



January 15, 1996

Juliet Shin
Alameda County Health Agency
Department of Environmental Health
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502-6577

**RE: Subsurface Investigation and
Case Closure Report**
Shell Service Station
WIC #204-5508-2808
9570 Golf Links Road
Oakland, California
WA Job #81-1055-02

Dear Ms. Shin:

This letter presents the results of Weiss Associates' (WA) subsurface investigation conducted at the Shell service station referenced above (Figure 1). As outlined in WA's September 18, 1995, workplan¹ and October 24, 1995, workplan addendum,² the investigation objective was to determine whether ground water has been impacted by the former waste oil tank. To achieve this objective, WA drilled one soil boring and collected soil samples for laboratory analysis.

In response to WA's workplan addendum, your letter dated October 31, 1995, states "if the TCLP analysis result is less than 5 mg/L and the STLC result is less than 560 mg/L, the concentrations of chromium in soil would not be considered a threat to groundwater."

WA's scope of work, the site background, results for this investigation and WA's rationale for case closure are presented below.

Scope Of Work

WA's scope of work for this investigation was to:

- Obtain the necessary drilling permits from the Alameda County Zone 7 Water Agency;

1 WA, Letter-workplan dated September 18, 1995, for the Shell service station at 9570 Golf Links Road, Oakland, California, 5 pages and 2 attachments.

2 WA, Letter-workplan addendum dated October 24, 1995, for the Shell service station at 9570 Golf Links Road, Oakland, California, 2 pages.

- Prepare a site-specific safety plan and locate underground and overhead utility lines;
- Drill one soil boring adjacent to the former tank complex, and collect ground water and soil samples at 5-ft intervals for hydrogeological description and possible hydrocarbon analysis;
- Analyze soil and ground water samples for total petroleum hydrocarbons as gasoline (TPH-G) and total petroleum hydrocarbons as diesel (TPH-D) by modified EPA Method 8015, benzene, toluene, ethylbenzene and xylenes (BTEX) by EPA Method 8020, petroleum oil and grease (POG) by APHA Standard Method 5520E, and the soluble threshold limit concentration (STLC) and toxicity characteristic leaching procedure (TCLP) for chromium;
- Backfill the boring with Portland Type I/II cement grout mixed with 3 to 5% bentonite using a tremie pipe from the total boring depth to the ground surface;
- Arrange for the disposal of drill cuttings; and
- Report the results.

Site Background

Setting

- Location:* The site is an operating Shell service station located at the north corner of Golf Links Road and Mountain Boulevard in Oakland, California (Figure 1).
- Local Land Use:* The area surrounding the site is both commercial and residential development.
- Site Lithology:* Gravel road base from ground surface to about 1 ft below ground surface (bgs), sandy clay from about 1 to 10 ft bgs, and gravelly clay from 10 to 11 ft bgs were encountered.
- Ground Water Depth and Flow Direction:* No ground water was encountered during excavation of the former waste oil tank pit. A 1/2-mile-radius well search conducted by the Alameda County Public Works Department indicates that depth to ground water is between 7

Environmental History

Tank Removal: On March 7, 1995, WA documented the removal of one 550-gallon, single-walled, steel waste oil tank. Analytical results indicate that soil samples collected from below the tank (7 feet bgs) contained 12,000 parts per million (ppm) POG, 3,900 ppm TPH-D, and 49 ppm (mg/kg) total chromium. The analytic results are summarized in Table 1. No ground water was encountered in the tankpit and the former tank was not replaced.

Overexcavation: On March 7, 1995, after the tank was removed, WA directed the overexcavation of about four feet of soil from the tank pit bottom. About one-half foot of soil was also removed from each sidewall. A total of about 15 cubic yards of soil was overexcavated.

Confirmatory soil samples were collected from the excavation floor (11 ft bgs) and from each sidewall (7 to 8 ft bgs). Only one sample contained POG; the 11-ft depth sample contained 62 ppm POG. No TPH-G, TPH-D, volatile organic compounds except toluene, semi-volatile organic compounds, polynuclear aromatic compounds, polychlorinated biphenyls, or creosote were detected in these samples. Between 12 and 56 ppm (mg/kg) total chromium were detected. Because chromium in soil exceeded ten times California's TCLP threshold concentration of 5 ppm, the Alameda County Department of Environmental Health requested additional investigation.

December 1995 Investigation

Permits Obtained: Alameda County Zone 7 Water Agency Drilling Permit No. 95834 (Attachment A).

Drilling Date: December 15, 1995

Drilling Contractor and Method: Gregg Drilling and Testing, Inc. of Martinez, California drilled the soil boring using a Mobile B-61 drill rig with 6-inch diameter hollow stem augers. WA's drilling and sampling procedures are presented as Attachment B.

Number of Borings: One (B-1; Figure 2).

Boring Location: Boring B-1 was drilled in native soil immediately downgradient of the former waste oil tank excavation.

Boring Depth: 47 ft bgs.

Sediments Encountered: Sediments in boring B-1 consisted of sandy clay and clayey sand with low to moderate estimated permeability from ground surface to about 28.5 ft bgs and siltstone from 28.5 to 47 ft bgs. The boring log is included as Attachment C.

- Depth to Ground Water:* No ground water was encountered in boring B-1. Samples from about 28.5 to 47 ft, the maximum depth explored, contained dense, dry siltstone.
- Soil Sampling Method:* Soil samples were collected from boring B-1 every 5-ft with a clean split-barrel drive sampler lined with stainless steel tubes.
- Soil Analytic Methods:* Soil samples were analyzed for TPH-G and TPH-D by modified EPA Method 8015, BTEX by EPA Method 8020, POG by APHA Standard Method 5520E&F, and STLC and TCLP for chromium. The analytic results are tabulated in Tables 2 and 3, and the analytic reports and chain-of-custody forms are included as Attachment D.
- Analytic Laboratory:* Sequoia Analytical, Inc., Redwood City, California.
- Soil Analytic Results:* No TPH-G or BTEX were detected in any of the samples. Only 2.8 ppm TPH-D and 56 ppm POG were detected in the 30.5-ft and the 40.5-ft depth samples, respectively. Up to 1.4 mg/L and 0.046 mg/L chromium were detected from the STLC and TCLP analyses, respectively. These results are well below state and federal threshold concentrations.
- Soil Disposal:* Soil samples were collected from the soil cuttings for disposal characterization. Upon approval about one cubic yard of soil was transported by Manley and Sons Trucking Inc. of Sacramento, California to Forward Inc. in Stockton, California for disposal.

Case Closure Rationale

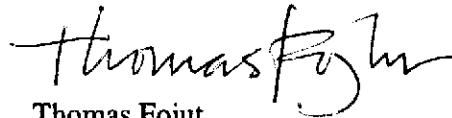
Based upon the site history and the results of this investigation, WA requests regulatory case closure because:

- No TPH-G or BTEX were detected in soil samples collected from boring B-1;
- Only 2.8 ppm TPH-D and 56 ppm POG, concentrations slightly above laboratory method detection limits, were detected in two soil samples;
- The maximum concentrations of chromium in soil detected by STLC and TCLP analyses were only 1.4 and 0.046 mg/L, respectively. These concentrations are well below the 560 mg/L STLC and 5 mg/L TCLP limits as stated in California Code of Regulations Title 22, Division 4.5, Chapter 11, Section 66261.24 (a) (2) (A).

- Although petroleum hydrocarbons were detected in soil during the tank removal, the overexcavation removed nearly all the petroleum hydrocarbon-bearing soil.
- Ground water is at least 47 ft bgs and at least 36 ft below the bottom of the former tank pit. Any residual hydrocarbon concentrations would have to migrate at least 36 ft through sediments of low to moderate estimated permeability and siltstone of low estimated permeability to potentially impact ground water.
- Future waste oil releases cannot occur because the waste oil tank was not replaced after removal.

We trust that this submittal meets your needs. Please call Tom Fojut at (510) 450-6120 if you have any questions or comments.

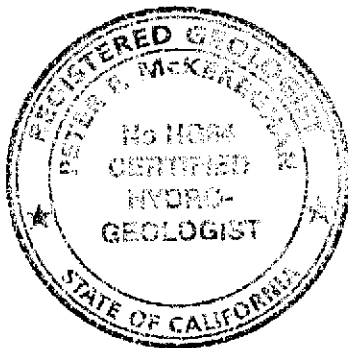
Sincerely,
Weiss Associates



Thomas Fojut
Geologist



Peter F. McKereghan, C.H.G.
Project Hydrogeologist



Attachments: Figures
Tables
A - Drilling Permit
B - Drilling and Sampling Procedures
C - Boring Log
D - Analytic Report and Chain-of-Custody Form

cc: R. Jeff Granberry, Shell Oil Products Company, P.O. Box 4023, Concord, California 94524
Kevin Graves, Regional Water Quality Control Board - San Francisco Bay Region, 2101 Webster Street,
Suite 500, Oakland, California 94612

TF/PFM:sjh
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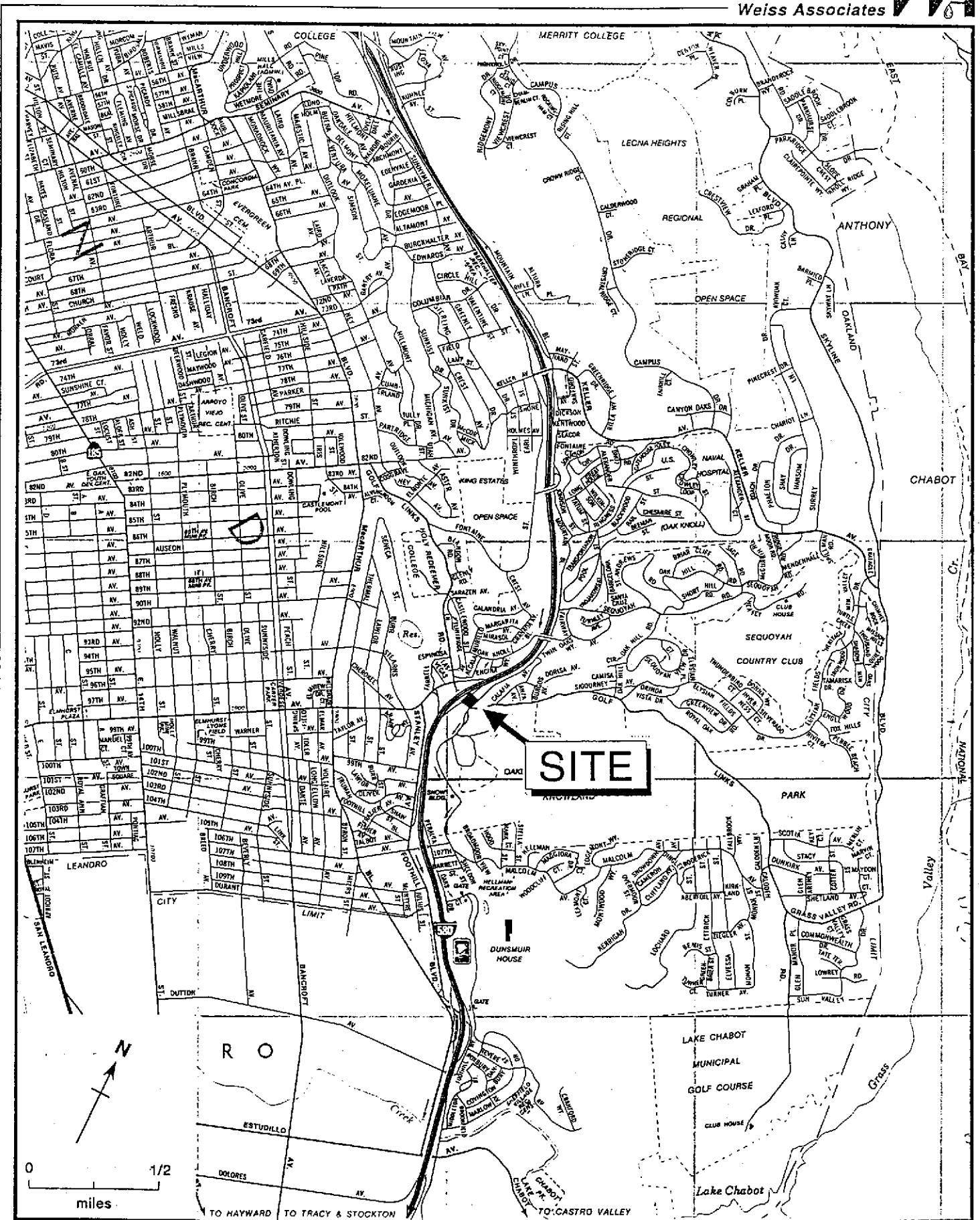


Figure 1. Site Location Map - Shell Service Station, WIC# 204-5508-2808, 9570 Golf Links Road, Oakland, California

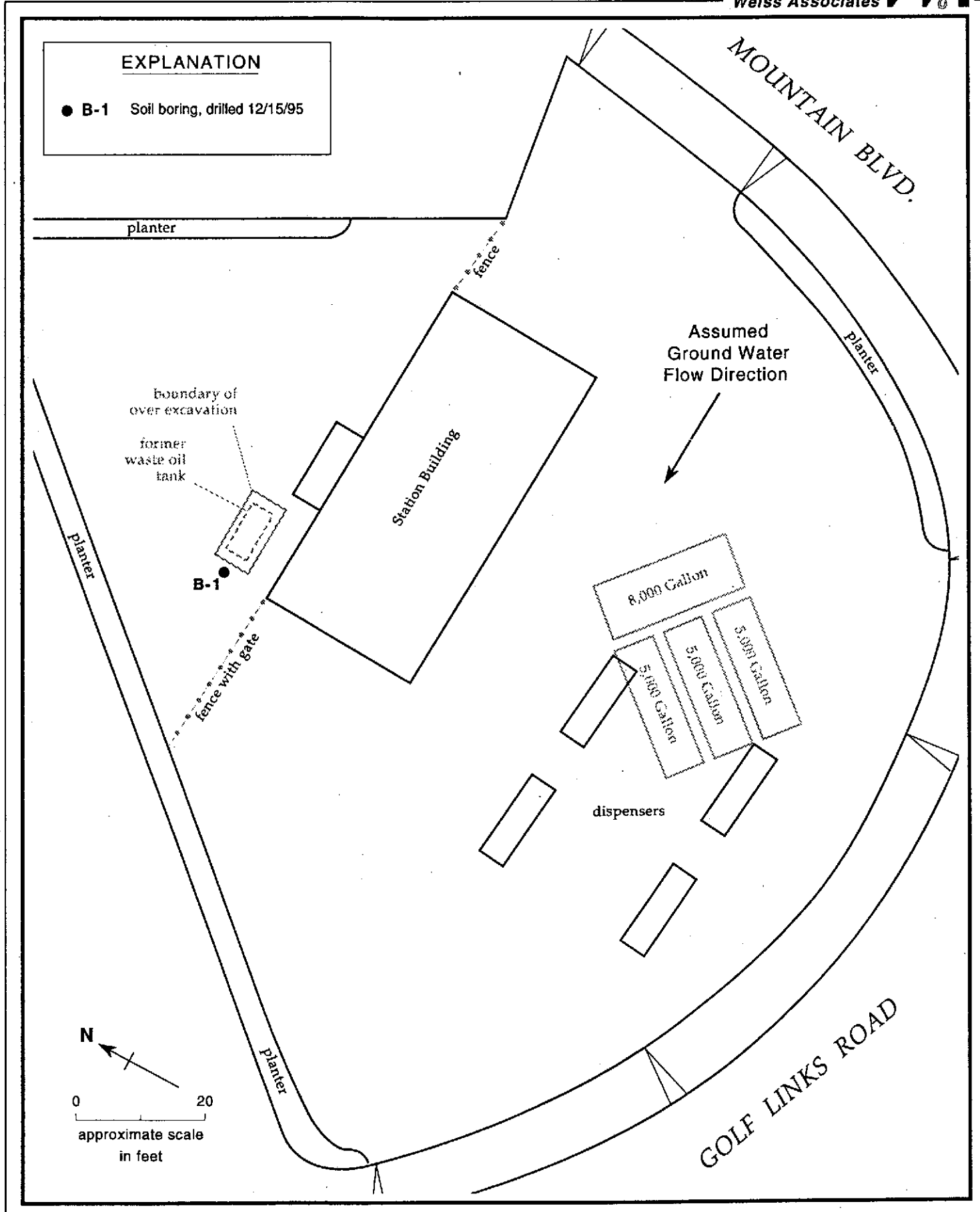


Figure 2. Soil Boring Location - Shell Service Station, WIC#204-5508-2808, 9570 Golf Links Road, Oakland, California

Table 1. Analytic Results for Soil - Shell Service Station , WIC #204-5508-2808, 9570 Golf Links Road, Oakland, California

Sample ID	Sample Depth (ft)	← parts per million (mg/kg) →																
		POG	TPH-D	TPH-G	B	T	E	X	Cd	Cr	Pb	Ni	Zn	VOCs	SVOCs	PNAs	PCBs	CREOSOTE
WO1	7.0	12,000	3900	190	<0.25	0.43	1.0	2.2	<0.5	49	18	39	55	a	ND	ND	0.60	<1,700
WO2	11.0	62	<1.0	<1.0	<0.005	0.072	<0.005	<0.005	<0.5	12	11	7.8	210	ND	ND	ND	ND	<1,700
NSW	7.5	<50	<1.0	<1.0	<0.005	0.10	<0.005	<0.005	<0.5	51	7.0	37	59	a	ND	ND	ND	<1,700
SSW	7.0	<50	<1.0	<1.0	<0.005	0.19	<0.005	<0.005	<0.5	44	6.7	39	79	ND	ND	ND	ND	<1,700
ESW	7.0	<50	<1.0	<1.0	<0.005	0.18	<0.005	<0.005	<0.5	46	<5.0	48	69	a	ND	ND	ND	<1,700
WSW	7.8	<50	<1.0	<1.0	<0.005	0.083	<0.005	<0.005	<0.5	56	6.5	40	62	ND	ND	ND	ND	<1,700

Abbreviations:

POG = Total oil and grease by APHA Standard Method 5520E&F
 TPH-D = Total petroleum hydrocarbons as diesel by modified EPA Method 8015
 TPH-G = Total petroleum hydrocarbons as gasoline by modified EPA Method 8015
 B = Benzene By EPA Method 8020
 T = Toluene by EPA Method 8020
 E = Ethylbenzene by EPA Method 8020
 X = Xylenes by EPA Method 8020
 VOCs = Volatile organic compounds by EPA Method 8240
 SVOCs = Semivolatile organic compounds by EPA Method 8270
 PNAs = Polynuclear organic compounds by EPA Method 8100
 PCBs = Polychlorinated biphenyls by EPA Method 8080
 CREOSOTE = Creosote by EPA Method 8270
 Cd, Cr, Pb, Ni, Zn = Total cadmium, chromium, lead, nickel and zinc by EPA Method 6010
 <n = Not detected at laboratory method detection limit of n mg/kg
 ND = All compounds were below laboratory detection limits.

Notes:

Samples collected on 03/08/95 by Weiss Associates and analyzed by Sequoia Analytical, Redwood City, California
 a = No VOCs detected except for BTEX

Table 2. Petroleum Hydrocarbons in Soil - Shell Service Station WIC# 204-5508-2808, 9570 Golf Links Road, Oakland, California

Sample ID	Sample Depth (ft)	Date Sampled	TPH-G	TPH-D	POG	parts per million(mg/kg)			
						B	T	E	X
B1-5.5	5.5	12/15/95	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005
B1-15.5	15.5	12/15/95	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005
B1-20.5	20.5	12/15/95	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005
B1-30.5	30.5	12/15/95	<1.0	2.8	<50	<0.005	<0.005	<0.005	<0.005
B1-35.5	35.5	12/15/95	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005
B1-40.5	40.5	12/15/95	<1.0	<1.0	56	<0.005	<0.005	<0.005	<0.005
B1-45.5	45.5	12/15/95	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005

Abbreviations:

- TPH-G = Total petroleum hydrocarbons as gasoline by Modified EPA Method 8015
- TPH-D = Total petroleum hydrocarbons as diesel by Modified EPA Method 8015
- POG = Petroleum Oil and Grease by APHA Standard Method 5520E&F
- B = Benzene by EPA Method 8020
- T = Toluene by EPA Method 8020
- E = Ethylbenzene by EPA Method 8020
- X = Xylenes by EPA Method 8020
- NE = Not established
- <n = Not detected at laboratory method detection limit of n ppm

Analytical Laboratory:

Sequoia Analytical, Inc., in Redwood City, California

Table 3. Chromium STLC and TCLP Concentrations in Soil - Shell Service Station WIC# 204-5508-2808, 9570 Golf Links Road, Oakland, California

Sample ID	Sample Depth (ft)	Date Sampled	Chromium STLC	Chromium TCLP
			← parts per million (mg/L) →	
B1-5.5	5.5	12/15/95	<0.010	<0.010
B1-15.5	15.5	12/15/95	0.032	<0.010
B1-20.5	20.5	12/15/95	<0.010	<0.010
B1-30.5	30.5	12/15/95	1.4	0.046
B1-35.5	35.5	12/15/95	<0.010	<0.010
B1-40.5	40.5	12/15/95	1.0	0.038
B1-45.5	45.5	12/15/95	0.31	0.020
Title 22 Threshold Concentration			560	5

Abbreviations:

STLC Chromium = Soluble threshold limit concentration for chromium

TCLP Chromium = Toxicity characteristic leaching procedure for chromium

<n = Not detected at laboratory method detection limit of n ppm

Title 22 Threshold Concentration = Minimum concentration that substance would classify as a RCRA hazardous (STLC) or California hazardous (TCLP) waste.

Analytical Laboratory:

Sequoia Analytical, Inc., in Redwood City, California

ATTACHMENT A

DRILLING PERMIT



ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588

VOICE (510) 484-2600
FAX (510) 482-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT Shell Service Station
9750 Golf Links Road
Oakland, CA 94605

PERMIT NUMBER 95834
LOCATION NUMBER _____

CLIENT
Name Shell Oil Products Company
Address P.O. Box 4023 Voice _____
City Concord, CA Zip 94524

PERMIT CONDITIONS
Circled Permit Requirements Apply

APPLICANT
Name Weiss Associates
Fatih Davran Fax (510) 547-5043
Address 5500 Shellmound St. Voice (510) 450-6161
City Emeryville, CA Zip 94608

A. GENERAL

1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

TYPE OF PROJECT

Well Construction	Geotechnical Investigation
Cathodic Protection _____	General _____
Water Supply _____	Contamination <u>X</u>
Monitoring _____	Well Destruction _____

B. WATER WELLS, INCLUDING PIEZOMETERS

1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

PROPOSED WATER SUPPLY WELL USE

Domestic _____	Industrial _____	Other _____
Municipal _____	Irrigation _____	

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

DRILLING METHOD:

Aud Rotary _____	Air Rotary _____	Auger <u>HOLLOW STEM</u>
Cable _____	Other _____	

DRILLER'S LICENSE NO. C57-485165

WELL PROJECTS

Drill Hole Diameter <u>4</u> in.	Maximum
Casing Diameter _____ in.	Depth <u>50</u> ft.
Surface Seal Depth _____ ft.	Number <u>12</u>

GEOTECHNICAL PROJECTS

Number of Borings <u>1</u>	Maximum
Hole Diameter <u>6</u> in.	Depth <u>750</u> ft.

ESTIMATED STARTING DATE Dec 15, 1995
ESTIMATED COMPLETION DATE Dec. 15, 1995

Approved Wyman Hong Date 13 Dec 95
Wyman Hong

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Fatih Davran Date 12/4/95

ATTACHMENT B
STANDARD FIELD PROCEDURES

STANDARD FIELD PROCEDURES

WA has developed standard procedures for drilling and sampling soil borings and installing, developing and sampling ground water monitoring wells. These procedures comply with Federal, State and local regulatory guidelines. Specific procedures are summarized below.

FIELD WORK PREPARATIONS

Site Safety Plan

WA prepares a site-specific safety plan based upon the site history, previous work and analytic results for soil and water samples previously collected at the site for each phase of work at a particular site. The safety plan will identify potential site hazards and specify procedures to protect site workers and the public.

Utility Lines

Prior to drilling, WA typically visits the site to locate overhead and underground utility lines. WA notifies Underground Service Alert of all scheduled drilling activities and often contracts a private line locator as well. All borings are hand-dug and probed to at least 5 ft depth before drilling.

SOIL BORING AND SAMPLING

Objectives/Supervision

Soil sampling objectives include characterizing subsurface lithology, assessing whether the soils exhibit obvious hydrocarbon or other compound vapor or staining, and collecting samples for analysis at a State-certified laboratory. All borings are logged using the Unified Soil Classification System by a trained geologist working under the supervision of a California Registered Geologist (RG) or a Certified Engineering Geologist (CEG).

Soil Boring and Sampling

Deep soil borings or borings for well installation are typically drilled using hollow-stem augers. Split-barrel samplers lined with steam-cleaned brass or stainless steel tubes are driven through the hollow auger stem into undisturbed sediments at the bottom of the borehole using a 140 pound hammer dropped 30 inches. Soil samples can also be collected without using hollow-stem augers by progressively driving split-barrel soil samplers to depths of up to 30 ft.

Soil samples are collected at least every five ft to characterize the subsurface sediments and for possible chemical analysis. Near the water table and at lithologic changes, the sampling interval may be less than five ft. Ground water sample may be collected from a soil boring by inserting a temporary slotted casing in the boring, purging the boring of as much water as possible with a steam-cleaned bailer and decanting ground water from the bailer into the appropriate sample containers.

Drilling and sampling equipment is steam-cleaned 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 Analysis

After noting the lithology at each end of the sampling tubes, the tube chosen for analysis is immediately trimmed of excess soil and capped with teflon tape and plastic end caps. The sample is labelled, stored at or below 4°C, and transported under chain-of-custody to a State-certified analytic laboratory.

Screening

One of the remaining tubes is partially emptied leaving about one-third of the soil in the tube. The tube is capped with plastic end caps and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable photoionization detector (PID) measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. PID measurements are used along with the stratigraphy and ground water depth to select soil samples for analysis.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe. If wells are completed in the borings, the well installation, development and sampling procedures summarized below are followed.

MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

Well Construction and Surveying

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

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about one to two ft above the well screen. A two ft thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of cement with 3-5% bentonite.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security.

The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark by a California-registered land surveyor.

Well Development

After 24 hours, the wells are developed using a combination of ground water surging and extraction. Surging agitates the ground water and dislodges fine sediments from the sand pack. After about ten minutes of surging, ground water is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of ground water are extracted and the sediment volume in the ground water is negligible. All equipment is steam-cleaned prior to use and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 24 hours after they are developed.

Floating Hydrocarbon Thickness and Water Level Measurements

Prior to sampling, each well is checked for the presence of floating hydrocarbons. If floating hydrocarbons are present, WA will measure the floating hydrocarbon thickness in the well with an oil/water interface probe. The water level in each well is also measured with respect to the top of the PVC casing to the nearest 0.01 ft using an electric sounder. The sounder is thoroughly rinsed with deionized water between measurements to prevent cross-contamination.

Ground Water Sampling

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

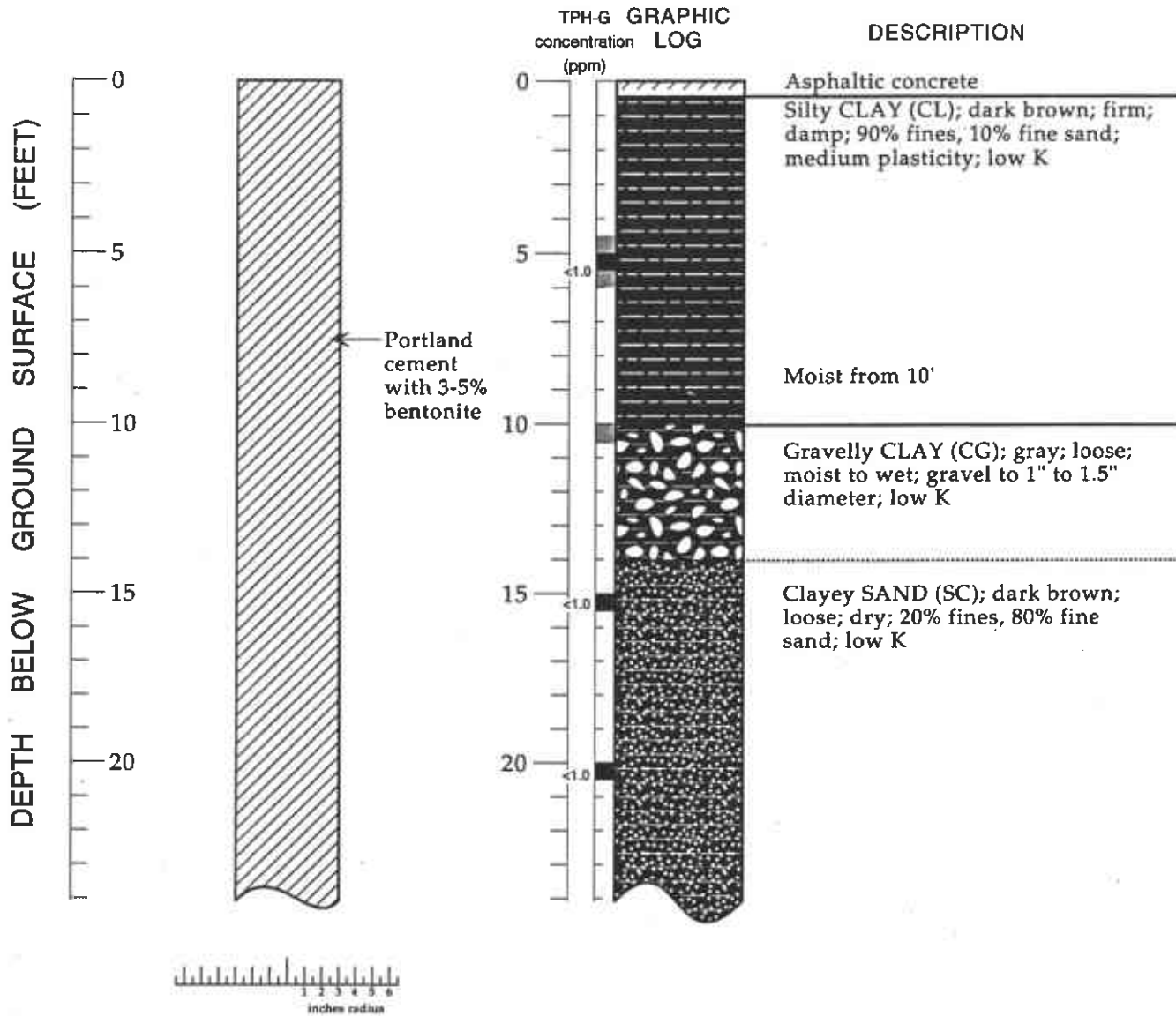
SOIL DISPOSAL

Drill cuttings are temporarily stockpiled on and covered with plastic sheeting or in steel 55-gallon steel at the site. One soil sample is collected for approximately every 12.5 cubic yards of soil. Up to four soil stockpile samples may be composited into one sample for analysis. A certified analytic laboratory generally analyzes the sample(s) for compounds that are suspected to be in the subsurface. Pending the analytic results and acceptance at an appropriate disposal facility, the soil will be transported to the disposal facility by a licensed waste hauler.

ATTACHMENT C

BORING LOG

BORING B-1



EXPLANATION

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

Logged By: Elizabeth Brogna
 Supervisor: Peter F. McKereghan; CHG 64
 Drilling Company: Gregg Drilling, Pacheco, CA
 License Number: #C57-485165
 Driller: Erik Christian
 Drilling Method: Hollow-stem auger
 Date Drilled: December 15, 1995
 Type of Sampler: Split barrel (2" ID)
 TPH-G: Total petroleum hydrocarbon as gasoline in soil by modified EPA Method 8015

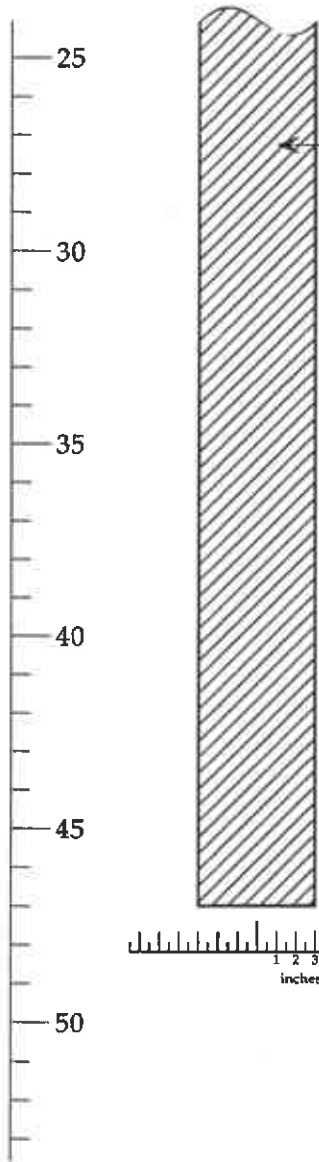
Boring Log - Soil Boring B-1 - Shell Service Station, WIC#204-5508-2808, 9570 Golf Links Road, Oakland, California

BORING B-1 (cont.)

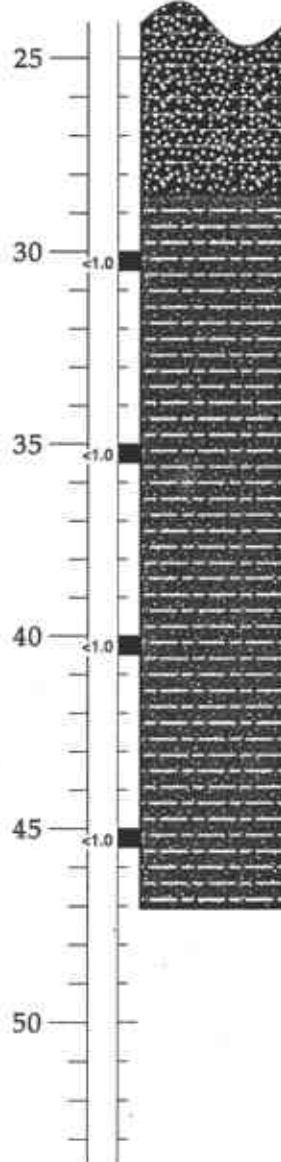
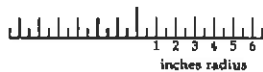
TPH-G GRAPHIC
concentration LOG
(ppm)

DESCRIPTION

DEPTH BELOW SURFACE (FEET)



Portland cement with 3-5% bentonite



SILTSTONE (ML); dark brown; dense; dry; 80% fines, 20% fine sand; non-plastic; low K

Extremely dry

ATTACHMENT D

ANALYTIC REPORT AND CHAIN-OF-CUSTODY FORM



Sequoia Analytical

680 Chesapeake Drive
404 N. Wiget Lane
819 Striker Avenue, Suite 8

Redwood City, CA 94063
Walnut Creek, CA 94598
Sacramento, CA 95834

(415) 364-9600
(510) 988-9600
(916) 921-9600

FAX (415) 364-9233
FAX (510) 988-9673
FAX (916) 921-0100

Weiss Associates
5500 Shellmound
Emeryville, CA 94608
Attention: Faith Daverin

Project: Shell 9570 Golf Links, Oaklan

Enclosed are the results from samples received at Sequoia Analytical on December 18, 1995.
The requested analyses are listed below:

<u>SAMPLE #</u>	<u>SAMPLE DESCRIPTION</u>	<u>DATE COLLECTED</u>	<u>TEST METHOD</u>
9512C78 -01	SOLID, B1-5.5	12/15/95	TRPH (SM 5520 E&F Mod.)
9512C78 -01	SOLID, B1-5.5	12/15/95	Chromium: STLC Extraction
9512C78 -01	SOLID, B1-5.5	12/15/95	Chromium: TCLP Extraction
9512C78 -01	SOLID, B1-5.5	12/15/95	TPHD_S Extractable TPH
9512C78 -01	SOLID, B1-5.5	12/15/95	TPHGBS Purgeable TPH/BTEX
9512C78 -02	SOLID, B1-15.5	12/15/95	TRPH (SM 5520 E&F Mod.)
9512C78 -02	SOLID, B1-15.5	12/15/95	Chromium: STLC Extraction
9512C78 -02	SOLID, B1-15.5	12/15/95	Chromium: TCLP Extraction
9512C78 -02	SOLID, B1-15.5	12/15/95	TPHD_S Extractable TPH
9512C78 -02	SOLID, B1-15.5	12/15/95	TPHGBS Purgeable TPH/BTEX
9512C78 -03	SOLID, B1-20.5	12/15/95	TRPH (SM 5520 E&F Mod.)
9512C78 -03	SOLID, B1-20.5	12/15/95	Chromium: STLC Extraction
9512C78 -03	SOLID, B1-20.5	12/15/95	Chromium: TCLP Extraction
9512C78 -03	SOLID, B1-20.5	12/15/95	TPHD_S Extractable TPH
9512C78 -03	SOLID, B1-20.5	12/15/95	TPHGBS Purgeable TPH/BTEX
9512C78 -04	SOLID, B1-30.5	12/15/95	TRPH (SM 5520 E&F Mod.)
9512C78 -04	SOLID, B1-30.5	12/15/95	Chromium: STLC Extraction
9512C78 -04	SOLID, B1-30.5	12/15/95	Chromium: TCLP Extraction
9512C78 -04	SOLID, B1-30.5	12/15/95	TPHD_S Extractable TPH
9512C78 -04	SOLID, B1-30.5	12/15/95	TPHGBS Purgeable TPH/BTEX
9512C78 -05	SOLID, B1-35.5	12/15/95	TRPH (SM 5520 E&F Mod.)

SEQUOIA ANALYTICAL





Sequoia Analytical

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<u>SAMPLE #</u>	<u>SAMPLE DESCRIPTION</u>	<u>DATE COLLECTED</u>	<u>TEST METHOD</u>
9512C78 -05	SOLID, B1-35.5	12/15/95	Chromium: STLC Extraction
9512C78 -05	SOLID, B1-35.5	12/15/95	Chromium: TCLP Extraction
9512C78 -05	SOLID, B1-35.5	12/15/95	TPHD_S Extractable TPH
9512C78 -05	SOLID, B1-35.5	12/15/95	TPHGBS Purgeable TPH/BTEX
9512C78 -06	SOLID, B1-40.5	12/15/95	TRPH (SM 5520 E&F Mod.)
9512C78 -06	SOLID, B1-40.5	12/15/95	Chromium: STLC Extraction
9512C78 -06	SOLID, B1-40.5	12/15/95	Chromium: TCLP Extraction
9512C78 -06	SOLID, B1-40.5	12/15/95	TPHD_S Extractable TPH
9512C78 -06	SOLID, B1-40.5	12/15/95	TPHGBS Purgeable TPH/BTEX
9512C78 -07	SOLID, B1-45.5	12/15/95	TRPH (SM 5520 E&F Mod.)
9512C78 -07	SOLID, B1-45.5	12/15/95	Chromium: STLC Extraction
9512C78 -07	SOLID, B1-45.5	12/15/95	Chromium: TCLP Extraction
9512C78 -07	SOLID, B1-45.5	12/15/95	TPHD_S Extractable TPH
9512C78 -07	SOLID, B1-45.5	12/15/95	TPHGBS Purgeable TPH/BTEX

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Mike Gregory
Project Manager





Weiss Associates
5500 Shellmound
Emeryville, CA 94608

Client Proj. ID: Shell 9570 Golf Links, Oaklan

Sampled: 12/15/95
Received: 12/18/95
Analyzed: see below

Lab Proj. ID: 9512C78

Attention: Faith Daverin

Reported: 12/26/95

LABORATORY ANALYSIS

Analyte	Units	Date Analyzed	Detection Limit	Sample Results
Lab No: 9512C78-01 Sample Desc: SOLID,B1-5.5				
Chromium: STLC Extraction	mg/L	12/23/95	0.010	N.D.
Chromium: TCLP Extraction	mg/L	12/22/95	0.010	N.D.
TRPH (SM 5520 E&F Mod.)	mg/Kg	12/26/95	50	N.D.
Lab No: 9512C78-02 Sample Desc: SOLID,B1-15.5				
Chromium: STLC Extraction	mg/L	12/23/95	0.010	0.032
Chromium: TCLP Extraction	mg/L	12/22/95	0.010	N.D.
TRPH (SM 5520 E&F Mod.)	mg/Kg	12/26/95	50	N.D.
Lab No: 9512C78-03 Sample Desc: SOLID,B1-20.5				
Chromium: STLC Extraction	mg/L	12/23/95	0.010	N.D.
Chromium: TCLP Extraction	mg/L	12/22/95	0.010	N.D.
TRPH (SM 5520 E&F Mod.)	mg/Kg	12/26/95	50	N.D.
Lab No: 9512C78-04 Sample Desc: SOLID,B1-30.5				
Chromium: STLC Extraction	mg/L	12/23/95	0.010	1.4
Chromium: TCLP Extraction	mg/L	12/22/95	0.010	0.046
TRPH (SM 5520 E&F Mod.)	mg/Kg	12/26/95	50	N.D.
Lab No: 9512C78-05 Sample Desc: SOLID,B1-35.5				
Chromium: STLC Extraction	mg/L	12/23/95	0.010	N.D.
Chromium: TCLP Extraction	mg/L	12/22/95	0.010	N.D.
TRPH (SM 5520 E&F Mod.)	mg/Kg	12/26/95	50	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory
Project Manager



Weiss Associates 5500 Shellmound Emeryville, CA 94608	Client Proj. ID: Shell 9570 Golf Links, Oakland Lab Proj. ID: 9512C78	Sampled: 12/15/95 Received: 12/18/95 Analyzed: see below Reported: 12/26/95
Attention: Faith Daverin		

LABORATORY ANALYSIS

Analyte	Units	Date Analyzed	Detection Limit	Sample Results
Lab No: 9512C78-06 Sample Desc: SOLID,B1-40.5				
Chromium: STLC Extraction	mg/L	12/23/95	0.010	1.0
Chromium: TCLP Extraction	mg/L	12/22/95	0.010	0.038
TRPH (SM 5520 E&F Mod.)	mg/Kg	12/26/95	50	56
Lab No: 9512C78-07 Sample Desc: SOLID,B1-45.5				
Chromium: STLC Extraction	mg/L	12/23/95	0.010	0.31
Chromium: TCLP Extraction	mg/L	12/22/95	0.010	0.020
TRPH (SM 5520 E&F Mod.)	mg/Kg	12/26/95	50	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory
Project Manager





Weiss Associates 5500 Shellmound Emeryville, CA 94608 Attention: Faith Daverin	Client Proj. ID: Shell 9570 Golf Links, Oakland Sample Descript: B1-5.5 Matrix: SOLID Analysis Method: EPA 8015 Mod Lab Number: 9512C78-01	Sampled: 12/15/95 Received: 12/18/95 Extracted: 12/20/95 Analyzed: 12/21/95 Reported: 12/26/95
---	--	--

QC Batch Number: GC1220950HBPEXA
Instrument ID: GCHP4A

Total Extractable Petroleum Hydrocarbons (TEPH)

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TEPH as Diesel Chromatogram Pattern:	1.0	N.D.
Surrogates	Control Limits %	% Recovery
n-Pentacosane (C25)	50 150	81

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory
Project Manager



Weiss Associates 5500 Shellmound Emeryville, CA 94608 Attention: Faith Daverin	Client Proj. ID: Shell 9570 Golf Links, Oakland Sample Descript: B1-5.5 Matrix: SOLID Analysis Method: 8015Mod/8020 Lab Number: 9512C78-01	Sampled: 12/15/95 Received: 12/18/95 Extracted: 12/20/95 Analyzed: 12/20/95 Reported: 12/26/95
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QC Batch Number: GC122095BTEXEXA
Instrument ID: GCHP18

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	1.0	N.D.
Benzene	0.0050	N.D.
Toluene	0.0050	N.D.
Ethyl Benzene	0.0050	N.D.
Xylenes (Total)	0.0050	N.D.
Chromatogram Pattern:		
Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	83

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory
Project Manager



Weiss Associates 5500 Shellmound Emeryville, CA 94608	Client Proj. ID: Shell 9570 Golf Links, Oakland Sample Descript: B1-15.5 Matrix: SOLID Analysis Method: EPA 8015 Mod Lab Number: 9512C78-02	Sampled: 12/15/95 Received: 12/18/95 Extracted: 12/20/95 Analyzed: 12/21/95 Reported: 12/26/95
Attention: Faith Daverin		

QC Batch Number: GC1220950HBPEXA
Instrument ID: GCHP4A

Total Extractable Petroleum Hydrocarbons (TEPH)

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TEPH as Diesel Chromatogram Pattern:	1.0	N.D.
Surrogates	Control Limits %	% Recovery
n-Pentacosane (C25)	50 150	83

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory
Project Manager



Weiss Associates 5500 Shellmound Emeryville, CA 94608	Client Proj. ID: Shell 9570 Golf Links, Oakland Sample Descript: B1-15.5 Matrix: SOLID Analysis Method: 8015Mod/8020 Lab Number: 9512C78-02	Sampled: 12/15/95 Received: 12/18/95 Extracted: 12/20/95 Analyzed: 12/20/95 Reported: 12/26/95
Attention: Faith Daverin		

QC Batch Number: GC122095BTEXEXA
Instrument ID: GCHP18

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	1.0	N.D.
Benzene	0.0050	N.D.
Toluene	0.0050	N.D.
Ethyl Benzene	0.0050	N.D.
Xylenes (Total)	0.0050	N.D.
Chromatogram Pattern:		
Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	85

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory
Project Manager



Weiss Associates
5500 Shellmound
Emeryville, CA 94608

Client Proj. ID: Shell 9570 Golf Links, Oaklan
Sample Descript: B1-20.5
Matrix: SOLID
Analysis Method: EPA 8015 Mod
Lab Number: 9512C78-03

Sampled: 12/15/95
Received: 12/18/95
Extracted: 12/20/95
Analyzed: 12/21/95
Reported: 12/26/95

QC Batch Number: GC1220950HBPEXA
Instrument ID: GCHP4A

Total Extractable Petroleum Hydrocarbons (TEPH)

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TEPH as Diesel Chromatogram Pattern:	1.0	N.D.
Surrogates	Control Limits %	% Recovery
n-Pentacosane (C25)	50 150	80

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory
Project Manager



Weiss Associates 5500 Shellmound Emeryville, CA 94608	Client Proj. ID: Shell 9570 Golf Links, Oakland Sample Descript: B1-20.5 Matrix: SOLID Analysis Method: 8015Mod/8020 Lab Number: 9512C78-03	Sampled: 12/15/95 Received: 12/18/95 Extracted: 12/20/95 Analyzed: 12/20/95 Reported: 12/26/95
---	---	--

QC Batch Number: GC122095BTEXEXA
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	1.0	N.D.
Benzene	0.0050	N.D.
Toluene	0.0050	N.D.
Ethyl Benzene	0.0050	N.D.
Xylenes (Total)	0.0050	N.D.
Chromatogram Pattern:		
Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	108

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory
Project Manager



Weiss Associates 5500 Shellmound Emeryville, CA 94608 Attention: Faith Daverin	Client Proj. ID: Shell 9570 Golf Links, Oakland Sample Descript: B1-30.5 Matrix: SOLID Analysis Method: EPA 8015 Mod Lab Number: 9512C78-04	Sampled: 12/15/95 Received: 12/18/95 Extracted: 12/20/95 Analyzed: 12/21/95 Reported: 12/26/95
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QC Batch Number: GC1220950HBPEXA
Instrument ID: GCHP4A

Total Extractable Petroleum Hydrocarbons (TEPH)

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TEPH as Diesel Chromatogram Pattern:	1.0	2.8 C12-C24
Surrogates	Control Limits %	% Recovery
n-Pentacosane (C25)	50 150	88

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory
Project Manager





Weiss Associates 5500 Shellmound Emeryville, CA 94608	Client Proj. ID: Shell 9570 Golf Links, Oaklan Sample Descript: B1-30.5 Matrix: SOLID Analysis Method: 8015Mod/8020 Lab Number: 9512C78-04	Sampled: 12/15/95 Received: 12/18/95 Extracted: 12/20/95 Analyzed: 12/20/95 Reported: 12/26/95
Attention: Faith Daverin		

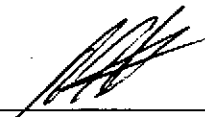
QC Batch Number: GC122095BTEXEXA
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	1.0	N.D.
Benzene	0.0050	N.D.
Toluene	0.0050	N.D.
Ethyl Benzene	0.0050	N.D.
Xylenes (Total)	0.0050	N.D.
Chromatogram Pattern:		
Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	99

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210



Mike Gregory
Project Manager



Weiss Associates 5500 Shellmound Emeryville, CA 94608 Attention: Faith Daverin	Client Proj. ID: Shell 9570 Golf Links, Oakland Sample Descript: B1-35.5 Matrix: SOLID Analysis Method: EPA 8015 Mod Lab Number: 9512C78-05	Sampled: 12/15/95 Received: 12/18/95 Extracted: 12/20/95 Analyzed: 12/21/95 Reported: 12/26/95
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QC Batch Number: GC1220950HBPEXA
Instrument ID: GCHP4A

Total Extractable Petroleum Hydrocarbons (TEPH)

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TEPH as Diesel Chromatogram Pattern:	1.0	N.D.
Surrogates	Control Limits %	% Recovery
n-Pentacosane (C25)	50 150	80

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory
Project Manager



Weiss Associates	Client Proj. ID: Shell 9570 Golf Links, Oakland	Sampled: 12/15/95
5500 Shellmound	Sample Descript: B1-35.5	Received: 12/18/95
Emeryville, CA 94608	Matrix: SOLID	Extracted: 12/20/95
Attention: Faith Daverin	Analysis Method: 8015Mod/8020	Analyzed: 12/20/95
	Lab Number: 9512C78-05	Reported: 12/26/95

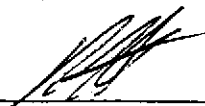
QC Batch Number: GC122095BTEXEXA
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	1.0	N.D.
Benzene	0.0050	N.D.
Toluene	0.0050	N.D.
Ethyl Benzene	0.0050	N.D.
Xylenes (Total)	0.0050	N.D.
Chromatogram Pattern:		
Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	99

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210



Mike Gregory
Project Manager



Weiss Associates 5500 Shellmound Emeryville, CA 94608 Attention: Faith Daverin	Client Proj. ID: Shell 9570 Golf Links, Oakland Sample Descript: B1-40.5 Matrix: SOLID Analysis Method: EPA 8015 Mod Lab Number: 9512C78-06	Sampled: 12/15/95 Received: 12/18/95 Extracted: 12/20/95 Analyzed: 12/21/95 Reported: 12/26/95
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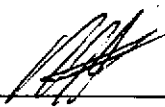
QC Batch Number: GC1220950HBPEXA
Instrument ID: GCHP4A

Total Extractable Petroleum Hydrocarbons (TEPH)

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TEPH as Diesel Chromatogram Pattern:	1.0	N.D.
Surrogates n-Pentacosane (C25)	Control Limits % 50 150	% Recovery 81

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210



Mike Gregory
Project Manager



Weiss Associates 5500 Shellmound Emeryville, CA 94608 Attention: Faith Daverin	Client Proj. ID: Shell 9570 Golf Links, Oaklan Sample Descript: B1-40.5 Matrix: SOLID Analysis Method: 8015Mod/8020 Lab Number: 9512C78-06	Sampled: 12/15/95 Received: 12/18/95 Extracted: 12/20/95 Analyzed: 12/20/95 Reported: 12/26/95
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QC Batch Number: GC122095BTEXEXA
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	1.0	N.D.
Benzene	0.0050	N.D.
Toluene	0.0050	N.D.
Ethyl Benzene	0.0050	N.D.
Xylenes (Total)	0.0050	N.D.
Chromatogram Pattern:		
Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	106

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory
Project Manager





Weiss Associates 5500 Shellmound Emeryville, CA 94608 Attention: Faith Daverin	Client Proj. ID: Shell 9570 Golf Links, Oaklan Sample Descript: B1-45.5 Matrix: SOLID Analysis Method: EPA 8015 Mod Lab Number: 9512C78-07	Sampled: 12/15/95 Received: 12/18/95 Extracted: 12/20/95 Analyzed: 12/21/95 Reported: 12/26/95
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QC Batch Number: GC1220950HBPEXA
Instrument ID: GCHP4A

Total Extractable Petroleum Hydrocarbons (TEPH)

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TEPH as Diesel Chromatogram Pattern:	1.0	N.D.
Surrogates	Control Limits %	% Recovery
n-Pentacosane (C25)	50 150	80

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210



Mike Gregory
Project Manager





Weiss Associates	Client Proj. ID: Shell 9570 Golf Links, Oakland	Sampled: 12/15/95
5500 Shellmound	Sample Descript: B1-45.5	Received: 12/18/95
Emeryville, CA 94608	Matrix: SOLID	Extracted: 12/20/95
Attention: Faith Daverin	Analysis Method: 8015Mod/8020	Analyzed: 12/20/95
	Lab Number: 9512C78-07	Reported: 12/26/95

QC Batch Number: GC122095BTEXEXA
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	1.0	N.D.
Benzene	0.0050	N.D.
Toluene	0.0050	N.D.
Ethyl Benzene	0.0050	N.D.
Xylenes (Total)	0.0050	N.D.
Chromatogram Pattern:		
Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	101

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory
Project Manager





Weiss & Associates
5500 Shellmound
Emeryville, CA 94608
Attention: Faith Daverin

Client Project ID: Shell 9570 Golf Links, Oakland
Matrix: Solid

Work Order #: 9512C78 01-07

Reported: Jan 2, 1996

QUALITY CONTROL DATA REPORT

Analyte: Diesel
QC Batch#: GC1220950HBPEXA
Analy. Method: EPA 8015 Mod.
Prep. Method: EPA 3550

Analyst: J. Minkel
MS/MSD #: 9512C7804
Sample Conc.: 2.8
Prepared Date: 12/20/95
Analyzed Date: 12/20/95
Instrument I.D.#: GCHP4A
Conc. Spiked: 25 mg/Kg

Result: 21
MS % Recovery: 73

Dup. Result: 21
MSD % Recov.: 73

RPD: 0.0
RPD Limit: 0-50

LCS #: BLK122095
Prepared Date: 12/20/95
Analyzed Date: 12/20/95
Instrument I.D.#: GCHP4A
Conc. Spiked: 25 mg/Kg

LCS Result: 22
LCS % Recov.: 88

**MS/MSD
LCS
Control Limits** 38-122

SEQUOIA ANALYTICAL

Mike Gregory
Project Manager

Please Note:
The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.





Weiss & Associates 5500 Shellmound Emeryville, CA 94608 Attention: Faith Daverin	Client Project ID: Shell 9570 Golf Links, Oakland Matrix: Solid Work Order #: 9512C78 01-07	Reported: Jan 2, 1996
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QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	GC122095BTEXEXA	GC122095BTEXEXA	GC122095BTEXEXA	GC122095BTEXEXA
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030

Analyst:	J. Padilla	J. Padilla	J. Padilla	J. Padilla
MS/MSD #:	951271406	951271406	951271406	951271406
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	12/20/95	12/20/95	12/20/95	12/20/95
Analyzed Date:	12/20/95	12/20/95	12/20/95	12/20/95
Instrument I.D.#:	GCHP18	GCHP18	GCHP18	GCHP18
Conc. Spiked:	0.20 mg/Kg	0.20 mg/Kg	0.20 mg/Kg	0.60 mg/Kg
Result:	0.17	0.18	0.18	0.54
MS % Recovery:	85	90	90	90
Dup. Result:	0.17	0.18	0.18	0.55
MSD % Recov.:	85	90	90	92
RPD:	0.0	0.0	0.0	1.8
RPD Limit:	0-50	0-50	0-50	0-50

LCS #:	BLK122095	BLK122095	BLK122095	BLK122095
Prepared Date:	12/20/95	12/20/95	12/20/95	12/20/95
Analyzed Date:	12/20/95	12/20/95	12/20/95	12/20/95
Instrument I.D.#:	GCHP18	GCHP18	GCHP18	GCHP18
Conc. Spiked:	0.20 mg/Kg	0.20 mg/Kg	0.20 mg/Kg	0.60 mg/Kg
LCS Result:	0.20	0.21	0.21	0.62
LCS % Recov.:	100	105	105	103

MS/MSD LCS Control Limits	55-145	47-149	47-155	56-140
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SEQUOIA ANALYTICAL


Mike Gregory
Project Manager

Please Note:

The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

** MS = Matrix Spike, MSD = MS Duplicate, RPD = Relative % Difference

9512C78.WAA <2>



Weiss & Associates 5500 Shellmound Emeryville, CA 94608 Attention: Faith Daverin	Client Project ID: Shell 9570 Golf Links, Oakland Matrix: Liquid Work Order #: 9512C78 01-07	Reported: Jan 2, 1996
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QUALITY CONTROL DATA REPORT

	TCLP	TCLP	TCLP	TCLP
Analyte:	Beryllium	Cadmium	Chromium	Nickel
QC Batch#:	ME1221956010MDB	ME1221956010MDB	ME1221956010MDB	ME1221956010MDB
Analy. Method:	EPA 6010	EPA 6010	EPA 6010	EPA 6010
Prep. Method:	EPA 3010	EPA 3010	EPA 3010	EPA 3010

	C. Medefesser	C. Medefesser	C. Medefesser	C. Medefesser
Analyst:	C. Medefesser	C. Medefesser	C. Medefesser	C. Medefesser
MS/MSD #:	9512E2901	9512E2901	9512E2901	9512E2901
Sample Conc.:	N.D.	0.032	N.D.	N.D.
Prepared Date:	12/21/95	12/21/95	12/21/95	12/21/95
Analyzed Date:	12/22/95	12/22/95	12/22/95	12/22/95
Instrument I.D.#:	MTJA2	MTJA2	MTJA2	MTJA2
Conc. Spiked:	1.0 mg/L	1.0 mg/L	1.0 mg/L	1.0 mg/L
Result:	0.98	1.0	0.94	0.95
MS % Recovery:	98	97	94	95
Dup. Result:	0.98	0.98	0.94	0.96
MSD % Recov.:	98	95	94	96
RPD:	0.0	2.0	0.0	1.0
RPD Limit:	0-30	0-30	0-30	0-30

	BLK122195	BLK122195	BLK122195	BLK122195
LCS #:	BLK122195	BLK122195	BLK122195	BLK122195
Prepared Date:	12/21/95	12/21/95	12/21/95	12/21/95
Analyzed Date:	12/22/95	12/22/95	12/22/95	12/22/95
Instrument I.D.#:	MTJA2	MTJA2	MTJA2	MTJA2
Conc. Spiked:	1.0 mg/L	1.0 mg/L	1.0 mg/L	1.0 mg/L
LCS Result:	1.0	1.0	1.0	1.0
LCS % Recov.:	100	100	100	100

MS/MSD	75-125	75-125	75-125	75-125
LCS	75-125	75-125	75-125	75-125
Control Limits				

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SEQUOIA ANALYTICAL

Mike Gregory
Mike Gregory
Project Manager



Weiss & Associates 5500 Shellmound Emeryville, CA 94608 Attention: Faith Daverin	Client Project ID: Shell 9570 Golf Links, Oakland Matrix: Liquid	Work Order #: 9512C78 01-07	Reported: Jan 2, 1996
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QUALITY CONTROL DATA REPORT

	STLC	STLC	STLC	STLC
Analyte:	Beryllium	Cadmium	Chromium	Nickel
QC Batch#:	ME1222956010MDB	ME1222956010MDB	ME1222956010MDB	ME1222956010MDB
Analy. Method:	EPA 6010	EPA 6010	EPA 6010	EPA 6010
Prep. Method:	EPA 3010	EPA 3010	EPA 3010	EPA 3010

	S. O'Donnell	S. O'Donnell	S. O'Donnell	S. O'Donnell
Analyst:	S. O'Donnell	S. O'Donnell	S. O'Donnell	S. O'Donnell
MS/MSD #:	9512F5001	9512F5001	9512F5001	9512F5001
Sample Conc.:	N.D.	N.D.	N.D.	0.052
Prepared Date:	12/22/95	12/22/95	12/22/95	12/22/95
Analyzed Date:	12/22/95	12/22/95	12/22/95	12/22/95
Instrument I.D.#:	MTJA2	MTJA2	MTJA2	MTJA2
Conc. Spiked:	1.0 mg/L	1.0 mg/L	1.0 mg/L	1.0 mg/L
Result:	0.98	0.93	0.93	0.96
MS % Recovery:	98	93	93	91
Dup. Result:	0.99	0.95	0.94	0.97
MSD % Recov.:	99	95	94	92
RPD:	1.0	2.1	1.1	1.0
RPD Limit:	0-30	0-30	0-30	0-30

	BLK122295	BLK122195	BLK122195	BLK122195
LCS #:	BLK122295	BLK122195	BLK122195	BLK122195
Prepared Date:	12/22/95	12/22/95	12/22/95	12/22/95
Analyzed Date:	12/22/95	12/22/95	12/22/95	12/22/95
Instrument I.D.#:	MTJA2	MTJA2	MTJA2	MTJA2
Conc. Spiked:	1.0 mg/L	1.0 mg/L	1.0 mg/L	1.0 mg/L
LCS Result:	1.0	1.0	0.99	1.0
LCS % Recov.:	100	100	99	100

MS/MSD LCS Control Limits	75-125	75-125	75-125	75-125

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SEQUOIA ANALYTICAL

Mike Gregory
Mike Gregory
Project Manager





Weiss & Associates 5500 Shellmound Emeryville, CA 94608 Attention: Faith Daverin	Client Project ID: Shell 9570 Golf Links, Oakland Matrix: Solid	Work Order #: 9512C78 01-07	Reported: Jan 2, 1996
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QUALITY CONTROL DATA REPORT

Analyte: TRPH
QC Batch#: OP1220955520EXC
Analy. Method: SM 5520EF Mod.
Prep. Method: EPA 3550

Analyst: C. Garde
MS/MSD #: 951276502
Sample Conc.: 88
Prepared Date: 12/20/95
Analyzed Date: 12/21/95
Instrument I.D.#: MANUAL
Conc. Spiked: 500 mg/Kg

Result: 480
MS % Recovery: 78

Dup. Result: 490
MSD % Recov.: 80

RPD: 2.1
RPD Limit: 0-50

LCS #: BLK122095

Prepared Date: 12/20/95
Analyzed Date: 12/21/95
Instrument I.D.#: MANUAL
Conc. Spiked: 500 mg/kg

LCS Result: 470
LCS % Recov.: 94

MS/MSD	60-140
LCS	70-110
Control Limits	

SEQUOIA ANALYTICAL


Mike Gregory
Project Manager

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** MS= Matrix Spike, MSD= MS Duplicate, RPD= Relative % Difference

9512C78.WAA <5>





SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD
Serial No: 9512078

Date: 12/18/95
Page 1 of 1

Site Address: 9570 Golf Links Road, Oakland, CA

Analysis Required

LAB: Sequoia

WIC#: 204-5508-2808

Shell Engineer: Jeff Granberry Phone No.:
Fax #:

Consultant Name & Address: WEISS ASSOCIATES
5500 SHELLMOUND ST EMERYVILLE CA 94608

Consultant Contact: Faith Daverin Phone No.:
WA JOB #81-1055-02 (510) 450-6000
Fax #: 547-5043

Comments: Phase I Site Investigation

Sampled by: Elizabeth Brogna

Printed Name:

Sample ID	Date	Sludge	Soil	Water	Air	No. of conds.
B1-5.5	12/18/95		X			1
B1-15.5			X			1
B1-20.5			X			1
B1-30.5			X			1
B1-35.5			X			1
B1-40.5			X			1
B1-45.5			X			1

TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/802)	Volatile Organics (EPA 8240)	Test for Disposal	Combination TPH 8015 & BTEX 8020	POG (5520 E)	STL & TULP Chromium	Asbestos	Container Size	Preparation Used	Composite Y/N
	X				X	X					
	X				X	X					
	X				X	X					
	X				X	X					
	X				X	X					
	X				X	X					

CHECK ONE (1) BOX ONLY	CT/DI	TURN AROUND TIME
G.W. Monitoring <input type="checkbox"/>	4461	24 hours <input type="checkbox"/>
Site Investigation <input checked="" type="checkbox"/>	4441	48 hours <input type="checkbox"/>
Soil Classify/Disposal <input type="checkbox"/>	4442	15 days <input checked="" type="checkbox"/> (Normal)
Water Classify/Disposal <input type="checkbox"/>	4443	Other <input type="checkbox"/>
Soil/Air Rem. or Sys. O & M <input type="checkbox"/>	4452	
Water Rem. or Sys. O & M <input type="checkbox"/>	4453	
Other <input type="checkbox"/>		

NOTE: Notify Lab as soon as Possible of 24/48 hrs. TAT.

UST AGENCY:

MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
	1
	2
	3
	4
	5
	6
	7

Relinquished By (signature):
C. Elizabeth Brogna
Relinquished By (signature):
Ralph Boniello
Relinquished By (signature):

Printed Name:
C. Elizabeth Brogna
Printed Name:
Ralph Boniello
Printed Name:

Date: 12/18/95
Time: 10:35
Date: 12/18/95
Time: 11:31
Date:
Time:

Received (signature):
Ralph Boniello
Received (signature):
C. Throm
Received (signature):

Printed Name:
Ralph Boniello
Printed Name:
C. Throm
Printed Name:

Date: 12/18/95
Time: 10:35
Date:
Time:
Date: 12/18/95
Time: 11:31

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN-OF-CUSTODY WITH INVOICE AND RESULTS