-	-
P11	2	3/10/1998	-	**1.1**	<0.005	<0.005	<0.005	<0.005	<0.05	-	**130**	-	-	-	-	-	-	-	-
Hydraulic Hoist Samples																			
H1	7	3/10/1998	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**110**
H2	7	3/10/1998	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**310**

Table 1

Historical Soil Sample Analytical Results
Former Chevron Service Station 9-2506
2630 Broadway, Oakland, California

Boring/ Sample ID	*Depth (fbg)*	*Date*	*TPHd*	*TPHg*	*Benzene*	*Toluene*	*Ethylbenzene*	*Xylenes*	*MTBE*	*Oxygenates*	*Total Lead*	*Organic Lead*	*Cadmium*	*Chromium*	*Nickel*	*Zinc*	*HVOCs*	*Semi-VOCs*	*Oil & Grease*
			← *concentrations in milligrams per kilogram (mg/kg)* →																
Used-Oil Tank Excavation																			
UO1	8	3/10/1998	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	**0.11**	-	**430**	-	<0.50	**18**	**13**	**380**	ND	ND[1]	**110**
UO2	8	3/10/1998	**4.8**	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05	-	**6,800**	-	**1.7**	**45**	**11**	**1,400**	ND	ND[2]	**91**
UOSP-1(a-d)	Stockpile	3/10/1998	**3.9**	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05	-	**1,500**	-	<0.50	**17**	**20**	**360**	ND	ND[3]	**52**
Dispenser Island and Used-Oil Tank Over-Excavation																			
PX2	5	11/19/1998	-	**2.96**	<0.002	<0.002	<0.002	<0.004	**0.0396**	-	<7.5	<5.0	-	-	-	-	-	-	-
PX5	6	11/19/1998	-	**95.7**	<0.010	**0.0422**	**0.0905**	**1.01**	<0.01	-	<7.5	<5.0	-	-	-	-	-	-	-
PX7	9	11/19/1998	-	**1,190**	<0.50	**23.2**	**26.7**	**149**	<2.5	-	-	-	-	-	-	-	-	-	-
PX8	7	11/19/1998	-	<0.400	<0.002	<0.002	<0.002	<0.004	**0.637**	-	-	-	-	-	-	-	-	-	-
PX9	6	11/19/1998	-	**5.21**	<0.002	**0.0357**	**0.063**	**0.596**	**0.138**	-	-	-	-	-	-	-	-	-	-
PX10	9	11/19/1998	-	**44.6**	<0.005	<0.005	**0.137**	**1.18**	<0.025	-	-	-	-	-	-	-	-	-	-
SP-3(a-d)	Stockpile	11/19/1998	-	**37.8**	<0.010	**0.273**	**0.505**	**3.34**	<0.050	-	**9.81**	-	-	-	-	-	-	-	-
UOSP-3(a&b)	Stockpile	11/19/1998	-	<0.400	<0.002	<0.002	<0.002	<0.004	<0.010	-	**1,790**	<5.0	-	-	-	-	-	-	-
Exploratory Borings																			
B-14	5	6/4/2007	-	<1.0	<0.0005	<0.001	<0.001	<0.001	**0.002**	ND	-	-	-	-	-	-	-	-	-
	15	6/7/2007	-	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	ND	-	-	-	-	-	-	-	-	-
	22	6/7/2007	-	<1.0	<0.0005	<0.001	<0.001	<0.001	**0.001**	ND	-	-	-	-	-	-	-	-	-
B-17	5	6/4/2007	-	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	ND	-	-	-	-	-	-	-	-	-
	15	6/6/2007	-	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	ND	-	-	-	-	-	-	-	-	-
	25	6/6/2007	-	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	ND	-	-	-	-	-	-	-	-	-
B-18	5	6/4/2007	-	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	ND	-	-	-	-	-	-	-	-	-
	15	6/6/2007	-	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	ND	-	-	-	-	-	-	-	-	-
	25	6/6/2007	-	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	ND	-	-	-	-	-	-	-	-	-
B-19	5	6/4/2007	-	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	ND	-	-	-	-	-	-	-	-	-
B-20	5	6/4/2007	-	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	ND	-	-	-	-	-	-	-	-	-
	15	6/6/2007	-	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	ND	-	-	-	-	-	-	-	-	-
B-21	6	6/7/2007	-	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	ND	-	-	-	-	-	-	-	-	-
	10	6/7/2007	-	<1.0	<0.0005	**0.001**	<0.001	<0.001	<0.0005	ND	-	-	-	-	-	-	-	-	-
	15	6/7/2007	-	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	ND	-	-	-	-	-	-	-	-	-
	20	6/7/2007	-	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	ND	-	-	-	-	-	-	-	-	-
	25	6/7/2007	-	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	ND	-	-	-	-	-	-	-	-	-
	30	6/7/2007	-	<1.0	<0.0005	<0.001	<0.001	<0.001	**0.001**	ND	-	-	-	-	-	-	-	-	-

Table 1

Historical Soil Sample Analytical Results
Former Chevron Service Station 9-2506
2630 Broadway, Oakland, California

Boring/ Sample ID	Depth (fbg)	Date	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Oxygenates	Total Lead	Organic Lead	Cadmium	Chromium	Nickel	Zinc	HVOCs	Semi-VOCs	Oil & Grease
			concentrations in milligrams per killogram (mg/kg)																

Abbreviations/Notes
TPHd = total petroleum hydrocarbons as diesel by EPA Method 8015
TPHg = total petroleum hydrocarbons as gasoline by EPA Method 8015
BTEX = benzene, toluene, ethylbenzene, xylenes by EPA Method 8020/8260
MTBE = methyl tertiary butyl ether by EPA Method 8020/8260
HVOCs = halogenated volatile organic compounds by EPA Method 8010
Semi-VOCs = semi-volatile organic compounds by EPA Method 8270
Oxygenates = tertiary-butyl alcohol (TBA), tertiary-amyl methyl ether (TAME), di-isopropyl ether (DIPE), ehtyl tertiary-butyl ehter (ETBE), 1,2-dichloroethane (1,2-DCA), and 1,2-dibromoethane (EDB) by EPA Method 8260
"-" = not analyzed
<x.xx = not detected at or above the stated laboratory reporting limit
ND = not detected; detection limits vary
Note: Samples that are crossed out were collected from soil that was subsequently over-excavated
1 Not detected with the exception of Bis(2-ethylhexyl)phthalate at 1.1 mg/kg
2 Not detected with the exception of Bis(2-ethylhexyl)phthalate at 2.3 mg/kg
3 Not detected with the exception of Benzo(k)fluoranthene at 0.23 mg/kg; Benzo(a)pyrene at 0.19 mg/kg; Bis(2-ethylhexyl)phthalate at 1.2 mg/kg; Chrysene at 0.21 mg/kg; Fluoranthene at 0.28 mg/kg; and Pyrene at 0.33 mg/kg

ATTACHMENT F

STANDARD FIELD PROCEDURES

STANDARD FIELD PROCEDURES FOR GEOPROBE® SAMPLING

This document describes Conestoga-Rovers & Associates' 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 Professional Geologist (PG) 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. Prior to drilling, the first 8 ft of the boring are cleared using an air or water knife and vacuum extraction. This minimizes the potential for impacting utilities.

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 photo ionization 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.

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.