GROUNDWATER MONITORING AND SAMPLING REPORT

EMERYVILLE MAINTENANCE FACILITY
4525 HOLLIS STREET
EMERYVILLE, CALIFORNIA
SECOND QUARTER 1998

6/98

Prepared for

Pacific Gas and Electric Company
Technical and Ecological Services

June, 1998

Prepared by

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Project 0143-014.03

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1 INTRODUCTION

This report presents data collected during the second quarter 1998 monitoring period at the Pacific Gas and Electric Company (PG&E) Emeryville Maintenance Facility at 4525 Hollis Street in Emeryville, California (see Figure 1).

2 GROUNDWATER GRADIENT AND DIRECTION

Second quarter groundwater levels were measured at the PG&E Maintenance Facility in Emeryville, California, on May 15, 1998, using an electronic sounding device, and recorded on the historical monitoring well data form included in Appendix A. The groundwater elevations are summarized in Table 1. Well ESE-4 has been abandoned and is no longer part of the monitoring well network. The May data were used in constructing a groundwater contour map (see Figure 2). May water levels ranged from a low of 11.02 feet above mean sea level (MSL) in well ESE-1 to a high of 17.85 feet above MSL in well MW-4. The groundwater gradient is 0.02 foot per foot (ft/ft) to the north between monitoring wells ESE-2 and MW-4, and 0.05 ft/ft to the north-northeast between monitoring wells ESE-2 and ESE-1.

3 SAMPLING, ANALYSIS, AND MONITORING PROGRAM RESULTS

Groundwater samples were collected from wells ESE-1 through ESE-3 on May 15, 1998, consistent with the protocol presented in Figure 3, and analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) by U.S. Environmental Protection Agency (USEPA) Method 602/8020; polychlorinated biphenyls (PCBs) by USEPA Method 3510/608; and total extractable petroleum hydrocarbons (TEPH) as mineral oil, by USEPA Method 3510/8015M. Temperature, pH, and electrical conductivity were measured in the field and recorded on the water sample field data sheets (see Appendix A). Field readings from the second quarter 1998 monitoring event are summarized in Table 1.

The analytical results are discussed below. Second quarter 1998 and historical analytical data are summarized in Table 2. Certified analytical reports and chain-of-custody records are included in Appendix B.

BTEX, PCBs, and mineral oil were not detected at or above the method reporting limit (MRL) in any sample collected from ESE-1 through ESE-3.

4 FIELD LABORATORY QUALITY CONTROL RESULTS

Analytical data were evaluated for accuracy and precision based on field and laboratory quality control (QC) sample performance. The field QC consisted of collecting one field blank (FB-1) and analyzing it for BTEX.

Field blanks are collected to assess the effect of field environments on the analytical results and to identify false positives. No parameters were detected above their respective MRLs in the field blank, indicating no adverse effects from sampling procedures.

The laboratory QC consisted of checking adherence to holding times and evaluating method blanks and matrix spike (MS) results.

Holding times are established by the USEPA and refer to the maximum time allowed to pass between sample collection and analysis by the laboratory. These limits assist in determining data validity. The method blank results are used to assess the effect of the laboratory environment on the analytical results. The MS recoveries are used to assess accuracy.

All analyses were done within the holding times specified by the USEPA. No compounds were detected in the daily method blanks. Recoveries of MS results, were within the laboratory acceptance limits.

The field and laboratory QC results indicate that the analytical data are of acceptable quality.

The material and data in this report were prepared under the supervision and direction of the undersigned.

EMCON

for J.C. Isham
Geology Manager
~~C.H.G. 007~~

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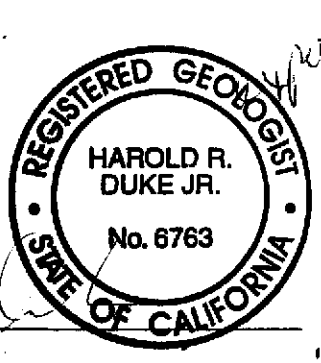

Harold R. Duke
Project Manager
R.G. 6763

Table 1
Field Measurements
Second Quarter 1998 and Historical Data
Pacific Gas and Electric Company
Emeryville, California

Sample Designation	Date	Top-of-Casing Elevation (ft/MSL)[1]	Depth to Water (feet)	Groundwater Elevation (ft/MSL)	Measured Well Depth (feet)	pH (units)	Temperature (°F)	Electrical Conductivity (umhos/cm)
ESE-1	03/28/94	23.66	10.06	13.60	20.8	8.48	73.1	600
ESE-1	04/07/94	23.66	10.22	13.44	NM[3]	NS[4]	NS	NS
ESE-1	12/12/94	23.66	9.18	14.48	30.6	7.26	63.4	588
ESE-1	03/13/95	23.66	8.20	15.46	30.6	7.33	63.3	548
ESE-1	06/15/95	23.66	9.50	14.16	30.6	6.90	64	505
ESE-1	09/15/95	23.66	10.13	13.53	30.6	6.80	65.1	505
ESE-1	12/15/95	23.66	10.55	13.11	33.8	7.04	65.1	511
ESE-1	03/15/96	23.66	11.79	11.87	33.6	6.94	64.9	540
ESE-1	06/14/96	23.66	12.68	10.98	33.6	6.93	67.4	517
ESE-1	10/07/96	23.66	12.56	11.10	34.0	6.94	73.3	494
ESE-1	12/04/96	23.66	12.67	10.99	34.2	6.80	64.4	507
ESE-1	02/14/97	23.66	12.62	11.04	34.2	6.96	67.5	509
ESE-1	05/16/97	23.66	13.05	10.61	34.2	7.07	69.0	534
ESE-1	08/22/97	23.66	12.60	11.06	34.0	6.32	67.4	597
ESE-1	11/14/97	23.66	12.32	11.34	33.7	7.35	65.9	600
ESE-1	02/13/98	23.66	10.61	13.05	33.7	7.21	61.8	621
ESE-1	05/15/98	23.66	12.64	11.02	33.7	7.19	68.0	598
ESE-2	03/28/94	27.80	10.13	17.67	34.2	7.67	67.5	580
ESE-2	04/07/94	27.80	14.37	13.43	NM	NS	NS	NS
ESE-2	12/12/94	27.80	13.05	14.75	34.3	7.05	64.6	610
ESE-2	03/13/95	27.80	12.48	15.32	34.3	7.19	62.5	596
ESE-2	06/15/95	27.80	13.85	13.95	34.3	7.02	65.1	601
ESE-2	09/15/95	27.80	14.22	13.58	34.3	6.91	65.6	627
ESE-2	12/15/95	27.80	11.65	16.15	34.1	7.12	64.7	591
ESE-2	03/15/96	27.80	12.87	14.93	34.1	7.01	65.8	669
ESE-2	06/14/96	27.80	13.94	13.86	34.1	7.08	67.1	607

Table 1
Field Measurements
Second Quarter 1998 and Historical Data
Pacific Gas and Electric Company
Emeryville, California

Sample Designation	Date	Top-of-Casing Elevation (ft/MSL)[1]	Depth to Water (feet)	Groundwater Elevation (ft/MSL)	Measured Well Depth (feet)	pH (units)	Temperature (°F)	Electrical Conductivity (umhos/cm)
ESE-2	10/07/96	27.80	13.58	14.22	34.0	7.10	74.6	558
ESE-2	12/04/96	27.80	14.20	13.60	34.4	6.89	65.0	618
ESE-2	02/14/97	27.80	13.80	14.00	34.4	7.02	66.3	578
ESE-2	05/16/97	27.80	14.07	13.73	34.4	7.00	69.9	580
ESE-2	08/22/97	27.80	14.35	13.45	34.4	6.49	66.1	623
ESE-2	11/14/97	27.80	13.80	14.00	34.4	7.23	66.8	649
ESE-2	02/13/98	27.80	11.52	16.28	34.4	7.15	62.4	646
ESE-2	05/15/98	27.80	13.56	14.24	34.4	7.29	68.7	611
ESE-3	03/28/94	23.91	11.23	12.68	30.9	7.47	68.7	610
ESE-3	04/07/94	23.91	11.29	12.62	NM	NS	NS	NS
ESE-3	12/12/94	23.91	10.62	13.29	31.0	7.19	63.9	600
ESE-3	03/13/95	23.91	9.45	14.46	31.0	6.99	62.5	600
ESE-3	06/15/95	23.91	10.27	13.64	31.0	7.10	64.9	556
ESE-3	09/15/95	23.91	10.87	13.04	31.0	6.96	65.5	559
ESE-3	12/19/95	23.91	9.40	14.51	31.0	7.28	64.2	556
ESE-3	03/15/96	23.91	10.02	13.89	30.9	7.01	65.0	583
ESE-3	06/14/96	23.91	10.63	13.28	30.9	7.09	67.0	546
ESE-3	10/07/96	23.91	10.85	13.06	31.0	6.87	68.8	514
ESE-3	12/04/96[5]	23.91	10.67	13.24	30.9	NM	NM	NM
ESE-3	02/14/97	23.91	10.75	13.16	30.9	7.01	65.9	506
ESE-3	05/16/97	23.91	10.99	12.92	31.0	7.40	69.9	539
ESE-3	08/22/97	23.91	10.65	13.26	31.0	6.86	66.6	563
ESE-3	11/14/97	23.91	10.50	13.41	31.0	7.47	65.8	583
ESE-3	02/13/98	23.91	9.32	14.59	31.0	7.04	63.7	602
ESE-3	05/15/98	23.91	10.72	13.19	31.0	7.42	67.8	593

Table 1
Field Measurements
Second Quarter 1998 and Historical Data
Pacific Gas and Electric Company
Emeryville, California

Sample Designation	Date	Top-of-Casing Elevation (ft/MSL)[1]	Depth to Water (feet)	Groundwater Elevation (ft/MSL)	Measured Well Depth (feet)	pH (units)	Temperature (°F)	Electrical Conductivity (umhos/cm)
ESE-4	03/28/94	24.33	10.63	13.70	31.4	7.77	66.3	610
ESE-4	04/07/94	24.33	10.85	13.48	NM	NS	NS	NS
ESE-4	12/12/94	24.33	9.63	14.70	31.6	7.11	63.1	591
ESE-4	03/13/95	24.33	8.90	15.43	31.6	7.16	61.2	595
ESE-4	06/15/95	24.33	9.81	14.52	31.6	7.05	64.1	565
ESE-4	09/15/95	24.33	10.85	13.48	31.6	7.01	66.3	584
ESE-4	12/15/95	24.33	8.72	15.61	31.6	7.05	64.6	555
ESE-4	03/15/96	24.33	9.29	15.04	31.5	7.01	63.7	600
ESE-4	06/14/96	24.33	10.23	14.10	31.5	7.04	66.0	591
ESE-4	10/07/96	24.33	10.44	13.89	31.5	6.89	70.1	541
ESE-4	12/04/96 [5]	24.33	10.31	14.02	31.5	NM	NM	NM
ESE-4	02/14/97	24.33	10.12	14.21	31.5	7.11	65.3	511
ESE-4	05/16/97	24.33	10.56	13.77	31.6	7.40	69.1	559
ESE-4	08/22/97 [5]	24.33	NM	NM	NM	NM	NM	NM
ESE-4	11/14/97	24.33	10.20	14.13	31.5	7.52	65.5	576
ESE-4	02/13/98 [6]	24.33	NM	NM	NM	NM	NM	NM
ESE-4	Well Abandoned							
MW-4	03/13/95	28.14	9.84	18.30	14.7	NS	NS	NS
MW-4	06/15/95	28.14	10.74	17.40	14.7	NS	NS	NS
MW-4	09/15/95	28.14	10.90	17.24	14.7	NS	NS	NS
MW-4	12/15/95	28.14	6.53	21.61	14.7	NS	NS	NS
MW-4	03/15/96	28.14	8.12	20.02	14.7	NS	NS	NS
MW-4	06/14/96	28.14	10.78	17.36	14.7	NS	NS	NS
MW-4	10/07/96	28.14	10.81	17.33	14.7	NS	NS	NS
MW-4	12/04/96	28.14	10.44	17.70	14.7	NS	NS	NS
MW-4	02/14/97	28.14	10.41	17.73	14.7	NS	NS	NS

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Emeryville, California

Sample Designation	Date	Top-of-Casing Elevation (ft/MSL)[1]	Depth to Water (feet)	Groundwater Elevation (ft/MSL)	Measured Well Depth (feet)	pH (units)	Temperature (°F)	Electrical Conductivity (umhos/cm)
MW-4	05/16/97	28.14	10.78	17.36	14.7	NS	NS	NS
MW-4	08/22/97	28.14	10.55	17.59	14.7	NS	NS	NS
MW-4	11/14/97	28.14	10.15	17.99	14.7	NS	NS	NS
MW-4	02/13/98	28.14	9.75	18.39	14.7	NS	NS	NS
MW-4	05/15/98	28.14	10.29	17.85	14.7	NS	NS	NS

[1] ft/MSL = feet relative to mean sea level.
[2] umhos/cm = micromhos per centimeter at 77°F.
[3] NM = not measured.
[4] NS = not sampled.
[5] Wells not sampled due to construction in the area resulting in heavy traffic.
[6] Unable to locate well. Well area covered with mud and crushed rock from road construction.

Table 2
Analytical Data
Second Quarter 1998 and Historical Data
Pacific Gas and Electric Company
Emeryville, California
(ug/l)[1]

Sample Designation	Sampling Date	Polychlorinated Biphenols	TEPH[2]	Benzene	Toluene	Ethylbenzene	Xylenes
ESE-1	03/28/94	<1	340	<0.3	<0.3	<0.3	<0.3
ESE-1	12/12/94	<0.5	80	<0.5	<0.5	<0.5	<0.5
ESE-1	03/13/95	1.3	500 [3]	<0.5	<0.5	<0.5	<0.5
ESE-1	06/15/95	<0.5	350 [3]	<0.5	<0.5	<0.5	<0.5
ESE-1	09/15/95	<0.5	470 [3]	<0.5	<0.5	<0.5	<0.5
ESE-1	12/15/95	<0.5	440 [3]	<0.5	<0.5	<0.5	<0.5
ESE-1	03/15/96	<0.5	277	<0.5	<0.5	<0.5	<0.5
ESE-1	06/14/96	<0.5	<500	<0.5	<0.5	<0.5	<0.5
ESE-1	10/07/96	<0.5	110 [4]	<0.5	<0.5	<0.5	<0.5
ESE-1	12/04/96	<0.5	430 [4]	<0.5	<0.5	<0.5	<0.5
ESE-1	02/14/97	<0.5	1,600	<0.5	<0.5	<0.5	<0.5
ESE-1	05/16/97	<0.5	510 [8]	<0.5	<0.5	<0.5	<0.5
ESE-1	08/22/97	<0.5	740 [8]	<0.5	<0.5	<0.5	<0.5
ESE-1	11/14/97	<0.5	410 [8]	<0.5	<0.5	<0.5	<0.5
ESE-1	02/13/98	<0.5	<100 [8]	<0.5	<0.5	<0.5	<0.5
ESE-1	05/15/98	<0.5	<500	<0.5	<0.5	<0.5	<0.5
ESE-2	03/28/94	<1	250	0.8	1.5	<0.3	2.7
ESE-2	12/12/94	<0.5	<50	<0.5	<0.5	<0.5	<0.5
ESE-2	03/13/95	<0.5	120 [5]	<0.5	<0.5	<0.5	<0.5
ESE-2	06/15/95	<0.5	<50	<0.5	<0.5	<0.5	<0.5
ESE-2	09/15/95	<0.5	<50	<0.5	<0.5	<0.5	<0.5
ESE-2	12/15/95	<0.5	<50	<0.5	<0.5	<0.5	<0.5
ESE-2	03/15/96	<0.5	<59	<0.5	<0.5	<0.5	<0.5
ESE-2	06/14/96	<0.5	<500	<0.5	<0.5	<0.5	<0.5
ESE-2	10/07/96	<0.5	150 [4]	<0.5	<0.5	<0.5	<0.5

Table 2
Analytical Data
Second Quarter 1998 and Historical Data
Pacific Gas and Electric Company
Emeryville, California
(ug/l)[1]

Sample Designation	Sampling Date	Polychlorinated Biphenols	TEPH[2]	Benzene	Toluene	Ethylbenzene	Xylenes
ESE-2	12/04/96	<0.5	380 [4]	<0.5	<0.5	<0.5	<0.5
ESE-2	02/14/97	<0.5	510	<0.5	<0.5	<0.5	<0.5
ESE-2	05/16/97	<0.5	190 [8]	<0.5	<0.5	<0.5	<0.5
ESE-2	08/22/97	<0.5	<100 [8]	<0.5	<0.5	0.51	<0.5
ESE-2	11/14/97	<0.52	<100 [8]	<0.5	<0.5	<0.5	<0.5
ESE-2	02/13/98	<0.5	<100 [8]	<0.5	<0.5	<0.5	<0.5
ESE-2	05/15/98	<0.5	<500	<0.5	<0.5	<0.5	<0.5
ESE-3	03/28/94	<1	<50	<0.3	<0.3	<0.3	<0.3
ESE-3	12/12/94	<0.5	<50	<0.5	<0.5	<0.5	<0.5
ESE-3	03/13/95	<0.5	<50	<0.5	<0.5	<0.5	<0.5
ESE-3	06/15/95	<0.5	<50	<0.5	<0.5	<0.5	<0.5
ESE-3	09/15/95	<0.5	<50	<0.5	<0.5	<0.5	<0.5
ESE-3	12/15/95	<0.5	<50	<0.5	<0.5	<0.5	<0.5
ESE-3	03/15/96	<0.5	<59	<0.5	<0.5	<0.5	<0.5
ESE-3	06/14/96	<0.5	<500	<0.5	<0.5	<0.5	<0.5
ESE-3	10/07/96	<0.5	<100	<0.5	<0.5	<0.5	<0.5
ESE-3	12/04/96 [6]	NA [7]	NA	NA	NA	NA	NA
ESE-3	02/14/97	<0.5	<100	<0.5	<0.5	<0.5	<0.5
ESE-3	05/16/97	<0.5	<110 [8]	<0.5	<0.5	<0.5	<0.5
ESE-3	08/22/97	<0.5	<100 [8]	<0.5	<0.5	<0.5	<0.5
ESE-3	11/14/97	<0.5	<100 [8]	<0.5	<0.5	<0.5	<0.5
ESE-3	02/13/98	<0.5	<100 [8]	<0.5	<0.5	<0.5	<0.5
ESE-3	05/15/98	<0.5	<500	<0.5	<0.5	<0.5	<0.5
ESE-4	03/28/94	<1	<50	<0.3	<0.3	<0.3	<0.3
ESE-4	12/12/94	<0.5	<50	<0.5	<0.5	<0.5	<0.5
ESE-4	03/13/95	<0.5	56 [5]	<0.5	<0.5	<0.5	<0.5

Table 2
Analytical Data
Second Quarter 1998 and Historical Data
Pacific Gas and Electric Company
Emeryville, California
(ug/l)[1]

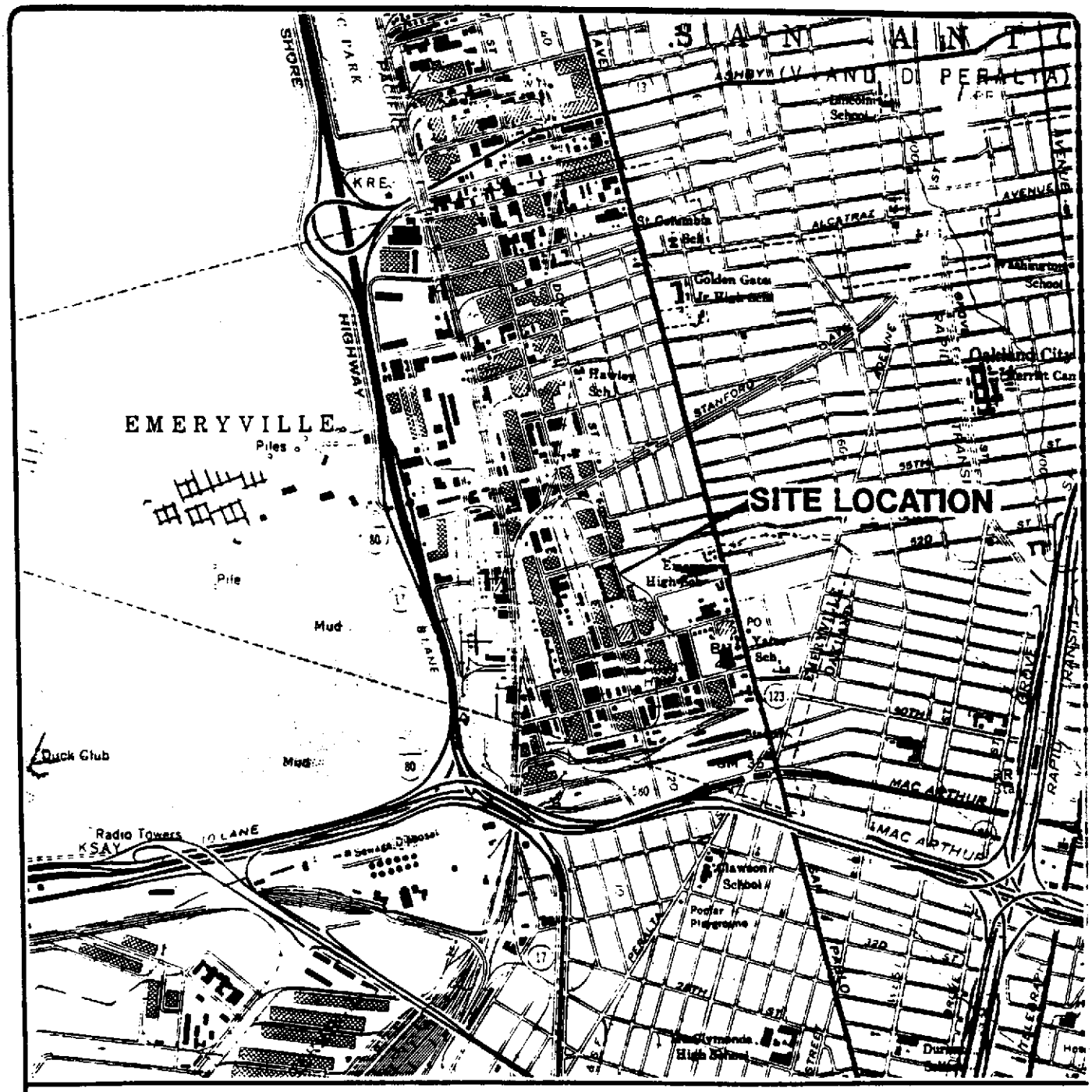
Sample Designation	Sampling Date	Polychlorinated Biphenols	TEPH[2]	Benzene	Toluene	Ethylbenzene	Xylenes
ESE-4	06/15/95	<0.5	<50	<0.5	<0.5	<0.5	<0.5
ESE-4	09/15/95	<0.5	<50	<0.5	<0.5	<0.5	<0.5
ESE-4	12/15/95	<0.5	57 [5]	<0.5	<0.5	<0.5	<0.5
ESE-4	03/15/96	<0.5	<59	<0.5	<0.5	<0.5	<0.5
ESE-4	06/14/96	<0.5	<500	<0.5	<0.5	<0.5	<0.5
ESE-4	10/07/96	<0.5	<100	<0.5	<0.5	<0.5	<0.5
ESE-4	12/04/96 [6]	NA	NA	NA	NA	NA	NA
ESE-4	02/14/97	<0.5	270 [4]	<0.5	<0.5	<0.5	<0.5
ESE-4	05/16/97	<0.5	<110 [8]	<0.5	<0.5	<0.5	<0.5
ESE-4	08/22/97 [6]	NA	NA	NA	NA	NA	NA
ESE-4	11/14/97	<0.5	<100 [8]	<0.5	<0.5	<0.5	<0.5
ESE-4	02/13/98 [9]	NA	NA	NA	NA	NA	NA
ESE-4	05/15/98 [9]	NA	NA	NA	NA	NA	NA
Trip Blank	03/28/94	<1	<50	<0.3	<0.3	<0.3	<0.3
Trip Blank	12/12/94	NA	NA	<0.5	<0.5	<0.5	<0.5
Trip Blank	03/13/95	NA	NA	<0.5	<0.5	<0.5	<0.5
Trip Blank	06/15/95	NA	NA	<0.5	<0.5	<0.5	<0.5
Trip Blank	09/15/95	NA	NA	<0.5	<0.5	<0.5	<0.5
Trip Blank	12/15/95	NA	NA	<0.5	<0.5	<0.5	<0.5
Field Blank	03/28/94	NA	NA	NA	NA	NA	NA
Field Blank	12/12/94	NA	NA	<0.5	<0.5	<0.5	<0.5
Field Blank	03/13/95	NA	NA	<0.5	<0.5	<0.5	<0.5
Field Blank	06/15/95	NA	NA	<0.5	<0.5	<0.5	<0.5
Field Blank	09/15/95	NA	NA	<0.5	<0.5	<0.5	<0.5
Field Blank	12/15/95	NA	NA	<0.5	<0.5	<0.5	<0.5

Table 2
Analytical Data
Second Quarter 1998 and Historical Data
Pacific Gas and Electric Company
Emeryville, California
(ug/l)[1]

Sample Designation	Sampling Date	Polychlorinated Biphenols	TEPH[2]	Benzene	Toluene	Ethylbenzene	Xylenes
Field Blank	03/15/96	NA	NA	<0.5	<0.5	<0.5	<0.5
Field Blank	06/14/96	NA	NA	<0.5	<0.5	<0.5	<0.5
Field Blank	10/07/96	NA	NA	<0.5	<0.5	<0.5	<0.5
Field Blank	12/04/96	NA	NA	<0.5	<0.5	<0.5	<0.5
Field Blank	02/14/97	NA	NA	<0.5	<0.5	<0.5	<0.5
Field Blank	05/16/97	NA	NA	<0.5	<0.5	<0.5	<0.5
Field Blank	08/22/97	NA	NA	<0.5	<0.5	<0.5	<0.5
Field Blank	11/14/97	NA	NA	<0.5	<0.5	<0.5	<0.5
Field Blank	02/13/98	NA	NA	<0.5	<0.5	<0.5	<0.5
Field Blank	05/15/98	NA	NA	<0.5	<0.5	<0.5	<0.5

[1] ug/l = micrograms per liter.
[2] TEPH = total extractable petroleum hydrocarbons.
[3] Compounds similar to client-supplied transformer oil were found.
[4] Hydrocarbon reported does not match the pattern of laboratory standard for mineral oil.
[5] Compounds in diesel range not similar to laboratory standard for transformer oil.
[6] Wells not sampled due to construction in the area resulting in heavy traffic.
[7] NA = not analyzed.
[8] Quantitation for mineral oil is based on the response factor of diesel.
[9] Unable to locate well. Well area covered with mud and crushed rock from road construction.

152753



Base map from USGS 7.5' Quad. Map:
Oakland West, California. (Photorevised 1980).

- N -

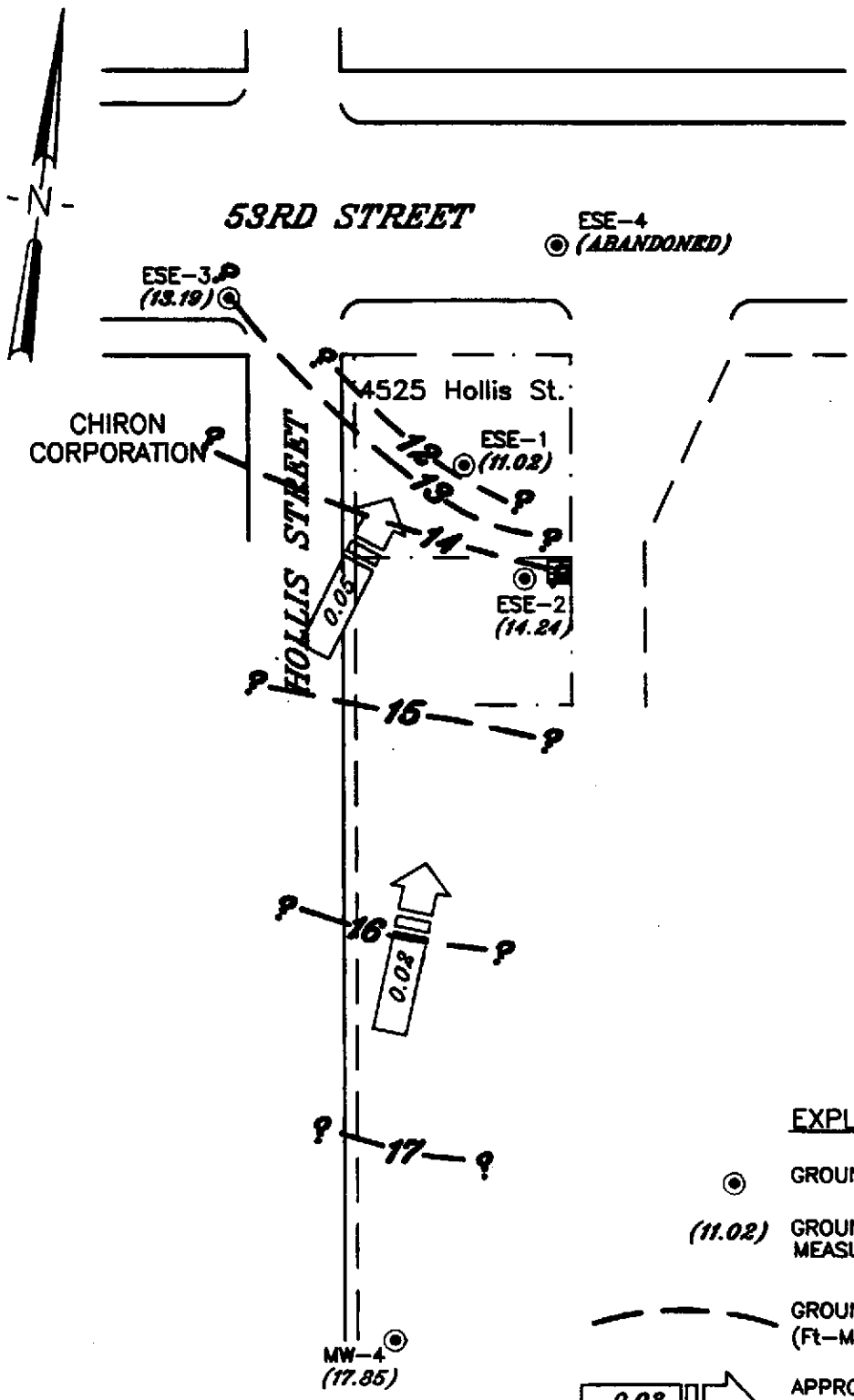
Scale : 0 2000 4000 Feet

EMCON Associates

PACIFIC GAS & ELECTRIC COMPANY
QUARTERLY MONITORING PROGRAM
EMERYVILLE, CALIFORNIA

SITE LOCATION

FIGURE
1
PROJECT NO
143-014.02



EMCON

DATE
DWN
APP
REV
PROJECT NO.
20143-014.003

FIGURE 2
PACIFIC GAS AND ELECTRIC
EMERYVILLE MAINTENANCE FACILITY
EMERYVILLE, CALIFORNIA
GROUNDWATER CONTOUR MAP
SECOND QUARTER 1998

MONITORING WELL PURGING PROTOCOL

EMCON

MEASURE AND RECORD DEPTH TO WATER AND WELL TOTAL DEPTH

CHECK FOR FLOATING PRODUCT

YES

MEASURE AND DOCUMENT FLOATING PRODUCT THICKNESS. DO NOT SAMPLE WELL FOR DISSOLVED CONSTITUENTS.

NO

CALCULATE PURGE VOLUME BY USING THE FOLLOWING EQUATION:

$$P = \pi r^2 h \times 7.48 \times 3$$

where:

- P = calculated purge volume (gallons)
- π = 3.14
- r = radius of well casing in feet
- h = height of water column in feet

EVACUATE WATER FROM WELL EQUAL TO THE CALCULATED PURGE VOLUME WHILE MONITORING GROUND-WATER STABILIZATION INDICATOR PARAMETERS (pH, CONDUCTIVITY, TEMPERATURE) AND TURBIDITY AT INTERVALS OF ONE CASING VOLUME.

WELL EVACUATED TO PRACTICAL LIMITS OF DRYNESS BEFORE REMOVING CALCULATED PURGE VOLUME

NO

FINAL TWO SETS OF GROUND-WATER STABILIZATION INDICATOR PARAMETER MEASUREMENTS MEET THE FOLLOWING CRITERIA:

pH	= ±	0.05 pH units
COND.	= ±	3 %
TEMP.	= ±	1.0 °F
TURBIDITY	= ±	<5 NTU

YES

WELL PURGING CRITERIA MET; PROCEED TO WELL SAMPLING

NO

CONTINUE PURGING; EVACUATE ADDITIONAL CASING VOLUME OF WATER, MONITORING INDICATOR PARAMETERS FOR STABILITY.

YES

WELL RECHARGES TO A LEVEL SUFFICIENT FOR SAMPLE COLLECTION WITHIN 24 HOURS OF EVACUATION TO DRYNESS.

YES

FIELD TEST FIRST RECHARGE WATER FOR INDICATOR PARAMETERS AND TURBIDITY, THEN PROCEED TO WELL SAMPLING.

NO

RECORD WELL AS DRY FOR PURPOSES OF SAMPLING.

EMCON

MONITORING WELL PURGING PROTOCOL

FIGURE 3

APPENDIX A

HISTORICAL MONITORING WELL DATA FORM AND WATER SAMPLE FIELD DATA SHEETS

EMCON - Field Services
1921 Ringwood Avenue
San Jose, California

Mike Ross
Signature

Historical Monitoring Well Data
PG&E Emeryville
0143-014.002

Well ID	Date	Depth to Floating Product (feet)	First Depth to Water (feet)	Second Depth to Water (feet)	Floating Product Thickness (feet)	Well Total Depth (feet)	Comments
Depth to liquid : 0.01 foot							Total depth : 0.1 foot
	08/22/97	ND	12.60	12.60	ND	34.0	
	11/14/97	ND	12.32	12.32	ND	33.7	
	02/13/98	ND	10.61	10.61	ND	33.7	
ESE-1	5/15/98	ND	12.64	12.64	ND	33.7	Time 0950 Lock: None
	08/22/97	ND	14.35	14.35	ND	34.4	
	11/14/97	ND	13.80	13.80	ND	34.4	water on bar
	02/13/98	ND	11.52	11.52	ND	34.4	T.O.C.
ESE-2		ND	13.56	13.56	ND	34.4	Time: 0954 Lock: Dolphin
	08/22/97	ND	10.65	10.65	ND	31.0	
	11/14/97	ND	10.50	10.50	ND	31.0	
	02/13/98	ND	9.32	9.32	ND	31.0	
ESE-3		ND	10.72	10.72	ND	31.0	Time: 1010 Lock: 3210
	08/22/97	ND	NR	NR	NR	NR	
	11/14/97	ND	10.20	10.20	ND	31.5	
	02/13/98	NR	NR	NR	NR	NR	bad cover
ESE-4		NR	NR	NR	NR	NR	Time: Lock: 3210
	08/22/97	ND	10.55	10.55	ND	14.7	
	11/14/97	ND	10.15	10.15	ND	14.7	
	02/13/98	ND	9.75	9.75	ND	14.7	
MW-4		ND	10.21	10.24	ND	14.7	Time 0946 Lock: None

WATER SAMPLE FIELD DATA SHEET

Rev 1/97

OWT

PROJECT NO 20147.04.002 SAMPLE ID ESE - 1
PURGED BY M. Ross CLIENT NAME PG&E Emeryville
SAMPLED BY M. Ross LOCATION Emeryville, CA

TYPE: Groundwater ✓ Surface Water ____ Leachate ____ Other ____
CASING DIAMETER (inches): 2 ✓ 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION (feet/MSL)	NR	VOLUME IN CASING (gal.)	3.41
DEPTH OF WELL (feet)	33.7	CALCULATED PURGE (gal.)	13.64
DEPTH OF WATER (feet)	12.80	ACTUAL PURGE VOL. (gal.)	14.0

DATE PURGED: 5/15/98 END PURGE: 1244
DATE SAMPLED: 5/15/98 SAMPLING TIME: 1300

TIME (2400 HR)	VOLUME (gal)	pH (units)	E.C. (umhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1229	3.5	6.99	569	68.1	light brown	mod
1234	7.0	7.09	598	68.5	"	"
1239	10.5	7.06	599	68.2	"	"
1244	14.0	7.14	598	68.0	"	"

OTHER: NR ODOR: None NR NR
(COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
____ 2" Bladder Pump	____ Bailer (Teflon)	____ 2" Bladder Pump	✓ Bailer (Teflon)
____ Centrifugal Pump	✓ Bailer (PVC)	____ Bomb Sampler	____ Bailer (Stainless Steel)
____ Submersible Pump	____ Bailer (Stainless Steel)	____ Dipper	____ Submersible Pump
____ Well Wizard™	____ Dedicated	____ Well Wizard™	____ Dedicated
Other: ____		Other: Disposable	

WELL INTEGRITY: Ok LOCK: Red

REMARKS:

pH, E.C., Temp. Meter Calibration Date: 5/15/98 Time: 1035 Meter Serial No: 6001/2
E.C. 1000 ____ / ____ pH 7 ____ / ____ pH 10 ____ / ____ pH 4 ____ / ____
Temperature °F ____ See ESE-3

SIGNATURE: [signature] REVIEWED BY: [signature] PAGE 1 OF 4

WATER SAMPLE FIELD DATA SHEET

Rev 1/97

OWT

PROJECT NO 20143-014.002 | SAMPLE ID ESE-2
PURGED BY M. Ross | CLIENT NAME PG&E Emeryville
SAMPLED BY M. Ross | LOCATION Emeryville, Ca

TYPE: Groundwater ✓ Surface Water ___ Leachate ___ Other ___

CASING DIAMETER (inches): 2 ✓ 3 ___ 4 ___ 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL): NR
DEPTH OF WELL (feet): 34.4
DEPTH OF WATER (feet): 13.67

VOLUME IN CASING (gal.): 3.38
CALCULATED PURGE (gal.): 13.53
ACTUAL PURGE VOL. (gal.): 14.0

DATE PURGED: 5/15/98
DATE SAMPLED: 5/15/98

END PURGE: 1156
SAMPLING TIME: 1210

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°c)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1141	3.5	6.99	501	70.8	Light Brn	Trace
1146	7.0	7.18	606	68.5	"	"
1151	10.5	7.23	612	69.1	"	"
1156	14.0	7.29	611	68.7	"	"

OTHER: DNR
ODOR: None
COLOR (COBALT 0-100): NR
TURBIDITY (NTU 0-200): NR

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): FB-1 @ 1220

PURGING EQUIPMENT

___ 2" Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Well Wizard™
___ Bailer (Teflon)
✓ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated
Other: ___

SAMPLING EQUIPMENT

___ 2" Bladder Pump
___ Bomb Sampler
___ Dipper
___ Well Wizard™
✓ Bailer (Teflon)
___ Bailer (Stainless Steel)
___ Submersible Pump
___ Dedicated
Other: Disposable

WELL INTEGRITY: OK
LOCK: Plug

REMARKS:

pH, E.C., Temp. Meter Calibration: Date: 5/15/98 Time: 1035 Meter Serial No.: 600112
E.C. 1000 ___/___ pH 7 ___/___ pH 10 ___/___ pH 4 ___/___
Temperature °F

see ESE-3

SIGNATURE: [signature] REVIEWED BY: [signature] PAGE 2 OF 4

WATER SAMPLE FIELD DATA SHEET

Rev 1/97

OWT

PROJECT NO 20143-014.002 SAMPLE ID ESE-3
PURGED BY M. Ross CLIENT NAME PG&E Emeryville
SAMPLED BY M. Ross LOCATION Emeryville, CA

TYPE Groundwater ___ Surface Water ✓ Leachate ___ Other ___

CASING DIAMETER (inches) 2 ✓ 3 ___ 4 ___ 4.5 ___ 6 ___ Other ___

CASING ELEVATION (feet/MSL)	NR	VOLUME IN CASING (gal.)	3.29
DEPTH OF WELL (feet)	31.0	CALCULATED PURGE (gal.)	13.18
DEPTH OF WATER (feet)	10.72	ACTUAL PURGE VOL. (gal.)	13.5

DATE PURGED: 5/15/98 END PURGE: 1105
DATE SAMPLED: 5/15/98 SAMPLING TIME: 1115

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°c)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1051	3.5	7.11	659	68.6	Light Brn	Turbid
1056	7.0	7.24	613	68.2	"	"
1101	10.5	7.40	597	68.0	"	"
1105	13.5	7.42	593	67.8	"	"

OTHER: NR ODOR None NR (COBALT 0-100) NR (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT

___ 2" Bladder Pump ___ Bailer (Teflon)
___ Centrifugal Pump ✓ Bailer (PVC)
___ Submersible Pump ___ Bailer (Stainless Steel)
___ Well Wizard™ ___ Dedicated
Other: ___

SAMPLING EQUIPMENT

___ 2" Bladder Pump ✓ Bailer (Teflon)
___ Bomb Sampler ___ Bailer (Stainless Steel)
___ Dipper ___ Submersible Pump
___ Well Wizard™ ___ Dedicated
Other: Disposable

WELL INTEGRITY: OK LOCK: PG&E

REMARKS:

pH, E.C., Temp. Meter Calibration: Date: 5/15/98 Time: 1035 Meter Serial No.: 620112
E.C. 1000 1268 / 1000 pH 7 730 / 700 pH 10 996 / 1000 pH 4 402 / 400
Temperature °F 71.1

SIGNATURE: [signature] REVIEWED BY [signature] PAGE 3 OF 4

WATER SAMPLE FIELD DATA SHEET

Rev 1/97

OWT

PROJECT NO 20143-014.002 | SAMPLE ID ESE-4
PURGED BY M. Ross | CLIENT NAME PG&E Emeryville
SAMPLED BY M. Ross | LOCATION Emeryville, Ca.

TYPE Groundwater ✓ Surface Water ____ Leachate ____ Other ____

CASING DIAMETER (inches): 2 ✓ 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION (feet/MSL): NR
DEPTH OF WELL (feet): NR
DEPTH OF WATER (feet): NR

VOLUME IN CASING (gal.): NR
CALCULATED PURGE (gal.): NR
ACTUAL PURGE VOL. (gal.): NR

DATE PURGED: NR
DATE SAMPLED: NR

END PURGE: NR
SAMPLING TIME: NR

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°c)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
	UNABLE TO LOCATE WELL LOCATED IN STREET				ESE-4	

OTHER: NR ODOR: ____ (COBALT 0-100): NR (NTU 0-200): NR

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT

____ 2" Bladder Pump ____ Bailer (Teflon)
____ Centrifugal Pump ____ Bailer (PVC)
____ Submersible Pump ____ Bailer (Stainless Steel)
____ Well Wizard™ ____ Dedicated
Other: ____

SAMPLING EQUIPMENT

____ 2" Bladder Pump ____ Bailer (Teflon)
____ Bomb Sampler ____ Bailer (Stainless Steel)
____ Dipper ____ Submersible Pump
____ Well Wizard™ ____ Dedicated
Other: ____

WELL INTEGRITY: ____ LOCK: ____

REMARKS: WELL NEEDS TO BE re-surveyed.

pH, E.C., Temp. Meter Calibration: Date: ____ Time: ____ Meter Serial No.: ____

E.C. 1000 ____ / ____ pH 7 ____ / ____ pH 10 ____ / ____ pH 4 ____ / ____

Temperature °F ____

SIGNATURE: Mike Ross REVIEWED BY: NA PAGE 4 OF 4

EMCON - Drum Inventory Record

20143-014.002	Emeryville, CA	5/15/98
Project No	**Location**	**Date**
PG&E- Emeryville	Mike Ross	Friday
Client	**Sampler**	**Day of Week**

DRUM NUMBER OR ID	WELL OR SOURCE ID(s)	TYPE OF MATERIAL	AMOUNT OF MATERIAL IN DRUM	DATE ACCUMULATED OR GENERATED
(A)	ESE-1 ESE-2 ESE-3	H_2O	45.0 gal	5/15/98

Sketch locations of drums, include drum ID's

COMMENTS:

Number of Drums From This Event 1

Total Number of Drums At Site 1

EMCON
GROUNDWATER SAMPLING AND ANALYSIS REQUEST FORM

PROJECT NAME: **PG&E-Emeryville**
4525 Hollis Street, Emeryville, CA
DATE SUBMITTED: **15-May-98**

SPECIAL INSTRUCTIONS / CONSIDERATIONS :
Quarterly Water Quality Monitoring - Third Month of the Quarter

Survey water levels prior to well purging and sampling.
Purge four casing volumes prior to sample collection
Purge and sample using bailers.
Drum purge water; use the drums supplied by PG&E
Deliver samples to Sequoia Analytical upon completion.

Authorization: _____

Project No. : **20143-014.002**

Send Results To: **JC Isham**

Coordinator: **Steve Horton**

Well Locks:
PG&E

PG&E Project
Coordinator: **Mr. Fred Flint** Phone No.: **(510) 866-5808**
Site Contact: **Mr. Mel Byrd** Phone No.: **(510) 450-5740**

Well ID or Source	Casing Diameter (inches)	Casing Length (feet)	ANALYSES REQUESTED
ESE-1	2.0	30.6	**PCBs by EPA 8080** **BTEX by EPA 602** **TEPH as mineral oil by EPA 3510/8015**
ESE-2	2.0	34.3	
ESE-3	2.0	31.0	
ESE-4	2.0	31.6	
FB-1	NA	NA	**BTEX by EPA 602**
MW-4	2.0	14.7	**Water Level & Total Depth Only**

Laboratory and Lab QC Instructions:
Tier I QC; all samples are to be analyzed by Chromalab

APPENDIX B

CERTIFIED ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (650) 364-9600, FAX (650) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131

Attention: J.C. Isham

Client Proj. ID: PG&E-Emeryville 20143-014.002
Sample Descript: ESE-1
Matrix: LIQUID
Analysis Method: EPA 602
Lab Number: 9805B28-01

Sampled: 05/15/98
Received: 05/15/98

Analyzed: 05/23/98
Reported: 06/24/98

QC Batch Number: GC052398OVOA08A
Instrument ID: GCHP08

Purgeable Aromatics (EPA 602)

Analyte	Detection Limit ug/L	Sample Results ug/L
Benzene	0.50	N.D.
Ethyl benzene	0.50	N.D.
Toluene	0.50	N.D.
Total Xylenes	0.50	N.D.

Surrogates	Control Limits %		% Recovery
1-Chloro-2-fluorobenzene	70	130	97

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (650) 364-9600, FAX (650) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131

Attention: J.C. Isham

Client Proj. ID: PG&E-Emeryville 20143-014.002
Sample Descript: ESE-2
Matrix: LIQUID
Analysis Method: EPA 602
Lab Number: 9805B28-02

Sampled: 05/15/98
Received: 05/15/98

Analyzed: 05/23/98
Reported: 06/24/98

QC Batch Number: GC052398OVOA08A
Instrument ID: GCHP08

Purgeable Aromatics (EPA 602)

Analyte	Detection Limit ug/L	Sample Results ug/L
Benzene	0.50	N.D.
Ethyl benzene	0.50	N.D.
Toluene	0.50	N.D.
Total Xylenes	0.50	N.D.
Surrogates	**Control Limits %**	**% Recovery**
1-Chloro-2-fluorobenzene	70 130	99

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (650) 364-9600, FAX (650) 364-9233
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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131

Attention: J.C. Isham

Client Proj. ID: PG&E-Emeryville 20143-014.002
Sample Descript: ESE-3
Matrix: LIQUID
Analysis Method: EPA 602
Lab Number: 9805B28-03

Sampled: 05/15/98
Received: 05/15/98

Analyzed: 05/23/98
Reported: 06/24/98

QC Batch Number: GC052398OVOA08A
Instrument ID: GCHP08

Purgeable Aromatics (EPA 602)

Analyte	Detection Limit ug/L	Sample Results ug/L
Benzene	0.50	N.D.
Ethyl benzene	0.50	N.D.
Toluene	0.50	N.D.
Total Xylenes	0.50	N.D.

Surrogates	Control Limits %		% Recovery
1-Chloro-2-fluorobenzene	70	130	97

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

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404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131

Attention: J.C. Isham

Client Proj. ID: PG&E-Emeryville 20143-014.002
Sample Descript: FB-1
Matrix: LIQUID
Analysis Method: EPA 602
Lab Number: 9805B28-04

Sampled: 05/15/98
Received: 05/15/98

Analyzed: 05/23/98
Reported: 06/24/98

QC Batch Number: GC052398OVOA08A
Instrument ID: GCHP08

Purgeable Aromatics (EPA 602)

Analyte	Detection Limit ug/L	Sample Results ug/L
Benzene	0.50	N.D.
Ethyl benzene	0.50	N.D.
Toluene	0.50	N.D.
Total Xylenes	0.50	N.D.
Surrogates	**Control Limits %**	**% Recovery**
1-Chloro-2-fluorobenzene	70 130	94

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (650) 364-9600, FAX (650) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100
1455 McDowell Blvd. North, Ste. D, Petaluma, CA 94954, (707) 792-1865, FAX (707) 792-0342

EMCON Associates	Client Proj. ID: PG&E-Emeryville 20143-014.002	Sampled: 05/15/98
1921 Ringwood Avenue	Sample Descript: ESE-1	Received: 05/15/98
San Jose, CA 95131	Matrix: LIQUID	Extracted: 05/27/98
	Analysis Method: EPA 8080	Analyzed: 05/28/98
Attention: J.C. Isham	Lab Number: 9805B28-01	Reported: 06/03/98

QC Batch Number: GC0527980PCBEXA
Instrument ID: GCHP12

Polychlorinated Biphenyls (EPA 8080)

Analyte	Detection Limit ug/L	Sample Results ug/L
PCB-1016	0.50	N.D.
PCB-1221	2.0	N.D.
PCB-1232	0.50	N.D.
PCB-1242	0.50	N.D.
PCB-1248	0.50	N.D.
PCB-1254	0.50	N.D.
PCB-1260	0.50	N.D.

Surrogates	Control Limits %		% Recovery
Dibutylchlorendate	50	150	60
Tetrachloro-m-xylene	50	150	44 Q

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (650) 364-9600, FAX (650) 364-9233
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1455 McDowell Blvd. North, Ste. D, Petaluma, CA 94954, (707) 792-1865, FAX (707) 792-0342

EMCON Associates	Client Proj. ID: PG&E-Emeryville 20143-014.002	Sampled: 05/15/98
1921 Ringwood Avenue	Sample Descript: ESE-2	Received: 05/15/98
San Jose, CA 95131	Matrix: LIQUID	Extracted: 05/27/98
	Analysis Method: EPA 8080	Analyzed: 05/28/98
Attention: J.C. Isham	Lab Number: 9805B28-02	Reported: 06/03/98

QC Batch Number: GC0527980PCBEXA
Instrument ID: GCHP12

Polychlorinated Biphenyls (EPA 8080)

Analyte	Detection Limit ug/L	Sample Results ug/L
PCB-1016	0.50	N.D.
PCB-1221	2.0	N.D.
PCB-1232	0.50	N.D.
PCB-1242	0.50	N.D.
PCB-1248	0.50	N.D.
PCB-1254	0.50	N.D.
PCB-1260	0.50	N.D.

Surrogates	Control Limits %		% Recovery
Dibutylchlorendate	50	150	52
Tetrachloro-m-xylene	50	150	35 Q

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (650) 364-9600, FAX (650) 364-9233
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1455 McDowell Blvd. North, Ste. D, Petaluma, CA 94954, (707) 792-1865, FAX (707) 792-0342

EMCON Associates	Client Proj. ID: PG&E-Emeryville 20143-014.002	Sampled: 05/15/98
1921 Ringwood Avenue	Sample Descript: ESE-3	Received: 05/15/98
San Jose, CA 95131	Matrix: LIQUID	Extracted: 05/19/98
	Analysis Method: EPA 8080	Analyzed: 05/22/98
Attention: J.C. Isham	Lab Number: 9805B28-03	Reported: 06/03/98

QC Batch Number: GC0519980PCBEXA
Instrument ID: GCHP12

Polychlorinated Biphenyls (EPA 8080)

Analyte	Detection Limit ug/L	Sample Results ug/L
PCB-1016	0.50	N.D.
PCB-1221	2.0	N.D.
PCB-1232	0.50	N.D.
PCB-1242	0.50	N.D.
PCB-1248	0.50	N.D.
PCB-1254	0.50	N.D.
PCB-1260	0.50	N.D.

Surrogates	Control Limits %		% Recovery
Dibutylchlorendate	50	150	57
Tetrachloro-m-xylene	50	150	42 Q

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

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EMCON Associates	Client Proj. ID: PG&E-Emeryville 20143-014.002	Sampled: 05/15/98
1921 Ringwood Avenue	Sample Descript: ESE-1	Received: 05/15/98
San Jose, CA 95131	Matrix: LIQUID	Extracted: 05/22/98
	Analysis Method: EPA 8015 Mod	Analyzed: 05/25/98
Attention: J.C. Isham	Lab Number: 9805B28-01	Reported: 06/03/98

QC Batch Number: GC0522980HBPEXB
Instrument ID: GCHP5A

Fuel Fingerprint : Mineral Oil

Analyte	Detection Limit ug/L	Sample Results ug/L
Extractable HC as Mineral Oil Chromatogram Pattern:	500	N.D.

Surrogates	Control Limits %		% Recovery
n-Pentacosane (C25)	50	150	95

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

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EMCON Associates	Client Proj. ID: PG&E-Emeryville 20143-014.002	Sampled: 05/15/98
1921 Ringwood Avenue	Sample Descript: ESE-2	Received: 05/15/98
San Jose, CA 95131	Matrix: LIQUID	Extracted: 05/22/98
	Analysis Method: EPA 8015 Mod	Analyzed: 05/25/98
Attention: J.C. Isham	Lab Number: 9805B28-02	Reported: 06/03/98

QC Batch Number: GC0522980HBPEXB
Instrument ID: GCHP5A

Fuel Fingerprint : Mineral Oil

Analyte	Detection Limit ug/L	Sample Results ug/L
Extractable HC as Mineral Oil Chromatogram Pattern:	500	N.D.

Surrogates	Control Limits %		% Recovery
n-Pentacosane (C25)	50	150	101

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

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EMCON Associates	Client Proj. ID: PG&E-Emeryville 20143-014.002	Sampled: 05/15/98
1921 Ringwood Avenue	Sample Descript: ESE-3	Received: 05/15/98
San Jose, CA 95131	Matrix: LIQUID	Extracted: 05/22/98
	Analysis Method: EPA 8015 Mod	Analyzed: 05/25/98
Attention: J.C. Isham	Lab Number: 9805B28-03	Reported: 06/03/98

QC Batch Number: GC0522980HBPEXB
Instrument ID: GCHP5A

Fuel Fingerprint : Mineral Oil

Analyte	Detection Limit ug/L	Sample Results ug/L
Extractable HC as Mineral Oil Chromatogram Pattern:	500	N.D.

Surrogates	Control Limits %		% Recovery
n-Pentacosane (C25)	50	150	93

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

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Emcon Associates	Client Project ID:	PG&E Emeryville 20143-014.002	
1921 Ringwood Avenue	Matrix:	Liquid	
San Jose, CA 95131			
Attention: J. C. Isham	Work Order #:	9805B28 01-03	Reported: Jun 8, 1998

QUALITY CONTROL DATA REPORT

Analyte:	PCB 1260
QC Batch#:	GC0519980PCBEXB
Analy. Method:	EPA 8080
Prep. Method:	EPA 3510
Analyst:	S. Toyoda
MS/MSD #:	980596204
Sample Conc.:	1800
Prepared Date:	5/19/98
Analyzed Date:	5/21/98
Instrument I.D.#:	GCHP12
Conc. Spiked:	2.5 µg/L
Result:	4.9
MS % Recovery:	124
Dup. Result:	3.7
MSD % Recov.:	76
RPD:	28
RPD Limit:	0-50

LCS #:	BLK051998
Prepared Date:	5/19/98
Analyzed Date:	5/21/98
Instrument I.D.#:	GCHP12
Conc. Spiked:	2.5 µg/L
LCS Result:	1.8
LCS % Recov.:	72

MS/MSD LCS Control Limits	40-140

SEQUOIA ANALYTICAL

Tod Granicher
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

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Emcon Associates	Client Project ID:	PG&E 20143-111.001	
1921 Ringwood Avenue	Matrix:	Liquid	
San Jose, CA 95131			
Attention: J. C. Isham	Work Order #:	9805B28 01-03	Reported: Jun 8, 1998

QUALITY CONTROL DATA REPORT

Analyte:	Alkalinity
QC Batch#:	IN0518983102FIB
Analy. Method:	EPA 310.2
Prep. Method:	

Analyst:	K. Cesar
MS/MSD #:	980596201
Sample Conc.:	1000
Prepared Date:	5/18/98
Analyzed Date:	5/18/98
Instrument I.D.#:	FIA
Conc. Spiked:	250 mg/L
Result:	1300
MS % Recovery:	120
Dup. Result:	1300
MSD % Recov.:	120
RPD:	0.0
RPD Limit:	0-20

LCS #:	LCS051398
Prepared Date:	5/18/98
Analyzed Date:	5/18/98
Instrument I.D.#:	FIA
Conc. Spiked:	34 mg/L
LCS Result:	35
LCS % Recov.:	104

MS/MSD	75-125
LCS	80-120
Control Limits	

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

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

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EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131
Attention: J. C. Isham

Client Project ID: PG&E Emeryville 20143-014.002

QC Sample Group: 9805B28

Reported: Jun 3, 1998

QUALITY CONTROL DATA REPORT

Matrix: Liquid
Method: EPA 8020/602
Analyst: B. ALI

ANALYTE	Benzene	Toluene	Chlorobenzene
QC Batch #:	GC0523980VOA08A		
Sample No.:	9805B28-01		
Date Prepared:	5/23/98	5/23/98	5/23/98
Date Analyzed:	5/23/98	5/23/98	5/23/98
Instrument I.D.#:	GCHP08	GCHP08	GCHP08
Sample Conc., ug/L:	N.D.	N.D.	N.D.
Conc. Spiked, ug/L:	25	25	25
Matrix Spike, ug/L:	21	23	22
% Recovery:	84	92	88
Matrix Spike Duplicate, ug/L:	22	24	24
% Recovery:	88	96	96
Relative % Difference:	4.7	4.3	8.7
RPD Control Limits:	0-50	0-50	0-50

LCS Batch#:	VWBLK052398BS		
Date Prepared:	5/23/98	5/23/98	5/23/98
Date Analyzed:	5/23/98	5/23/98	5/23/98
Instrument I.D.#:	GCHP08	GCHP08	GCHP08
Conc. Spiked, ug/L:	25	25	25
Recovery, ug/L:	21	24	23
LCS % Recovery:	84	96	92

Percent Recovery Control Limits:

MS/MSD	65-135	70-130	70-130
LCS	65-135	70-130	70-130

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

Please Note:
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EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131
Attention: J. C. Isham

Client Project ID: PG&E Emeryville 20143-014.002

QC Sample Group: 9805B28

Reported: Jun 3, 1998

QUALITY CONTROL DATA REPORT

Matrix:	Liquid
Method:	EPA 8015A
Analyst:	A. PORTER
ANALYTE	Diesel

QC Batch #: GC0522980HBPEXB

Sample No.:	9805B28-3
Date Prepared:	5/22/98
Date Analyzed:	5/25/98
Instrument I.D.#:	GCHP5A
Sample Conc., ug/L:	75
Conc. Spiked, ug/L:	1000
Matrix Spike, ug/L:	970
% Recovery:	90
Matrix Spike Duplicate, ug/L:	890
% Recovery:	82
Relative % Difference:	9.3
RPD Control Limits:	0-50

LCS Batch#: BLK052298BS

Date Prepared:	5/22/98
Date Analyzed:	5/25/98
Instrument I.D.#:	GCHP5A
Conc. Spiked, ug/L:	1000
Recovery, ug/L:	790
LCS % Recovery:	79

Percent Recovery Control Limits:

MS/MSD	50-150
LCS	60-140

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

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EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131
Attention: J.C. Isham

Client Proj. ID: PG&E-Emeryville 20143-014.002
Lab Proj. ID: 9805B28

Received: 05/15/98
Reported: 06/03/98

LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 10 pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

EMCON - San Jose

CHAIN OF CUSTODY /LABORATORY ANALYSIS REQUEST FORM

Date 5/15/98 Page 1 of 1

1921 Ringwood Avenue, San Jose, CA 95131 (408) 453-7300 FAX (408) 437-9526

Laboratory:

Project Name: Pacific Gas & Electric - Emeryville
Project Number: 20143-014.002
Project Manager: J.C. Isham

Company/Address: EMCON
1433 North Market Boulevard
Sacramento, CA 95834-1943
Phone: (916) 928-3300
(916) 928-3341 (fax)

Sampler's Signature: Mike Ross

Sample I.D.	Date	Time	LAB I.D.	Sample Matrix	Number of Containers	BTEX EPA 602	PCBs EPA 8080	TEPH as mineral oil by EPA 3510/8015								REMARKS
						Analysis Requested										
						HCl	NP	NP								Preservations
ESE-1	5/15/98	1300		H2O	6	X	X	X								
ESE-2		1210		H2O	6	X	X	X								
ESE-3		1115		H2O	6	X	X	X								
ESE-4				H2O	6	X	X	X								
FB-1		1220		H2O	2	X										

NO Samples Taken: UNABLE TO LOCATE WELL

Relinquished By	Received By
Signature: Mike Ross	Signature:
Printed Name: EMCON	Printed Name:
Firm:	Firm:
Date/Time: 5/15/98 · 1410	Date/Time:
Relinquished By	Received By
Signature:	Signature: Jim Downs
Printed Name:	Printed Name: DOWNS
Firm:	Firm: SEQUOIA
Date/Time:	Date/Time: 5-15-98 1410

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr
X Standard
___ Provide Verbal Preliminary Results
X Provide FAX Preliminary Results
Requested Report Date: ___

REPORT REQUIREMENTS
X I. Routine Report
___ II. Report includes DUP, MS, MSD, as required, may be charged as samples
___ III. Data Validation Report (includes All Raw Data)
___ RWQCB (MDLs/PQLs/TRACE#)

INVOICE INFORMATION
P.O. #: ___
Bill to: ___

SAMPLE RECEIPT
Shipping VIA: ___
Shipping #: ___
Condition: ___
Lab No: ___

Special Instructions/Comments:

Please fax *chain-of-custody* to Fred Flint *prior* to conducting analysis; please fax *analytical results* to Fred Flint *after* conducting analysis (fax # 510-866-5681)

Sequoia Analytical
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