TES

Investigation
of Subsurface Soils at
Emeryville Materials Facility
Emeryville, California

Prepared by:

Land and Water Quality Unit

Prepared for:

Central Repair and Recovery Services
Pacific Gas and Electric Company

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Pacific Gas and Electric Company
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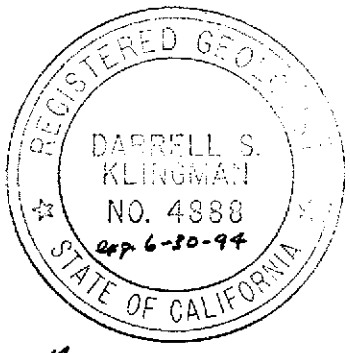

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FIGURES

INTRODUCTION

This report presents the results of a preliminary soils investigation performed in the vicinity of four former transformer oil storage tanks located within PG&E's Emeryville Materials Facility. The facility is located at 4525 Hollis Street in the city of Emeryville (Figure 1-1). The purpose of this investigation is to assess the possible presence of materials associated with transformer oil storage in the subsurface soils where the four former tanks were located.

This report presents a description of the field methods used for soil sampling (including collection, preservation and analysis) and the results of field and laboratory tests.

BACKGROUND

The Emeryville Materials Facility was constructed in the early 1920's and has served as a warehouse, repair shop and storage yard. Transformers, capacitors, oil circuit breakers and other miscellaneous equipment used in the electrical transmission and distribution system are brought to the facility for repair and storage.

Four above ground tanks used to store fuel and transformer oil were located in a lowered concrete pad in the northwestern corner of the property adjacent to 53rd Street. Three of the tanks had a capacity of 10,000 gallons each while the fourth had a capacity of 11,000 gallons. These tanks have been removed.

In addition to the four tanks, the concrete pad also supported a pump which was used for oil transfer. The loading of transformers occurred along the railroad tracks to the east of the above ground tanks.

SITE DESCRIPTION

Location and Land Use

The Emeryville Materials Facility is located between Hollis and Holden streets and extends from an area south of 45th Street to the railroad right-of-way property located north of 53rd Street (Figure 1-2). The property occupies approximately 16.5 acres and is used as materials storage and supply yard for PG&E. Land use in the near vicinity is industrial.

The site was constructed on artificial fill about three to four feet above the natural ground surface at an elevation of approximately 20 feet above mean sea level (USGS 1980). The nearest drainage is Temescal Creek, an intermittent creek which flows west through the property toward San Francisco Bay. In the

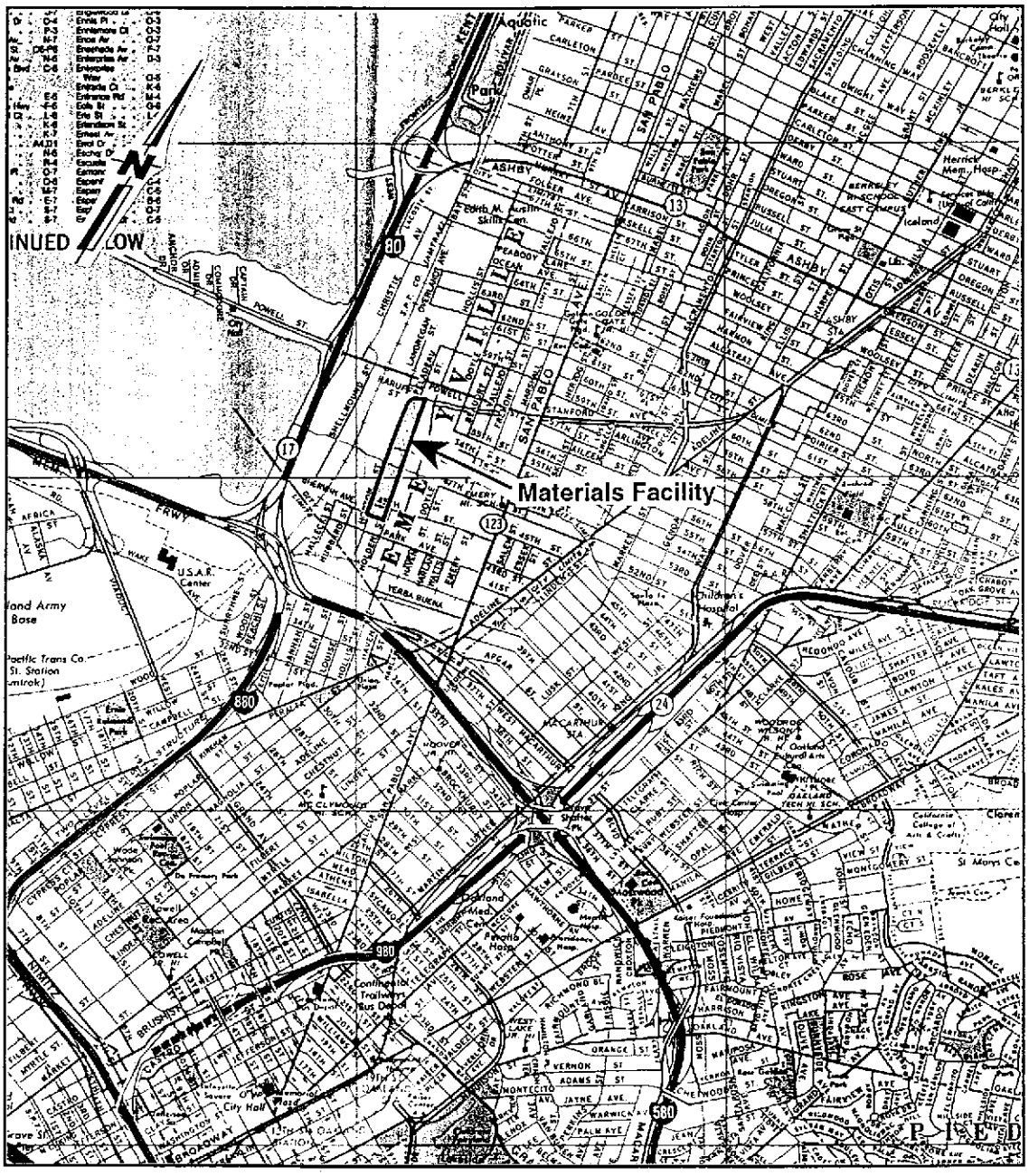

Figure 1-1. Location map of Emeryville materials facility.

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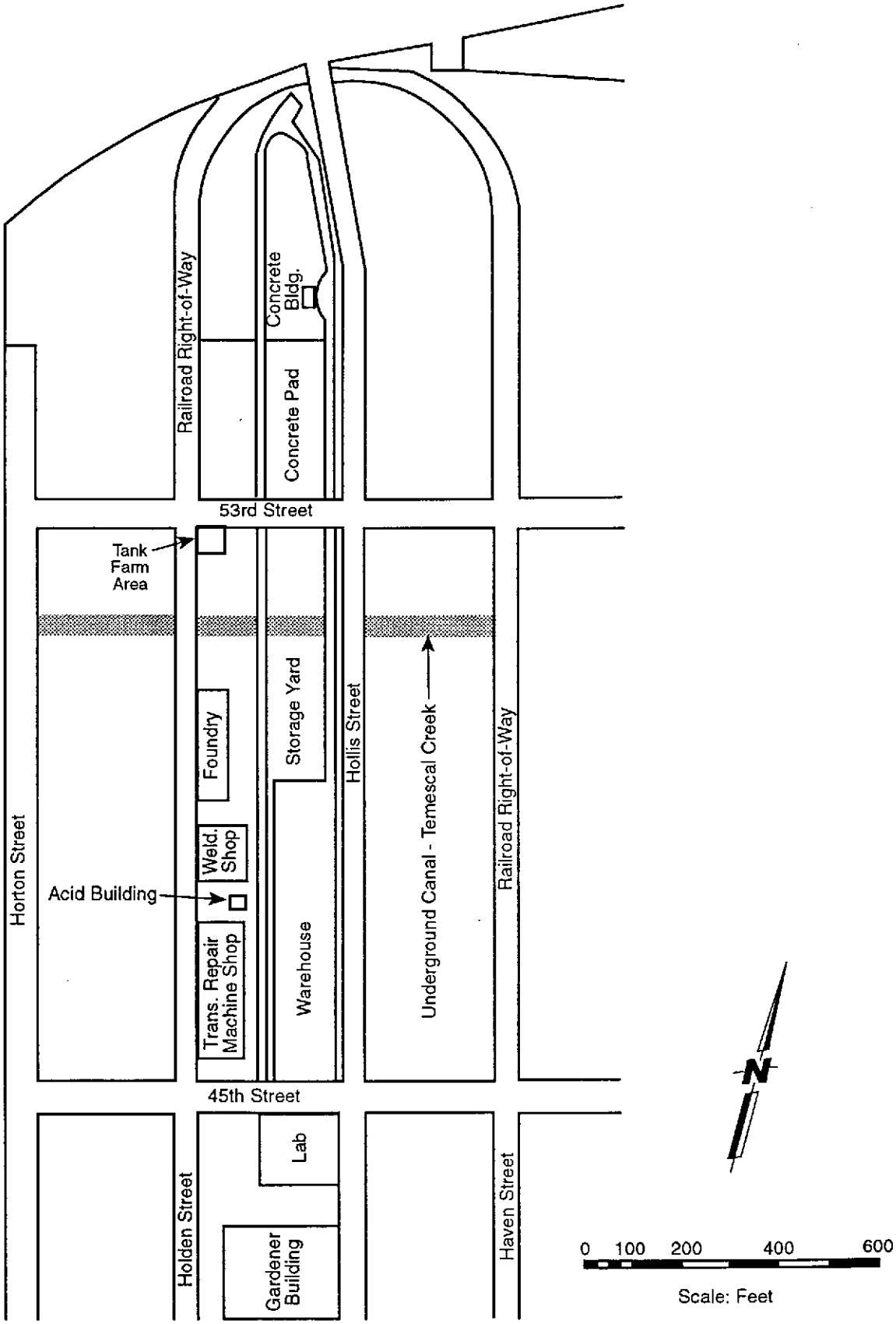

Figure 1-2. Site plot plan, Emeryville materials facility.

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vicinity of the site, Temescal Creek flows through an underground culvert. San Francisco Bay is located approximately one-half mile west of the site (Figure 1-3).

Geologic Settings

The facility is located in lowland area along the eastern shore of San Francisco Bay. The Bay is a flooded river valley in a northwest trending structural trough formed in Franciscan bedrock. Tectonic forces in place during the Pleistocene epoch (approximately 2 million years ago) created the San Francisco Bay depression as the Oakland/Berkeley hills were undergoing uplift (Radbruch, 1957). Erosion and deposition of material from the Oakland/Berkeley hills created coalescing alluvial fan deposits along the east shore of the bay.

Alluvial deposits along the East Bay margin include:

- Pleistocene alluvial fan deposits consisting of silty and sandy clays with gravely lenses which grade laterally into margin sediments.
- Upper Pleistocene Merrit sand consisting of fine grained lenticular sands and silty sands that occur irregularly and vary in thickness from a few inches to 65 feet.
- Late Pleistocene to Holocene alluvial deposits consisting of interbedded clayey gravels, sand and silty clays, and sand-silt-clay mixtures that grade laterally into Merrit sand.
- Holocene stream deposits.

Generally, Pleistocene alluvial fan material is termed Alameda formation and the Late Pleistocene sands and alluvium are termed the Temescal formation (Radbruch 1957). Classification of these alluvial units into stratigraphic formations are subject to interpretation.

Previous investigations indicate that the facility is underlain by approximately 3–4 feet of fill. This fill is underlain by Pleistocene alluvial fan deposits consisting of thick sequences of silty and sandy clay with thinly interbedded and discontinuous gravel lenses.

Shallow groundwater occurs at an elevation of about 6 to 8 feet above sea level, or roughly 12.5 to 14.5 feet below ground surface. General groundwater flow direction is anticipated to be westerly toward the bay shoreline.

Figure 1-3. Topographic map of Emeryville materials facility.

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METHODS

Nine exploratory soil borings were advanced and sampled in the former above ground tank area on October 6 and 7, 1993 (Figure 2-1). The soil samples were inspected and logged, and selected samples were submitted for chemical analyses by standard EPA methodology at a State of California certified laboratory (Sherwood Labs, Inc., Hilmar). All site activities were performed under the direction of a California Registered Geologist.

SOIL SAMPLING PROCEDURES

Boreholes were advanced at the approximate locations shown in Figure 2-1, using a hand driven sampling device (Environmentalist Soil Probe (ESP), Ames, Iowa). This instrument collects a soil core in one-inch plastic tubing which allows for inspection, logging, and sample collection.

The exploratory soil borings were sampled to a depth of approximately 9 feet. Samples were collected at intervals no greater than 1.5 feet. All boreholes were backfilled with a neat cement grout from the total depth to the ground surface.

The following procedures were used during soil sample collection and handling:

1. Before sampling, the sampler and sample liners were thoroughly washed with a trisodium phosphate solution and rinsed with potable water.
2. The samples were retained in the sample liners with the ends covered with aluminum foil and plastic end caps.
3. Each sample was labeled using waterproof ink with the job name, job number, boring or monitoring well number, sample depth, and date collected.
4. The soil sample was described on a boring log by the field geologist. The description included a soil classification (ASTM D-2487-83), color, and moisture content (in relative terms).
5. Immediately after sample collection and labeling, the samples were sealed in a plastic bag and placed in a sturdy ice chest. The temperature in the ice chest was maintained at or below 4 degrees C.
6. Selected samples were transferred to Sherwood Labs, Inc. (Hilmar) for chemical analysis. All remaining samples were transferred to PG&E's Technical and Ecological Services (TES, San Ramon), and stored in a refrigerator for at least 14 days for possible additional analysis.

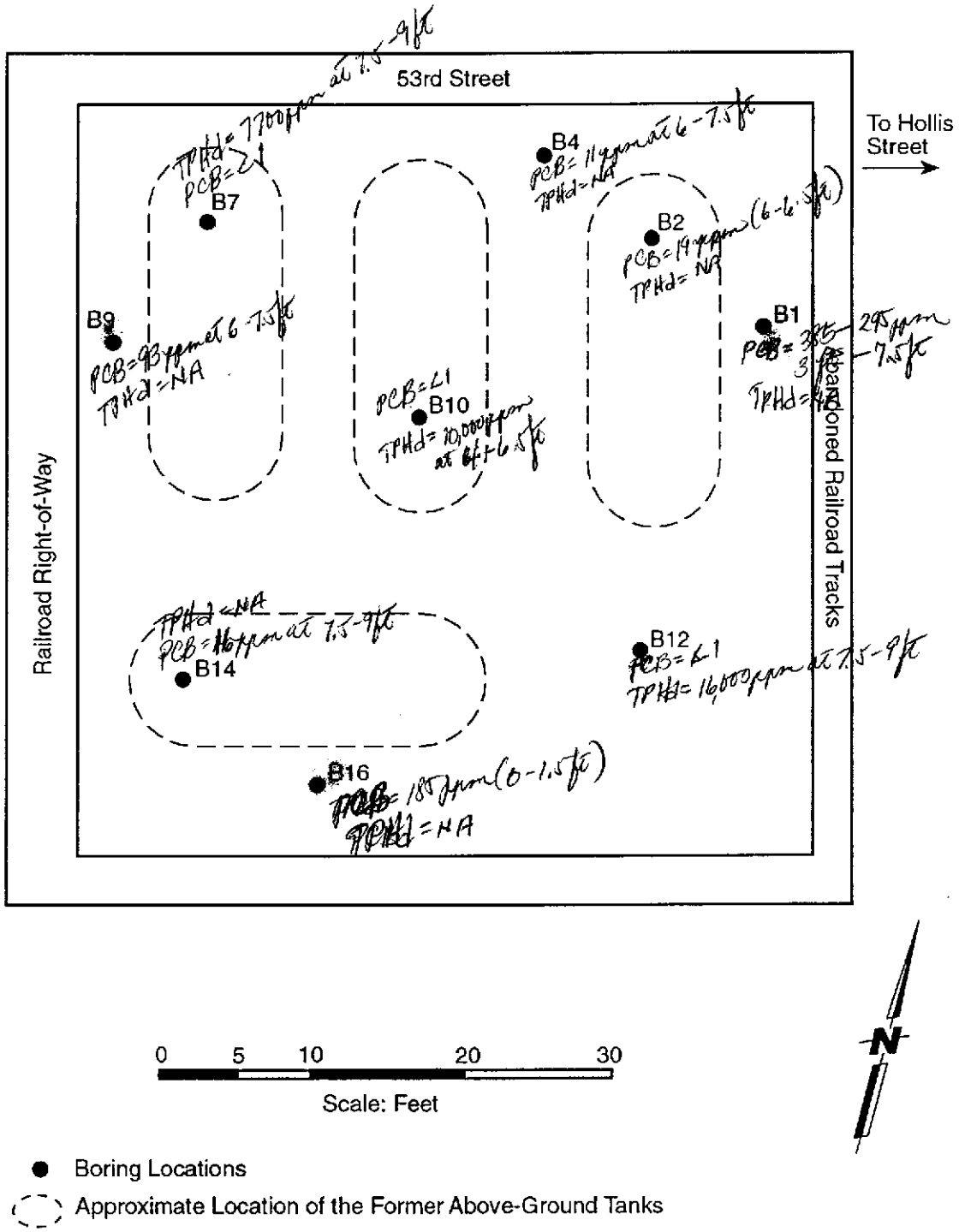

Figure 2-1. Plot plan, Tank Farm boring locations at Emeryville Materials Facility.

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FIELD AND LABORATORY ANALYSIS PROCEDURES

Initially, a field assessment of soil quality was accomplished by analyzing 27 soil samples for polychlorinated biphenyls (PCBs) by EPA Method 8080. Once results were obtained from the initial screening, 9 samples were also analyzed for total extractable petroleum hydrocarbons (TEPH) by EPA Method 3540/8015. An additional 15 samples were submitted for PCB analysis for further analytical definition of the soil.

In addition, a nearby monitoring well was sampled for PCBs (EPA Method 8080), TEPH (EPA Method 3510/8015), and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 602.

QUALITY ASSURANCE/QUALITY CONTROL AND CHAIN-OF-CUSTODY PROCEDURES

Quality Assurance/Quality Control

Quality assurance samples were used to evaluate the quality and accuracy of the data obtained from the field program. Established QA/QC procedures for the analyses included sample custody procedures, analyses of matrix spikes and method blanks, data reduction, verification of raw analytical data, and maintenance of control charts to monitor analytical performance. These procedures are outlined in the laboratory's Quality Assurance/Quality Control Plan and Standard Operating Procedures. Organic chemical analyses are performed in conformance with the standard procedures established by the EPA in "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act" (40 CFR Part 136, October 1984). The laboratory (Sherwood Labs, Inc.) is periodically evaluated through several performance audits conducted by the EPA and the State of California Department of Toxic Substances Control using QC laboratories.

Chain-of-Custody

Chain-of-custody procedures were used to identify and ensure the traceability and integrity of the samples collected. These procedures were used to document sample handling and shipping and trace the sample from collection through all custody transfers, to the storage facility or the analytical laboratory where the laboratory's internal procedures govern the final disposition of the samples. This information was recorded on the chain-of-custody form which remained with the sample at all times.

RESULTS

SITE GEOLOGY

The boring logs indicate that the portion of the site included in this investigation is underlain by sand, clayey sand, silt and clay. The material from the surface to approximately 8 feet is artificial fill composed of clayey sand, silt and clay. Poorly graded sand was encountered in several of the borings at depths of 7.5 to 8 feet. Boring logs are presented in Appendix A. Groundwater was not encountered in any of the borings. Several of the samples collected at a depth of 9 feet indicated very moist conditions.

ANALYTICAL LABORATORY RESULTS

Initially, 27 samples (three from each boring, generally at 3 foot intervals) were submitted to Sherwood Labs for PCB analysis. Analytical results indicated measurable concentrations of PCBs in borings B1, B2, B4, B9, B14, and B16. Soil analytical data are summarized in Table 1. Analytical data sheets for all chemical analyses are presented in Appendix B.

In boring B1, PCB concentrations vary from < 1 mg/kg (1.5–3.0 ft) to 385 mg/kg (3.0–4.5 ft). Boring B2 contained PCBs ranging from < 1 mg/kg (2.0–6.0 ft) to 19 mg/kg (6.0 to 6.5 ft). Boring B4 contained PCBs varying from < 1 mg/kg (0.0 to 6.0 ft) to 11 mg/kg (6.0 to 7.5 feet). In boring B9, PCB concentrations ranged from 1 mg/kg (1.5–3.0 feet) to 93 mg/kg (6.0–7.5 feet). In boring B14, PCB concentrations vary from < 1 mg/kg (2.5–3.0 feet) to 16 mg/kg (7.5–9.0 feet). Boring B16 contained PCBs ranging from 0.5 mg/kg (4.5–6.0 feet) to 185 mg/kg (0.0–1.5 feet). The highest levels of PCBs were found in borings at the east, west and south borders of the former tank farm. All PCBs were characterized as Aroclor 1260.

Although boring B7, B10, and B12 did not contain PCBs, they did contain detectable amounts of TEPH. Boring B7 contained TEPH ranging from 640 mg/kg (4.5–6.0 feet) to 7700 mg/kg (7.5–9.0 feet). Boring B10 contained TEPH varying from 1600 mg/kg (7.3–9.0 feet) to 10,000 mg/kg (4.5–6.0 feet). Boring B12 contained TEPH ranging from 8400 mg/kg (4.5–6.0 feet) to 16,000 mg/kg (7.5–9.0 feet).

Results of the water sample collected from the nearby monitoring well (MW4) indicated that PCBs, TEPH and BTEX are not present above the Method Detection Limits.

Table 1

Emeryville Materials Facility
Soil Analytical Data

Sample	PCB* (ppm)	TEPH (ppm)	Sample	PCB* (ppm)	TEPH (ppm)
B1 0.0-1.5	38	NA	B9 0.0-1.5	2	NA
B1 1.5-3.0	<1	NA	B9 1.5-3.0	1	NA
B1 3.0-4.5	385	NA	B9 3.0-4.5	2	NA
B1 4.5-6.0	350	NA	B9 4.5-6.0	4	NA
B1 6.0-7.5	295	NA	B9 6.0-7.5	93	NA
B1 7.5-9.0	2	NA	B9 7.5-9.0	13	NA
B2 1.0-2.0	4	NA	B10 1.5-3.0	<1	5200
B2 2.0-3.0	<1	NA	B10 4.5-6.0	<1	10000
B2 4.0-6.0	<1	NA	B10 7.5-9.0	<1	1600
B2 6.0-6.5	19	NA			
			B12 1.5-3.0	<1	11000
B4 0.0-1.5	<1	NA	B12 4.5-6.0	<1	8400
B4 1.5-3.0	<1	NA	B12 7.5-9.0	<1	16000
B4 3.0-4.5	<1	NA			
B4 4.5-6.0	<1	NA	B14 2.5-3.0	<1	NA
B4 6.0-7.5	11	NA	B14 3.0-4.5	5	NA
B4 7.5-9.0	8	NA	B14 4.5-6.0	15	NA
			B14 6.0-7.5	12	NA
B7 1.5-3.0	<1	1950	B14 7.5-9.0	16	NA
B7 4.5-6.0	<1	640			
B7 7.5-9.0	<1	7700	B16 0.0-1.5	185	NA
			B16 1.5-3.0	10	NA
			B16 3.0-4.5	32	NA
			B16 4.5-6.0	0.5	NA
			B16 6.0-7.5	18	NA
			B16 7.5-9.0	9	NA

NA = Not Analyzed
< = Quantity is less than the value indicated
PCB = Polychlorinated Biphenyls
TEPH = Total Extractable Petroleum Hydrocarbons
* = All PCBs characterized as Aroclor 1260

SUMMARY

The following is a summary of field and analytical results obtained from the soil investigation at PG&E's Emeryville Materials Facility former transformer oil storage area.

1. The soils beneath the site consist of sand, clayey sand, silt and clay.
2. Groundwater was not encountered to a depth of 9 feet.
3. PCBs characterized as Aroclor 1260 are present in Borings B1, B2, B4, B9, B14, and B16 at concentrations ranging from non-detection (less than 1 mg/kg) to 385 mg/kg.
4. TEPH is present in Borings B7, B10, and B12 at concentrations ranging from 640 mg/kg to 16,000 mg/kg.
5. A water sample collected from a nearby monitoring well (MW4) did not contain detectable levels of PCBs, TEPH, and BTEX.

REFERENCES

Radbruch, Dorothy H., 1957, Areal and Engineering Geology of the Oakland West Quadrangle, California, United States Geological Survey Miscellaneous Geologic Investigation Map I–239, USGS, Washington D.C.

United States Geological Survey. 1980 7.5 minute Quadrangle. Oakland West, California.

BORING LOG

SWIMS No.	Boring No.	Sheet
0524-E1	B1	1 of 1

Client	Boring Location
Central Repair & Recovery Svc.	Emeryville Maintenance Facility

Drilling Contractor	Driller	Rig	DRILLING START TIME	DRILLING FINISH TIME

Logged By	Surface Conditions	Groundwater Depth	DATE	DATE
Fred Flint	Dry Soil	NA	10/7/93	10/7/93

Type & Diameter of Boring	Sampling Method
1" Plastic Tube	Environmentalist Soil Probe - Hand Driven

SAMPLES: Inches Driven	SAMPLES: Inches Recovered	SAMPLES: Blows/12" Sampler	PID (PPM)	Ground Water	Depth (Feet)	Sample Interval	Graphic Log	Soil Symbol	MATERIALS ENCOUNTERED AND DRILLING CONDITIONS
					0				
					1				Fill, moderate brown, black at 1.5'
					2			CL	
					3				Silty clay, olive green, moist, no odor
					4				
					5				
					6			SC	Fine, clayey sand, olive green, slightly moist, no odor
					7				
					8			SP	Sand, very fine grained, olive green with reddish brown mottling, no odor, poorly graded, well sorted, moist.
					9				BOH - 9'
					10				
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				

BORING LOG

SWIMS No.	Boring No.	Sheet
0524-E1	B2	1 of 1

Client	Boring Location
Central Repair & Recovery Svc.	Emeryville Maintenance Facility

Drilling Contractor	Driller	Rig	DRILLING START TIME	DRILLING FINISH TIME

Logged By	Surface Conditions	Groundwater Depth	DATE	DATE
Fred Flint	Dry Soil	NA	10/6/93	10/6/93

Type & Diameter of Boring	Sampling Method
1" Plastic Tube	Environmentalist Soil Probe - Hand Driven

SAMPLES: Inches Driven	SAMPLES: Inches Recovered	SAMPLES: Blows/12" / Sampler	PID (PPM)	Ground Water	Depth (Feet)	Sample Interval	Graphic Log	Soil Symbol	MATERIALS ENCOUNTERED AND DRILLING CONDITIONS
					0			SM	Fill, medium brown, sandy with pebbles & silt
					1				
					2				Dark gray at 2.0'
					3				Silt, dark olive green, no odor, moist
					4			ML	
					5				
					6				Sandy silt with pebbles, mottled light brown & light gray, no odor, no staining, moist
					7				BOH - 6.5'
					8				
					9				
					10				
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				

BORING LOG

SWIMS No.	Boring No.	Sheet
0524-E1	B4	1 of 1

Client	Boring Location
Central Repair & Recovery Svc.	Emeryville Maintenance Facility

DRILLING

START TIME	FINISH TIME

Drilling Contractor	Driller	Rig

Logged By	Surface Conditions	Groundwater Depth	DATE	DATE
Fred Flint	Dry Soil	NA	10/7/93	10/7/93

Type & Diameter of Boring	Sampling Method
1" Plastic Tube	Environmentalist Soil Probe - Hand Driven

SAMPLES: Inches Driven	SAMPLES: Inches Recovered	SAMPLES: Blows/12" / Sampler	PID (PPM)	Ground Water	Depth (Feet)	Sample Interval	Graphic Log	Soil Symbol	MATERIALS ENCOUNTERED AND DRILLING CONDITIONS
					0				
					1				Black at 1.5', odor
					2				Clayey sand fill, olive green, odor, dry
					3				
					4			SC	
					5				
					6				Clayey sand fill, moderate brown, dry
					7				
					8				Clayey sand fill, moderate brown, dry
					9				BOH - 9'
					10				
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				

BORING LOG

SWIMS No.	Boring No.	Sheet
0524-E1	B7	1 of 1

Client	Boring Location
Central Repair & Recovery Svc.	Emeryville Maintenance Facility

Drilling Contractor	Driller	Rig	DRILLING START TIME	DRILLING FINISH TIME

Logged By	Surface Conditions	Groundwater Depth	DATE	DATE
Fred Flint	Dry Soil	NA	10/6/93	10/6/93

Type & Diameter of Boring	Sampling Method
1" Plastic Tube	Environmentalist Soil Probe - Hand Driven

SAMPLES: Inches Driven	SAMPLES: Inches Recovered	SAMPLES: Blows/12" Sampler	PID (PPM)	Ground Water	Depth (Feet)	Sample Interval	Graphic Log	Soil Symbol	MATERIALS ENCOUNTERED AND DRILLING CONDITIONS
					0			ML	Silty, dark greenish gray, moist, slight odor
					1				
					2				
					3				
					4			CL	Silty clay, mottled olive brown & greenish gray, slightly moist, no odor
					5				
					6				
					7				
					8			SP	Sand greenish gray, silty, very fine grained, moist, no odor
					9				BOH - 9'
					10				
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				

BORING LOG

SWIMS No.	Boring No.	Sheet
0524-E1	B9	1 of 1

Client	Boring Location	DRILLING
Central Repair & Recovery Svc.	Emeryville Maintenance Facility	START TIME / FINISH TIME

Drilling Contractor	Driller	Rig	START TIME	FINISH TIME

Logged By	Surface Conditions	Groundwater Depth	DATE	DATE
Fred Flint	Dry Soil	NA	10/7/93	10/7/93

Type & Diameter of Boring	Sampling Method
1" Plastic Tube	Environmentalist Soil Probe - Hand Driven

SAMPLES: Inches Driven	Inches Recovered	Blows/12" Sampler	PID (PPM)	Ground Water	Depth (Feet)	Sample Interval	Graphic Log	Soil Symbol	MATERIALS ENCOUNTERED AND DRILLING CONDITIONS
					0				
					1				
					2				Clayey silt, olive green, slight odor, slightly moist
					3				Black at 3.0'
					4			ML	Lenses of black discoloration in tube
					5				
					6				
					7				
					8				Clayey silt, olive green, slight odor, slightly moist
					9				BOH - 9'
					10				
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				

BORING LOG

SWIMS No.	Boring No.	Sheet
0524-E1	B10	1 of 1

Client	Boring Location	DRILLING	
Central Repair & Recovery Svc.	Emeryville Maintenance Facility	START TIME	FINISH TIME

Drilling Contractor	Driller	Rig	DATE	DATE
			10/6/93	10/6/93

Logged By	Surface Conditions	Groundwater Depth
Fred Flint	Dry Soil	NA

Type & Diameter of Boring	Sampling Method
1" Plastic Tube	Environmentalist Soil Probe - Hand Driven

SAMPLES: Inches Driven	SAMPLES: Inches Recovered	SAMPLES: Blows/12" Sampler	PID (PPM)	Ground Water	Depth (Feet)	Sample Interval	Graphic Log	Soil Symbol	MATERIALS ENCOUNTERED AND DRILLING CONDITIONS
					0				
					1			ML	Silty dark greenish gray, no odor, dry
					2				
					3				
					4				
					5			SC	Clayey sand with pebbles, olive green with white mottling, no odor
					6				
					7				
					8				Sand, silty, very fine grained, greenish gray, mottled wtih Fe O_2 staining, very moist, poorly graded
					9			SP	BOH - 9'
					10				
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				

BORING LOG

SWIMS No.	Boring No.	Sheet
0524-E1	B12	1 of 1

Client	Boring Location
Central Repair & Recovery Svc.	Emeryville Maintenance Facility

Drilling Contractor	Driller	Rig	DRILLING START TIME	DRILLING FINISH TIME

Logged By	Surface Conditions	Groundwater Depth	DATE	DATE
Fred Flint	Dry Soil	NA	10/6/93	10/6/93

Type & Diameter of Boring	Sampling Method
1" Plastic Tube	Environmentalist Soil Probe - Hand Driven

SAMPLES: Inches Driven	SAMPLES: Inches Recovered	SAMPLES: Blows/12" Sampler	PID (PPM)	Ground Water	Depth (Feet)	Sample Interval	Graphic Log	Soil Symbol	MATERIALS ENCOUNTERED AND DRILLING CONDITIONS
					0			CL	Fill, clayey sand, dark gray, no odor, moist
					1				
					2				
					3				
					4				
					5				Clayey sand with pebbles, olive green with mottling
					6				
					7			SC	Fill above
					8				Clayey sand, olive green, fine grained, moist
					9				BOH - 9'
					10				
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				

BORING LOG

SWIMS No.	Boring No.	Sheet
0524-E1	B14	1 of 1

Client	Boring Location
Central Repair & Recovery Svc.	Emeryville Maintenance Facility

Drilling Contractor	Driller	Rig

Logged By	Surface Conditions	Groundwater Depth
Fred Flint	Dry Soil	NA

DRILLING	
START TIME	FINISH TIME
DATE	DATE
10/6/93	10/6/93

Type & Diameter of Boring	Sampling Method
1" Plastic Tube	Environmentalist Soil Probe - Hand Driven

SAMPLES: Inches Driven	SAMPLES: Inches Recovered	SAMPLES: Blows/12" / Sampler	PID (PPM)	Ground Water	Depth (Feet)	Sample Interval	Graphic Log	Soil Symbol	MATERIALS ENCOUNTERED AND DRILLING CONDITIONS
					0				
					1			SC	
					2				Fill, clayey sand with pebbles, very dark gray, possible odor
					3				
					4			CL	Silty clay, moist, olive green
					5				
					6			SC	Clayey sand, fine grained with pebbles, olive green
					7				
					8			CL	Silty clay, olive green to black, moist
					9			SC	Clayey sand, very fine grained, light brown, moist BOH - 9'
					10				
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				

BORING LOG

SWIMS No.	Boring No.	Sheet
0524-E1	B16	1 of 1

Client	Boring Location
Central Repair & Recovery Svc.	Emeryville Maintenance Facility

DRILLING

START TIME	FINISH TIME

Drilling Contractor	Driller	Rig

Logged By	Surface Conditions	Groundwater Depth	DATE	DATE
Fred Flint	Dry Soil	NA	10/7/93	10/7/93

Type & Diameter of Boring	Sampling Method
1" Plastic Tube	Environmentalist Soil Probe - Hand Driven

SAMPLES: Inches Driven | Inches Recovered | Blows/12" Sampler | PID (PPM) | Ground Water | Depth (Feet) | Sample Interval | Graphic Log | Soil Symbol

MATERIALS ENCOUNTERED AND DRILLING CONDITIONS

Black at 1.5'

SC — Clayey sand, olive green, very fine grained, odor, moist, well sorted, poorly graded

Fill, medium gray, clayey sand with pebbles, no odor

SP — Sand, fine grained, moderate olive gray with reddish brown mottling, moist, no odor, well sorted

BOH - 9'

Appendix B

ANALYTICAL DATA SHEETS AND CHAIN-OF-CUSTODY FORMS

SHERWOOD LABS, INC TEST REPORT #6 10/19/93

SO144
PACIFIC GAS & ELEC-SAN RAMON
3400 CROW CANYON ROAD
SAN RAMON, CA 94583-
ATTN: FRED FLINT

SHERWOOD LABS, INC
8071 N. LANDER AVENUE
HILMAR, CA 95324-
PAUL FREEHAUF, CHEMIST
DATE RCVD: 10/13/93

Lab Report #: H3101316 Lot# PO Number: 15-2746-202

Below is a listing of the samples received on 10/13/93 together with the laboratory results on their respective PCB content. Please contact the lab at 209-667-5258 if you have any questions regarding these sample results.

SWL NUM	SERIAL NO.	COMPANY ID.	AROCLOR	RESULTS	TYPE
PH3101771	1.5-3.0	B1		ND	SOIL
PH3101772	4.5-6.0	B1	1260	350	SOIL
PH3101773	7.5-9.0	B1	1260	2	SOIL
PH3101774	2.0-3.0	B2		ND	SOIL
PH3101775	4.0-6.0	B2		ND	SOIL
PH3101776	6.0-6.5	B2	1260	19	SOIL
PH3101777	1.5-3.0	B4		ND	SOIL
PH3101778	4.5-6.0	B4		ND	SOIL
PH3101779	7.5-9.0	B4	1260	3	SOIL
PH3101780	1.5-3.0	B7		ND	SOIL
PH3101781	4.5-6.0	B7		ND	SOIL
PH3101782	7.5-9.0	B7		ND	SOIL
PH3101783	1.5-3.0	B9	1260	1	SOIL
PH3101784	4.5-6.0	B9	1260	4	SOIL

The following table shows the methods and detection limits used, all tests use EPA Method 600/4-81-045.

Leland Palmer

TEST	EXTRACTION METHOD	LOWER DET. LIMIT	DIMENSIONS	TEST EQUIPMENT
OIL	NA	<1	PARTS PER MILLION	GC
SOIL	8080/3540	<1	MICROGRAMS/GRAM	SOXHLET/GC
WIPE	8080/3540	<1	MICROGRAMS/100 SQ CM	SOXHLET/GC

Lab Report #:H3101316 Page 1 Number of samples: 14

SHERWOOD LABS, INC TEST REPORT #6 10/19/93

50144
PACIFIC GAS & ELEC-SAN RAMON
3400 CROW CANYON ROAD
SAN RAMON, CA 94583-
ATTN: FRED FLINT

SHERWOOD LABS, INC
8071 N. LANDER AVENUE
HILMAR, CA 95324-
PAUL FREEHAUF, CHEMIST
DATE RCVD: 10/13/93

Lab Report #: H3101317 Lot# PO Number: ZS-2746-202

Below is a listing of the samples received on 10/13/93 together with the laboratory results on their respective PCB content. Please contact the lab at 209-667-5258 if you have any questions regarding these sample results.

SWL NUM	SERIAL NO.	COMPANY ID.	AROCLOR	RESULTS	TYPE
PH3101785	7.5-9.0	B9	1260	13	SOIL
PH3101786	1.5-3.0	B10		ND	SOIL
PH3101787	4.5-6.0	B10		ND	SOIL
PH3101788	7.5-9.0	B10		ND	SOIL
PH3101789	1.5-3.0	B12		ND	SOIL
PH3101790	4.5-6.0	B12		ND	SOIL
PH3101791	7.5-9.0	B12	1260	2	SOIL
PH3101792	2.5-3.0	B14		ND	SOIL
PH3101793	4.5-6.0	B14	1260	15	SOIL
PH3101794	7.5-9.0	B14	1260	16	SOIL
PH3101795	1.5-3.0	B16	1260	10	SOIL
PH3101796	4.5-6.0	B16	1260	0.5	SOIL
PH3101797	7.5-9.0	B16	1260	9	SOIL

The following table shows the methods and detection limits used, all tests use EPA Method 600/4-81-045.

Richard Peters

TEST	EXTRACTION METHOD	LOWER DET. LIMIT	DIMENSIONS	TEST EQUIPMENT
OIL	NA	<1	PARTS PER MILLION	GC
SOIL	8080/3540	<1	MICROGRAMS/GRAM	SOXHLET/GC
WIPE	8080/3540	<1	MICROGRAMS/100 SQ CM	SOXHLET/GC

Lab Report #:H3101317 Page 1 Number of samples: 13

CHAIN OF CUSTODY RECORD
Pacific Gas & Electric Company

3400 Crow Canyon Rd
San Ramon, CA 94583

Ship To: Environmental

Attention: | Phone: | Page 1 of 2

Job Number:	Project Name:	Project Manager:
0524 E1	Emeryville MF	F. Flint

Samplers: (Signatures) | Field Team Leader:

SAMPLE NUMBER	DATE	TIME	SAMPLE TYPE	SAMPLE INFORMATION	NO. OF CNTRS.	TCLP 22A 8180						REMARKS
B1 0-1.5	10/7/93	821	SOIL		1	/						Rush Analysis
B1 3.0-4.5	10/7/93	1100			1	/						to Ted Flint
B1 6.0-7.5	10/7/93	1150			1	/						(510) 866 5808
B2 1.0-2.0	10/6/93	1015			1	/						FAX to Ted Flint
~~B2~~ B4 0.0-1.5	10/7/93	1605			1	/						(510) 866-5915
~~B3~~ B4 3.0-4.5	10/7/93	1610			1	/						
~~B4~~ B4 6.0-7.5	10/7/93	1625			1	/						Collect sample for
B9 0-1.5	10/7/93	1520			1	/						Analysis from
B9 3.0-4.5	10/7/93	1340			1	/						Tube 2 and marked
B9 6.0-7.5	10/7/93	1400			1	/						"B"
B14 3.0-4.5	10/6/93	1535			1	/						
B14 6.0-7.5	10/6/93	1550			1	/						
B16 0-1.5	10/7/93	1425			1	/						
B16 3.0-4.5	10/7/93	1445			1	/						

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:
	10/21/93 1415		10-21-93 1415	
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number: / Date:
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	

DISTRIBUTION: Original Accompanies Shipment; Canary Copy to PG&E; Pink-Sampler

NOTE: Samples are discarded 30 days after results are reported unless other arrangements are made.

60006997/GI/TI97

B-3

CHAIN OF CUSTODY RECORD
Pacific Gas & Electric Company

3400 Crow Canyon Rd
San Ramon CA 94518

Ship To:	SHERWOOD	
Attention:	Phone:	Page 2 of 2

Job Number:	Project Name:	Project Manager:
0524 E1	Energy Use MF	T. FLINT
Samplers: (Signatures) Fred Flint		Field Team Leader:

SAMPLE NUMBER	DATE	TIME	SAMPLE TYPE	SAMPLE INFORMATION	NO. OF CNTRS.	PCB's	8080	REMARKS
B16 6.0-7.5	10/21/93	1505	SOIL		1	1		REPORT ANALYSIS TO FRED FLINT (510) 866-5820 FAX REPORT TO FRED FLINT (510) 866-5915 COLLECT SAMPLE FOR ANALYSIS FROM TUBE END MARKED "B"

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:
Fred Flint	10/21/93 1415	Joe V. Pasteforo.	10-21-93 1415	
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number: / Date:
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	

DISTRIBUTION: Original Accompanies Shipment; Canary Copy to PG&E; Pink-Sampler

NOTE: Samples are discarded 30 days after results are reported unless other arrangements are made.

60006997/GI/TI97

B-4

Sherwood Labs
CORPORATION

8071 NORTH LANDER AVENUE
P.O. BOX 937
HILMAR, CALIFORNIA 95324

10/26/93 DHS Certification #:1400

ANALYSIS REPORT: Total Extractable Petro. Hydrocarbons

CLIENT: Pacific Gas & Electric-San Ramon
3400 Crow Canyon RD
San Ramon, CA 94583
Attn: Fred Flint

Project Name: Emeryville MF
Project Number: 0524E1
Sampled By: Fred Flint

Date Received: 10/08/93
Date Started: 10/20/93
Date Completed: 10/25/93
Date Sampled: 10/06/93

Lab Report: H3101902

Method: 3540/8015 (M)

Lab ID/Sample ID	ANALYTE (mg/Kg) Dielectric Oil	MDL (mg/Kg)
PH3102157/B7 1.5-3.0, 1435	1950	5.0
PH3102158/B7 4.5-6.0, 1450	640	
PH3102159/B7 7.5-9.0, 1515	7700	
PH3102160/B10 1.5-3.0, 1315	5200	
PH3102161/B10 4.5-6.0, 1340	10000	
PH3102162/B10 7.5-9.0, 1425	1600	
PH3102163/B12 1.5-3.0, 1600	11000	
PH3102164/B12 4.5-6.0, 1615	8400	
PH3102165/B12 7.5-9.0, 1630	16000	

Paul Freehauf
Laboratory Director

SHERWOOD LABS, INC TEST REPORT #6 10/27/93

SO144
PACIFIC GAS & ELEC-SAN RAMON
3400 CROW CANYON ROAD
SAN RAMON, CA 94583-
ATTN: FRED FLINT

SHERWOOD LABS, INC
8071 N. LANDER AVENUE
HILMAR, CA 95324-
PAUL FREEHAUF, CHEMIST
DATE RCVD: 10/22/93

Lab Report #: H3102204 Lot# PO Number: ZS-2746-202

Below is a listing of the samples received on 10/22/93 together with the laboratory results on their respective PCB content. Please contact the lab at 209-667-5258 if you have any questions regarding these sample results.

SWL NUM	SERIAL NO.	COMPANY ID.	AROCLOR	RESULTS	TYPE
PH3102430		B1 0-1.5	1260	33	SOIL
PH3102431		B1 3.0-4.5	1260	385	SOIL
PH3102432		B1 6.0-7.5	1260	295	SOIL
PH3102433		B2 1.0-2.0	1260	4	SOIL
PH3102434		B4 0.0-1.5		ND	SOIL
PH3102435		B4 3.0-4.5		ND	SOIL
PH3102436		B4 6.0-7.5	1260	11	SOIL
PH3102437		B9 0-1.5	1260	2	SOIL
PH3102438		B9 3.0-4.5	1260	2	SOIL
PH3102439		B9 6.0-7.5	1260	93	SOIL
PH3102440		B14 3.0-4.5	1260	5	SOIL
PH3102441		B14 6.0-7.5	1260	12	SOIL
PH3102442		B16 0-1.5	1260	185	SOIL
PH3102443		B16 3.0-4.5	1260	32	SOIL
PH3102444		B16 6.0-7.5	1260	18	SOIL

The following table shows the methods and detection limits used, all tests use EPA Method 600/4-81-045.

TEST	EXTRACTION METHOD	LOWER DET. LIMIT	DIMENSIONS	TEST EQUIPMENT
OIL	NA	<1	PARTS PER MILLION	GC
SOIL	8080/3540	<1	MICROGRAMS/GRAM	SOXHLET/GC
WIPE	8080/3540	<1	MICROGRAMS/100 SQ CM	SOXHLET/GC

Lab Report #:H3102204 Page 1 Number of samples: 15

Pat Freehauf

CHAIN OF CUSTODY RECORD

Pacific Gas & Electric Company

3400 CROW CANYON RD
SAN RAMON CA 94583

Ship To: SHERWOOD LABORATORY

Attention: | Phone: | Page 1 of 2

Job Number:	Project Name:	Project Manager:
0524 E1	EMERYVILLE MF	F. FLINT

Samplers: (Signatures) [signature]

Field Team Leader: F. FLINT

SAMPLE NUMBER	DATE	TIME	SAMPLE TYPE	SAMPLE INFORMATION	NO. OF CNTRS.	TCB's EPA 8080	REMARKS
B1 1.5-3.0	10/7/93	805	SOIL		1	✓	HOLD SAMPLES FOR POSSIBLE FURTHER ANALYSIS. ANALYZE SOIL FROM TUBE END MARKED "B". REPORT VERBALLY TO FRED FLINT AT (510) 866-5808 FAX WRITTEN REPORT TO FRED FLINT AT (510) 866-5915
B1 4.5-6.0	10/7/93	1100				✓	
B1 7.5-9.0	10/7/93	1130				✓	
B2 2.0-3.0	10/6/93	1020				✓	
B2 4.0-6.0	10/6/93	1110				✓	
B2 6.0-6.5	10/6/93	1145				✓	
B4 1.5-3.0	10/7/93	1605				✓	
B4 4.5-6.0	10/7/93	1610				✓	
B4 7.5-9.0	10/7/93	1620				✓	
B7 1.5-3.0	10/6/93	1435				✓	
B7 4.5-6.0	10/6/93	1450				✓	
B7 7.5-9.0	10/6/93	1515				✓	
B9 1.5-3.0	10/7/93	1320				✓	
B9 4.5-6.0	10/7/93	1340				✓	

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:
[signature]	10/8/93 850	[signature]	10-8-93 8:45 AM	
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number: / Date:
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	

DISTRIBUTION: Original Accompanies Shipment; Canary Copy to PG&E; Pink-Sampler

NOTE: Samples are discarded 30 days after results are reported unless other arrangements are made.

60006997/GI/TI97

SHERWOOD LABS. INC TEST REPORT #6 11/02/93

S0144
PACIFIC GAS & ELEC-SAN RAMON
3400 CROW CANYON ROAD
SAN RAMON, CA 94583-
ATTN: FRED FLINT

SHERWOOD LABS, INC
8071 N. LANDER AVENUE
HILMAR, CA 95324-
PAUL FREEHAUF, CHEMIST
DATE RCVD: 10/29/93

Lab Report #: H3102910 Lot# PO Number: ZS-2746-202

Below is a listing of the samples received on 10/29/93 togetner with the laboratory results on their respective PCB content. Please contact the lab at 209-667-5258 if you have any questions regarding these sample results.

SWL NUM	SERIAL NO.	COMPANY ID.	AROCLOR	RESULTS	TYPE
PH3103282		MW4		ND	WATER

The following table shows the methods and detection limits used, all tests use EPA Method 600/4-81-045.

TEST	EXTRACTION METHOD	LOWER DET. LIMIT	DIMENSIONS	TEST EQUIPMENT
OIL	NA	<1	PARTS PER MILLION	GC
SOIL	8080/3540	<1	MICROGRAMS/GRAM	SOXHLET/GC
WIPE	8080/3540	<1	MICROGRAMS/100 SQ CM	SOXHLET/GC

Lab Report #:H3102910 Page 1 Number of samples: 1

Sherwood Labs
CORPORATION

8071 NORTH LANDER AVENUE
P.O. BOX 937
HILMAR, CALIFORNIA 95324

11/02/93 DHS Certification #: 1400

ANALYSIS REPORT: BTEX/Total Petroleum Hydrocarbons

CLIENT: Pacific Gas & Electric-San Ramon
3400 Crow Canyon RD
San Ramon, CA 94583
Attn: Fred Flint

Project #: 0524E1
Project Name: Emeryville M.F.
Sampled By: Fred Flint

Date Received: 10/29/93
Date Started: 10/30/93
Date Completed: 11/01/93
Date Taken: 10/27/93

Lab Report #: H3102911

RESULTS: BTEX-EPA 602 ug/L; TRPH-EPA 3510/8015(M) TPH-EPA 5030/8015(M) ug/L

	Benzene,	Toluene,	Ethyl Benzene,	Total Xylene	Hydrocarbons
PH3103283 MW4	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<50

Paul Freehauf
Laboratory Director

CHAIN OF CUSTODY RECORD
Pacific Gas & Electric Company

3400 Crow Canyon Road
San Ramon CA 94583

Ship To: Sherwood Lab

Attention: | Phone: | Page ____ of ____

Job Number: 05246E1 | Project Name: Evergreen M.F | Project Manager: F. Flint

Samplers: (Signatures) | Field Team Leader:

SAMPLE NUMBER	DATE	TIME	SAMPLE TYPE	SAMPLE INFORMATION	NO. OF CNTRS.	TBA	PCB	8015	8020	REMARKS
MW 4	10/27/93	1414	AQ		1					Can Fred Flint with Results (510) 866-5808 FAX Report to Fred Flint (510) 866-5915

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:
	10/28/93 1558		10/28/93 1532	
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number: / Date:
	10/29/93 0910		10/29/93 0910	
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	

DISTRIBUTION: Original Accompanies Shipment; Canary Copy to PG&E; Pink-Sampler

NOTE: Samples are discarded 30 days after results are reported unless other arrangements are made.

60006997/GI/TI97