

**FIRST QUARTER 1995  
MONITORING REPORT  
UNION PACIFIC RAILROAD**

**UNION PACIFIC MOTOR FREIGHT  
FACILITY  
1750 FERRO STREET  
OAKLAND, CALIFORNIA**

**USPCI/LAIDLAW PROJECT No.  
96120-844**

**PREPARED FOR:**

**UNION PACIFIC RAILROAD  
ENVIRONMENTAL MANAGEMENT  
1416 DODGE STREET, ROOM 930  
OMAHA, NEBRASKA 68179**

**Prepared by:**

**USPCI/Laidlaw Consulting Services  
5665 Flatiron Parkway  
Boulder, Colorado 80301**

**April 26, 1995**

**USPCI  
LAIDLAW  
ENVIRONMENTAL  
SERVICES**

April 26, 1995

Mr. Harry Patterson  
Union Pacific Railroad  
1416 Dodge Street, Room 930  
Omaha, Nebraska 68179

RE: "First Quarter 1995 Monitoring Report" Oakland Motor Freight Facility, 1750 Ferro Street, Oakland, California, USPCI/Laidlaw Project No. 96120-844

Dear Mr. Patterson:

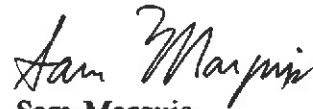
Enclosed is the final copy of the "First Quarter 1995 Monitoring Report", dated April 26, 1995, for the Union Pacific Motor Freight Facility at 1750 Ferro Street in Oakland, California.

If you have any questions, please call us at (303) 938-5500.

Sincerely,



Denton Mauldin  
Engineer III



Sam Marquis  
Project Hydrogeologist

cc: Jennifer Eberle, ACDEH  
John Amdur, Port of Oakland  
Philip Herden, APL  
Mark McCormick, USPCI/Laidlaw  
Ken Fossey, USPCI/Laidlaw (cover letter)

Enclosure  
DM/tjh

**FIRST QUARTER 1995 MONITORING REPORT  
UNION PACIFIC RAILROAD  
UNION PACIFIC MOTOR FREIGHT FACILITY  
1750 FERRO STREET  
OAKLAND, CALIFORNIA  
USPCI/Laidlaw Project No. 96120-844**

Prepared for:  
Union Pacific Railroad  
Environmental Management - Room 930  
1416 Dodge Street  
Omaha, Nebraska 68179

for submittal to:  
Ms. Jennifer Eberle  
Department of Environmental Health  
Hazardous Materials Division  
80 Swan Way, Room 200  
Oakland, California 94621

Prepared by:  
USPCI/Laidlaw Consulting Services  
5665 Flatiron Parkway  
Boulder, Colorado 80301



Mark McCormick  
Environmental Assistant



Sam Marquis  
Project Hydrogeologist  
R.G. No. 5110

April 26, 1995

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## 1. INTRODUCTION

The 1995 First Quarterly Monitoring Report has been prepared for Union Pacific Railroad (UPRR) by USPCI/Laidlaw in response to an April 29, 1993, Alameda County Department of Environmental Health, Hazardous Materials Division (ACDEH) request for UPRR to begin a quarterly monitoring program at the Union Pacific Motor Freight (UPMF) Ferro Street facility in Oakland, California (Figure 1). The facility was the site of a release of petroleum hydrocarbons from underground storage tanks (USTs).

The first quarterly monitoring event involved:

- Gauging the static water levels, purging, and sampling eight of the ten existing monitoring wells;
- Monitoring the performance of the product skimmer in recovery well RW;
- Analyzing groundwater samples for petroleum hydrocarbons from the groundwater monitoring wells where non-aqueous phase liquid petroleum hydrocarbon (product) was not measured.
- Determining the local hydraulic gradient based on the groundwater level measurements; and
- Preparation of the First Quarterly Monitoring Report.

Product was measured in monitoring wells OKUS-W5, OKUS-W6 and recovery well RW during the First Quarter 1995 Monitoring Event. Groundwater samples were collected from the eight remaining monitoring wells at the facility on February 22, 1995.

### 1.1 SITE BACKGROUND

The following describes the historical activities at the railyard and vicinity as well as the location of and access to the site.

The site is located on the southeastern end of the UPRR Oakland trailer-on-flat-car (TOFC) Yard (Figure 2), which is adjacent to the Oakland Inner Harbor or Oakland Estuary. The area surrounding the site is used for heavy to light commerce, with residential areas located approximately one half mile away to the north and to the south across the Oakland Estuary. Five USTs were removed from the UPMF site from 1987 to 1990. The refueling portion of the TOFC yard, approximately 700 feet northwest of the truck repair shop, is currently undergoing groundwater remediation for recovery of product. The limits of the diesel plume in that portion of the site was defined during previous

investigations (USPCI, 1991), and the plume does not extend to the area of impacted groundwater at the truck repair facility in the Oakland TOFC Yard.

The site is located in the UPRR TOFC Yard at 1750 Ferro Street in the Port of Oakland on the east side of the Inner Harbor, Oakland, California. Access to the site is from the intersection of Middle Harbor Road and Ferro Street.

## **1.2 INVESTIGATIVE PROCEDURES**

All USPCI/Laidlaw field activities, including data recording procedures, decontamination methods, groundwater sample collection, and purge water disposal, were completed following USPCI's standard operating procedures previously supplied to the ACDEH. The quarterly monitoring event was conducted by USPCI/Laidlaw Consulting Services personnel on February 22, 1995.

## **2. FIELD INVESTIGATION RESULTS**

The continued monitoring of wells and the compilation of the field and analytical data is directed towards an understanding of groundwater and petroleum hydrocarbon migration beneath the site. The field investigation presented in this report was completed on February 22, 1995. Groundwater level measurements and samples were collected on the same day. Samples were analyzed for total petroleum hydrocarbons as diesel (TPH/D) by EPA Method 8015 Modified; TPH as gasoline (TPH/G) by EPA Method 8015 Modified; and benzene, toluene, ethylbenzene and xylenes (BTEX) by EPA Method 8020. The following subsections present the findings and activities completed during the first quarter field investigation.

### **2.1 GROUNDWATER CHARACTERISTICS**

The UPRR Oakland UPMF Facility is adjacent to the Oakland Estuary, which is located in the eastern portion of the San Francisco Bay (Figure 2). No observable tidal influences have been noted to date at the site; however, the close proximity of the estuary to the site suggests that a direct hydrologic connection may exist between the estuary and the groundwater beneath the site.

### **2.2 ANALYTICAL RESULTS**

Analytical results of the samples collected from the groundwater monitoring wells reveal dissolved concentrations of TPH/D, TPH/G and BTEX in samples from monitoring wells OKUS-W2, OKUS-W3, OKUS-W4, OKUS-W7, OKUS-W8, APL/UP-W1, and APL/UP-W2. Only monitoring well OKUS-W1 did not exhibit dissolved concentrations above the detection limits. (Table 1 and Figure 3). Total BTEX concentrations ranged from below the detection limit in the samples collected from monitoring well OKUS-W1 to approximately 4,900 micrograms per liter ( $\mu\text{g/L}$ ) in the sample

collected from monitoring well OKUS-W3. TPH/G concentrations ranged from below the method detection limit (MDL) of 50  $\mu\text{g/L}$  in samples collected from OKUS-W1 and OKUS-W7 to 7,400  $\mu\text{g/L}$  in the sample from OKUS-W3. TPH/D concentrations ranged from 120  $\mu\text{g/L}$  in sample OKUS-W1 to 2,400  $\mu\text{g/L}$  in the sample from OKUS-W3. Comprehensive groundwater analytical results for the wells at the site are presented in Table 1. Analytical reports and chain of custody forms are included in Appendix A.

### 2.3 GROUNDWATER GRADIENT

Static water levels measured on February 22, 1995 (Table 2) were used to produce the groundwater elevation map presented as Figure 4. An increase in groundwater elevations was noted in most of the wells at the site since the fourth quarter 1994 sampling event. The groundwater gradient at the site was to the east and was consistent with the gradient observed during the previous (fourth quarter 1994) gauging and sampling event. Well stabilization and sampling reports are presented in Appendix B.

### 2.4 MONITORING AND RECOVERY OF NON-AQUEOUS PHASE LIQUID

As requested by the ACDEH, product thicknesses in monitoring wells OKUS-W4, OKUS-W5, OKUS-W6, and recovery well RW have been monitored at the site since January 31, 1994, on a monthly basis. The monitoring data indicates that monitoring wells OKUS-W5, OKUS-W6 and recovery well RW have had measurable amounts of product (Table 2).

As indicated in Table 2, monitoring well OKUS-W5 had 0.16 feet of product during the February 1995 monitoring event. Monitoring well OKUS-W6 continues to contain "bunker C" type hydrocarbon, as evidenced by the highly viscous nature of the product. An accurate determination of product thickness is not possible due to the viscosity of the product in OKUS-W6.

A product skimming system was installed in recovery well RW on April 29, 1994 and began operation during the week of May 2, 1994. The system has consistently recovered hydrocarbons from the well. Approximately 15 gallons of product were recovered during December 1994 and January 1995. During February 1995 and through March 6, 1995, approximately 25 gallons of product were recovered. The skimming system recovered approximately 3 gallons of product per week, which is an increase from the average of approximately one gallon per week of product recovery that has been observed in the past.

### 3. CONCLUSIONS AND RECOMMENDATIONS

The following subsections present conclusions and recommendations based on the field and analytical results from the subject site.

#### 3.1 CONCLUSIONS

The analytical results from the 1993 site assessments and current groundwater monitoring program indicate a dissolved plume of BTEX and TPH which is not limited to the immediate area surrounding the UPMF facility. An estimate of the lateral extent of the dissolved contaminant plume is presented in Figure 3. Based on the recent sampling results, the downgradient edge of the plume appears to be near monitoring well APL/UP-W2. Comparison of historical data to the most recent sampling results suggests that the dissolved BTEX plume has not migrated or increased in areal extent.

Bunker C continues to be observed in monitoring well OKUS-W6.

The product skimming system has continued to remove product from recovery well RW. During the first quarter 1995, product recovery increased from approximately one gallon per week to three gallons per week, which indicates increased system performance over the time period.

#### 3.2 RECOMMENDATIONS

Based on the above conclusions, the following recommendations are made:

- To monitor the status of the dissolved petroleum hydrocarbon plume in the groundwater at the site, the quarterly monitoring program should be continued.
- The monitoring of bunker C and product near the UPMF facility should be continued.
- The operation and monitoring of the product skimming system in recovery well RW should be continued.

### 4. REFERENCES

USPCI, 1994. "Fourth Quarter 1993, Monitoring Event, Union Pacific Railroad, May, 1994.



TABLE 1  
ANALYTICAL RESULTS - GROUNDWATER MONITORING WELLS  
UNION PACIFIC RAILROAD  
OAKLAND MOTOR FREIGHT FACILITY

SAMPLE LOCATION	SAMPLE ID	DATE SAMPLED	TPH/IR (mg/l)	TPH/D (ug/l)	TPH/G (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	BTEX (ug/l)	As (mg/l)	Pb (mg/l)
OKUS-W1	OKUS-W1	01/14/93	ND	ND	410	20	4	220	ND	240	ND	ND
		05/12/93	80	120	ND	ND	ND	ND	ND	ND	ND	ND
		08/25/93	ND	100	ND	ND	ND	ND	ND	ND	ND	ND
		11/11/93	ND	160	91	1.1	0.88	21	1.6	24	ND	ND
		02/08/94	NA	92	<50	<0.50	<0.50	<0.50	<0.50	ND	<0.10	<0.02
		05/03/94	NA	61	<50	<0.50	<0.50	<0.50	<0.50	ND	<0.10	<0.02
		08/24/94	NA	86	<50	<0.50	<0.50	<0.50	<0.50	ND	<0.10	NA
		02/22/95	NA	51	<50	<0.50	<0.50	<0.50	<0.50	ND	NA	NA
OKUS-W2	OKUS-W2	01/14/93	2.5	5400	14000	480	92	8500	ND	9100	0.036	ND
		05/12/93	ND	2800	8800	220	47	4600	100	5000	0.093	ND
		08/25/93	5.8	6500	22000	420	92	10000	210	11000	0.089	ND
		11/11/93	3.5	7700	24000	540	150	13000	280	14000	ND	ND
		02/08/94	NA	2300	4900	150	29	3000	78	3300	<0.10	<0.02
		05/03/94	NA	2600	17000	300	<0.50	5800	220	6300	<0.10	<0.02
		08/24/94	NA	8200	11000	320	67	7500	250	8100	<0.10	NA
		02/22/94	NA	5500	10000	290	79	130	160	660	NA	NA
OKUS-W3	OKUS-W3	01/14/93	4.5	4200	4900	230	42	2600	44	2900	NA	ND
		05/12/93	1.7	4400	4600	290	60	3500	72	3900	0.14	ND
		08/25/93	1.5	2700	9400	280	55	4300	41	4700	0.08	ND
		11/11/93	2.3	5000	9500	390	110	5100	130	5700	0.14	ND
		02/08/94	NA	4400	17000	420	78	9800	160	10000	0.12	<0.02
		05/03/94	NA	3000	14000	310	61	6400	210	7000	0.14	<0.02
		08/24/94	NA	4500	10000	350	78	7300	170	7900	<0.10	NA
		02/22/94	NA	4700	9100	260	64	95	<0.50	420	NA	NA
OKUS-W4	OKUS-W4	01/15/93	2.5	5400	8900	300	ND	4500	ND	4800	NA	ND
		05/12/93	1.3	2900	6000	320	110	4600	230	5300	0.16	ND
		08/26/93	ND	2200	6700	350	72	4800	130	5400	0.098	ND
		11/11/93	ND	2400	5500	250	53	4600	140	5000	0.13	ND
		02/07/94	NA	2700	9100	250	<0.50	4900	150	5300	<0.10	<0.02
		05/03/94	NA	2300	6500	240	34	4200	140	4600	0.12	<0.02
		08/24/94	NA	2900	5200	200	41	3600	190	4000	0.11	NA
		02/22/94	NA	2800	5500	320	52	<0.50	120	490	NA	NA
OKUS-W5	OKUS-W5	01/15/93	ND	2900	550	53	11	180	20	260	NA	ND
		05/12/93	130	2100	550	81	14	250	37	380	0.56	ND
		08/25/93	PHASE SEPARATED HYDROCARBONS - WELL NOT SAMPLED									
		11/11/93	2.7	1600	590	14	3.1	54	6.2	77	0.53	ND
		02/07/94	NA	1900	760	54	9.4	220	24	310	0.55	<0.02
		05/03/94	NA	2000	820	57	9.5	240	27	330	0.38	<0.02
		08/24/94	NA	1700	910	55	14	8.5	18	96	0.45	NA
		02/22/94	PHASE SEPARATED HYDROCARBONS - WELL NOT SAMPLED PHASE SEPARATED HYDROCARBONS - WELL NOT SAMPLED <i>.16 FP (diesel)</i>									
OKUS-W6	OKUS-W6	07/16/93	BRK	BRK	ND	2.5	ND	ND	ND	2.5	0.004	ND
		08/25/93	ND	590	ND	2.6	ND	4.9	1.3	8.8	0.013	ND
		11/12/93	ND	610	ND	3.6	ND	3.7	1.3	8.6	ND	ND
		02/07/94	PHASE SEPARATED HYDROCARBONS - WELL NOT SAMPLED									
		05/03/94	PHASE SEPARATED HYDROCARBONS - WELL NOT SAMPLED									
		08/24/94	PHASE SEPARATED HYDROCARBONS - WELL NOT SAMPLED									
		11/16/94	PHASE SEPARATED HYDROCARBONS - WELL NOT SAMPLED									
		02/22/94	PHASE SEPARATED HYDROCARBONS - WELL NOT SAMPLED <i>cannot determine thickness due to viscosity (Bunker C)</i>									
OKUS-W7	OKUS-W7	07/16/93	16	ND	ND	2.1	ND	ND	ND	2.1	0.009	ND
		08/25/93	ND	930	56	2.9	ND	1.2	ND	4.1	ND	ND
		11/12/93	ND	1100	ND	ND	ND	ND	ND	ND	ND	ND
		02/07/94	NA	1100	ND	0.7	<0.50	<0.50	<0.50	0.70	<0.10	<0.02
		05/03/94	NA	1300	<50	<0.50	<0.50	<0.50	<0.50	ND	<0.10	<0.02
		08/24/94	NA	910	<50	2.5	0.54	<0.50	<0.50	3	<0.10	NA
		11/16/94	NA	820	<50	0.62	<0.50	<0.50	<0.50	0.62	NA	NA
		02/22/94	NA	830	<50	0.54	<0.50	<0.50	<0.50	0.54	NA	NA

TABLE 1  
ANALYTICAL RESULTS - GROUNDWATER MONITORING WELLS  
UNION PACIFIC RAILROAD  
OAKLAND MOTOR FREIGHT FACILITY

SAMPLE LOCATION	SAMPLE ID	DATE SAMPLED	TPH/IR (mg/l)	TPH/D (ug/l)	TPH/G (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	BTEX (ug/l)	As (mg/l)	Pb (mg/l)
OKUS-W8	OKUS-W8	07/16/93	15	ND	ND	ND	ND	ND	ND	ND	0.012	0.003
		08/27/93	ND	1100	120	1.3	ND	ND	0.85	2.15	ND	0.005
		11/11/93	ND	1300	190	3.5	1.3	46	4.9	55.70	ND	ND
		02/07/94	NA	1000	120	0.9	<0.50	<0.50	<0.50	0.90	<0.10	<0.02
		05/03/94	NA	780	79	0.99	<0.50	<0.50	<0.50	0.99	<0.10	<0.02
		08/24/94	NA	700	100	1.4	<0.50	<0.50	<0.50	1.40	<0.10	NA
		11/15/94	NA	830	110	0.77	<0.50	<0.50	<0.50	0.77	NA	NA
		02/22/94	NA	370	150	0.96	<0.50	<0.50	1.2	2.20	NA	NA
APL/UP-W1	APL/UP-W1	07/16/93	11	700	300	25.4	1.7	ND	3.0	30	0.011	ND
		08/26/93	ND	810	720	47	1.3	360	14.0	420	0.013	ND
		11/11/93	ND	530	560	26	ND	220	11.0	260	ND	ND
		02/07/94	NA	660	620	25	<0.50	180	10	220	<0.10	<0.02
		05/03/94	NA	590	680	48	2.9	260	9.8	320	<0.10	<0.02
		08/24/94	NA	420	830	48	4.8	12	3.2	88	<0.10	NA
		11/15/94	NA	480	470	36	3.6	9.6	12	61	NA	NA
		02/22/94	NA	510	470	39	2.8	170	9	210	NA	NA
APL/UP-W2	APL/UP-W2	07/16/93	19	ND	ND	8.0	ND	ND	ND	8.0	0.016	ND
		08/26/93	ND	240	94	ND	ND	35	2.4	37.0	0.023	ND
		11/11/93	ND	190	110	5.0	ND	38	2.6	46	ND	ND
		02/07/94	NA	270	120	6.6	<0.50	38	1.8	46	<0.10	<0.02
		05/03/94	NA	100	<50	<0.50	<0.50	<0.50	<0.50	ND	<0.10	<0.02
		08/24/94	NA	330	220	13	0.77	3.5	3.1	20	<0.10	NA
		11/15/94	NA	320	190	11	<0.50	63	5.4	79	NA	NA
		02/22/94	NA	550	320	19	<0.50	100	9.5	130	NA	NA
OKUS-W5	OKUS-W6	01/15/93	ND	2800	510	50	10	170	19	250	NA	NA
OKUS-W1	OKUS-W6	05/12/93	ND	140	ND	ND	ND	ND	ND	ND	ND	ND
APL/UP-W1	QA/QC-1	07/16/93	12	ND	0.21	22.4	ND	ND	2.4	26	0.012	ND
OKUS-W4	OKUS-W9	08/26/93	ND	2700	6200	340	78	4500	100	5000	0.1	ND
OKUS-W8	OKUS-W9	11/11/93	ND	1300	120	1.3	ND	4	1.4	6.7	2.4	ND
OKUS-W3	QA/QC-1	02/08/94	NA	2900	15000	280	64	5800	<0.50	6100	0.12	0.12
OKUS-W4	OKUS-QC1	05/03/94	NA	2500	5400	300	41	5200	130	6700	0.12	<0.02
OKUS-W8	OKUS-QC1	08/24/94	NA	950	92	1.6	<0.50	<0.50	<0.50	1.6	<0.10	NA
APL/UP-W2	OKUS-QC1	11/15/94	NA	310	190	10	<0.50	62	4.7	77	NA	NA
APL/UP-W2	APL-W12	02/22/94	NA	490	360	28	<0.50	110	6.7	140	NA	NA
UPMF	OAK-FB 1	07/16/93	NA	NA	NA	ND	ND	ND	ND	ND	NA	NA
UPMF	OAK-TB 2	07/16/93	NA	NA	NA	ND	ND	ND	ND	ND	NA	NA
UPMF	TB-1	08/27/93	NA	NA	NA	ND	ND	ND	ND	ND	NA	NA
UPMF	TB-2	08/27/93	NA	NA	NA	ND	ND	ND	ND	ND	NA	NA
UPMF	TB-1	11/12/93	NA	NA	NA	ND	ND	ND	ND	ND	NA	NA
UPMF	TB-1	08/24/94	NA	NA	NA	ND	ND	ND	ND	ND	NA	NA
UPMF	TB-1	11/16/94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
UPMF	TB-1	02/22/94	NA	NA	ND	ND	ND	ND	ND	ND	NA	NA

ND - Not Detected  
NA - Not Analyzed  
BRK - Bottle broken during shipment  
TPH - Total Petroleum Hydrocarbons  
mg/L - milligram per liter  
ug/L - microgram per liter

TPH/IR - analyzed using EPA Method 418.1  
TPH/D - analyzed using EPA Method 8015 Mod.  
TPH/G - analyzed using EPA Method 8015 Mod.  
BTEX - analyzed using EPA Method 8020  
As - analyzed using EPA Method 7060  
Pb - analyzed using EPA Method 7421

*RW had .14' AP*

TABLE 2  
 FLUID LEVEL MEASUREMENT DATA  
 UNION PACIFIC RAILROAD  
 OAKLAND MOTOR FREIGHT FACILITY

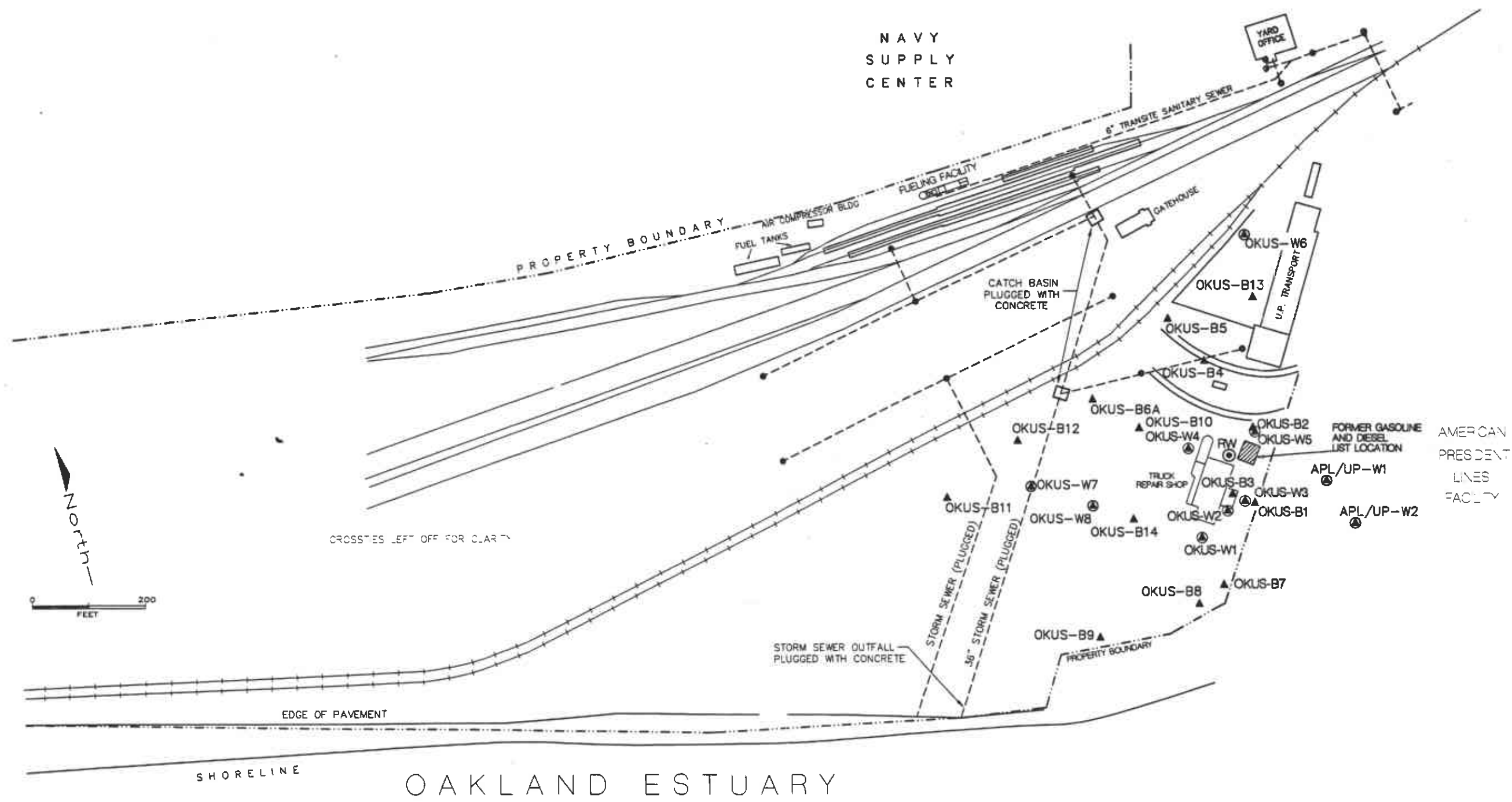
WELL NO.	ELEV.* TOC	DATE	DEPTH TO PRODUCT	PRODUCT ELEVATION	PRODUCT THICKNESS	DEPTH TO WATER	WATER ELEVATION	CORR'D ELEVATION
OKUS-W1	9.17	01/14/93	N/A	N/A	NP	8.42	0.75	0.75
	9.17	01/15/93	N/A	N/A	NP	8.45	0.72	0.72
	9.17	02/18/93	N/A	N/A	NP	7.79	1.38	1.38
	9.17	05/12/93	N/A	N/A	NP	8.04	1.13	1.13
	9.17	08/25/93	N/A	N/A	NP	8.61	0.56	0.56
	9.17	11/11/93	N/A	N/A	NP	9.24	-0.07	-0.07
	9.17	02/08/94	N/A	N/A	NP	8.47	0.70	0.70
	9.17	05/03/94	N/A	N/A	NP	8.49	0.68	0.68
	9.17	08/24/94	N/A	N/A	NP	8.89	0.28	0.28
	9.17	11/16/94	N/A	N/A	NP	8.56	0.61	0.61
9.17	02/22/94	N/A	N/A	NP	7.61	1.56	1.56	
OKUS-W2	9.71	01/14/93	N/A	N/A	NP	9.08	0.63	0.63
	9.71	01/15/93	N/A	N/A	NP	9.12	0.59	0.59
	9.71	02/18/93	N/A	N/A	NP	8.70	1.01	1.01
	9.71	05/12/93	N/A	N/A	NP	9.04	0.67	0.67
	9.71	08/25/93	N/A	N/A	NP	9.61	0.10	0.10
	9.71	11/11/93	N/A	N/A	NP	10.20	-0.49	-0.49
	9.71	02/08/94	N/A	N/A	NP	9.46	0.25	0.25
	9.71	05/03/94	N/A	N/A	NP	9.50	0.21	0.21
	9.71	08/24/94	N/A	N/A	NP	9.74	-0.03	-0.03
	9.71	11/16/94	N/A	N/A	NP	9.74	-0.03	-0.03
9.71	02/22/94	N/A	N/A	NP	8.49	1.22	1.22	
OKUS-W3	9.80	01/14/93	N/A	N/A	NP	9.39	0.41	0.41
	9.80	01/15/93	N/A	N/A	NP	9.33	0.47	0.47
	9.80	02/18/93	N/A	N/A	NP	8.85	0.95	0.95
	9.80	05/12/93	N/A	N/A	NP	9.23	0.57	0.57
	9.80	08/25/93	N/A	N/A	NP	9.82	-0.02	-0.02
	9.80	11/11/93	N/A	N/A	NP	10.30	-0.50	-0.50
	9.80	02/08/94	N/A	N/A	NP	9.73	0.07	0.07
	9.80	05/03/94	N/A	N/A	NP	9.75	0.05	0.05
	9.80	08/24/94	N/A	N/A	NP	9.98	-0.18	-0.18
	9.80	11/16/94	N/A	N/A	NP	9.61	0.19	0.19
9.80	02/22/94	N/A	N/A	NP	8.76	1.04	1.04	
OKUS-W4	7.35	01/14/93	N/A	N/A	NP	6.43	0.92	0.92
	7.35	01/15/93	N/A	N/A	NP	6.44	0.91	0.91
	7.35	02/18/93	N/A	N/A	NP	5.77	1.58	1.58
	7.35	05/12/93	6.39	0.96	0.01	6.40	0.95	0.95
	7.35	08/25/93	N/A	N/A	NP	6.63	0.72	0.72
	7.35	11/11/93	N/A	N/A	NP	7.10	0.25	0.25
	7.35	02/07/94	N/A	N/A	NP	6.64	0.71	0.71
	7.35	03/07/94	N/A	N/A	NP	6.45	0.90	0.90
	7.35	04/18/94	N/A	N/A	NP	6.58	0.77	0.77
	7.35	05/03/94	N/A	N/A	NP	6.55	0.80	0.80
	7.35	06/07/94	N/A	N/A	NP	6.62	0.73	0.73
	7.35	07/29/94	N/A	N/A	NP	6.65	0.70	0.70
	7.35	08/24/94	N/A	N/A	NP	6.80	0.55	0.55
	7.35	09/01/94	N/A	N/A	NP	6.93	0.42	0.42
	7.35	09/26/94	N/A	N/A	NP	6.95	0.40	0.40
	7.35	10/27/94	N/A	N/A	NP	7.05	0.30	0.30
	7.35	11/16/94	N/A	N/A	NP	6.71	0.64	0.64
7.35	01/25/95	N/A	N/A	NP	5.63	1.72	1.72	
7.35	02/22/94	N/A	N/A	NP	5.71	1.64	1.64	
OKUS-W5	9.25	01/14/93	N/A	N/A	NP	9.13	0.12	0.12
	9.25	01/15/93	N/A	N/A	NP	9.15	0.10	0.10
	9.25	02/18/93	N/A	N/A	NP	8.85	0.40	0.40
	9.25	05/12/93	9.18	0.07	0.02	9.20	0.05	0.05
	9.25	08/25/93	8.82	0.43	0.02	8.84	0.41	0.41
	9.25	11/11/93	N/A	N/A	NP	10.15	-0.90	-0.90
	9.25	02/07/94	N/A	N/A	NP	9.61	-0.36	-0.36
	9.25	03/07/94	N/A	N/A	NP	9.51	-0.26	-0.26
	9.25	04/18/94	N/A	N/A	NP	9.78	-0.53	-0.53
	9.25	05/03/94	N/A	N/A	NP	9.77	-0.52	-0.52
	9.25	06/07/94	N/A	N/A	NP	9.71	-0.46	-0.46
	9.25	07/29/94	N/A	N/A	NP	9.83	-0.58	-0.58
	9.25	08/24/94	N/A	N/A	NP	9.93	-0.68	-0.68
	9.25	09/01/94	9.91	N/A	0.01	9.92	-0.67	-0.67
	9.25	09/26/94	N/A	N/A	NP	9.92	-0.67	-0.67
	9.25	10/27/94	10.08	-0.83	0.06	10.14	-0.89	-0.89
	9.25	11/16/94	9.59	-0.34	0.22	9.61	-0.56	-0.56
	9.25	01/25/95	8.59	0.00	0.16	8.59	0.00	-0.10
	9.25	02/22/94	8.75	0.50	0.16	8.91	0.34	-0.10

TABLE 2  
 FLUID LEVEL MEASUREMENT DATA  
 UNION PACIFIC RAILROAD  
 OAKLAND MOTOR FREIGHT FACILITY

WELL NO.	ELEV.* TOC	DATE	DEPTH TO PRODUCT	PRODUCT ELEVATION	PRODUCT THICKNESS	DEPTH TO WATER	WATER ELEVATION	CORR'D ELEVATION
OKUS-W6	7.02	07/16/93	N/A	N/A	NP	6.20	0.82	0.82
	7.02	08/25/93	N/A	N/A	NP	6.52	0.50	0.50
	7.02	11/12/93	N/A	N/A	NP	7.22	-0.20	-0.20
	7.02	02/07/94	5.89	1.13	P	--	--	--
	7.02	05/03/94	5.90	1.12	P	--	--	--
	7.02	08/24/94	6.27	0.75	P	--	--	--
	7.02	09/26/94	6.50	0.52	P	--	--	--
	7.02	10/27/94	6.68	0.34	P	--	--	--
	7.02	11/16/94	5.13	1.89	P	--	--	--
	7.02	01/25/95	3.89	3.13	P	--	--	--
7.02	02/22/94	4.96	2.06	P	--	--	--	
OKUS-W7	6.91	07/16/93	N/A	N/A	NP	5.72	1.19	1.19
	6.91	08/25/93	N/A	N/A	NP	5.94	0.97	0.97
	6.91	11/12/93	N/A	N/A	NP	6.50	0.41	0.41
	6.91	02/07/94	N/A	N/A	NP	5.81	1.10	1.10
	6.91	05/03/94	N/A	N/A	NP	5.69	1.22	1.22
	6.91	08/24/94	N/A	N/A	NP	6.11	0.80	0.80
	6.91	11/16/94	N/A	N/A	NP	5.90	1.01	1.01
	6.91	02/22/94	N/A	N/A	NP	4.89	2.02	2.02
OKUS-W8	6.75	07/16/93	N/A	N/A	NP	5.56	1.19	1.19
	6.75	08/27/93	N/A	N/A	NP	5.88	0.87	0.87
	6.75	11/11/93	N/A	N/A	NP	6.43	0.32	0.32
	6.75	02/07/94	N/A	N/A	NP	5.59	1.16	1.16
	6.75	05/03/94	N/A	N/A	NP	5.55	1.20	1.20
	6.75	08/24/94	N/A	N/A	NP	5.96	0.77	0.77
	6.75	11/16/94	N/A	N/A	NP	5.75	1.00	1.00
	6.75	02/22/94	N/A	N/A	NP	4.79	1.96	1.96
APL/UP-W1	8.12	07/16/93	N/A	N/A	NP	10.02	-1.90	-1.90
	8.12	08/26/93	N/A	N/A	NP	9.93	-1.81	-1.81
	8.12	11/11/93	N/A	N/A	NP	10.25	-2.13	-2.13
	8.12	02/07/94	N/A	N/A	NP	9.71	-1.59	-1.59
	8.12	05/03/94	N/A	N/A	NP	10.10	-1.98	-1.98
	8.12	08/24/94	N/A	N/A	NP	10.25	-2.13	-2.13
	8.12	11/16/94	N/A	N/A	NP	10.08	-1.96	-1.96
	8.12	02/22/94	N/A	N/A	NP	9.76	-1.64	-1.64
APL/UP-W2	7.31	07/16/93	N/A	N/A	NP	9.38	-2.07	-2.07
	7.31	08/26/93	N/A	N/A	NP	9.20	-1.89	-1.89
	7.31	11/11/93	N/A	N/A	NP	9.65	-2.34	-2.34
	7.31	02/07/94	N/A	N/A	NP	8.85	-1.54	-1.54
	7.31	05/03/94	N/A	N/A	NP	10.02	-2.71	-2.71
	7.31	08/24/94	N/A	N/A	NP	9.13	-1.82	-1.82
	7.31	11/15/94	N/A	N/A	NP	9.40	-2.09	-2.09
	7.31	02/22/94	N/A	N/A	NP	8.85	-1.54	-1.54
RW	--	01/31/94	10.31	--	0.10	10.41	--	--
	--	02/07/94	10.26	--	0.10	10.36	--	--
	--	02/17/94	10.11	--	0.07	10.18	--	--
	--	02/23/94	10.01	--	0.09	10.10	--	--
	--	03/01/94	9.96	--	0.03	9.99	--	--
	--	03/07/94	9.92	--	0.04	9.96	--	--
	--	03/16/94	9.92	--	0.07	9.99	--	--
	--	03/23/94	9.93	--	0.06	9.99	--	--
	--	03/30/94	10.00	--	0.05	10.05	--	--
	--	04/05/94	10.02	--	0.01	10.03	--	--
	--	04/11/94	10.02	--	0.01	10.03	--	--
	--	04/18/94	10.07	--	0.02	10.09	--	--
	--	04/26/94	10.07	--	0.07	10.14	--	--
	--	05/07/94	9.94	--	0.03	9.97	--	--
	--	07/29/94	10.19	--	0.01	10.20	--	--
	--	09/01/94	9.71	--	0.09	9.80	--	--
	--	09/26/94	9.78	--	0.06	9.84	--	--
	--	10/27/94	9.81	--	0.05	9.86	--	--
	--	11/22/94	--	--	--	--	--	--
	--	12/20/94	--	--	--	--	--	--
--	01/25/95	8.35	--	0.12	8.47	--	--	
--	02/22/95	8.35	--	0.14	8.49	--	--	

\* All well casings measured to mean sea level (MSL). N/A Not Applicable  
 -- Information not available or inaccurate. NP - No Product  
 P - Product (bunker C) was encountered but the oil/water interface could not be found.





**LEGEND**

- ▲ OKUS-W1 MONITORING WELL LOCATION AND NUMBER
- ▲ OKUS-B1 BORING LOCATION AND NUMBER
- CATCH BASIN FOR STORM SEWER
- ◎ RW RECOVERY WELL

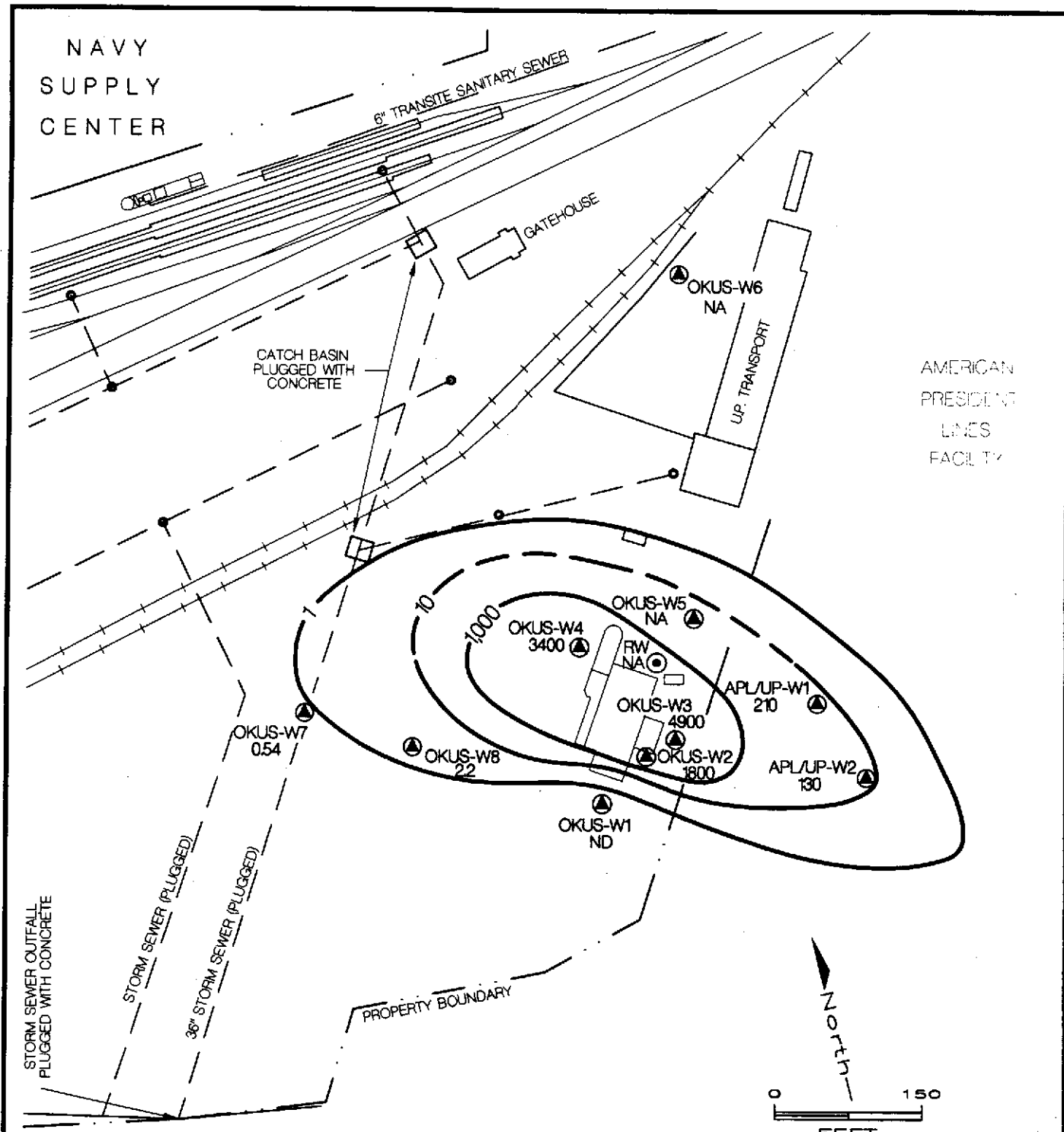
BY	DATE
DRAWN	9/93
CHECKED	8/94
APPROVED	8/7/94
APPROVED	
APPROVED	



UPRR TOFC RAILYARD  
UPMF REPAIR SHOP, OAKLAND, CALIFORNIA

**FIGURE 2  
SITE VICINITY MAP**

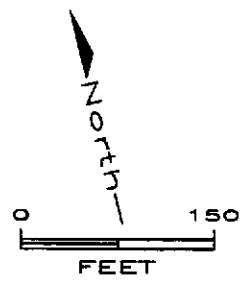
SCALE	DATE	DWG. NO.
1"=200'	9/93	96120-556



**LEGEND**

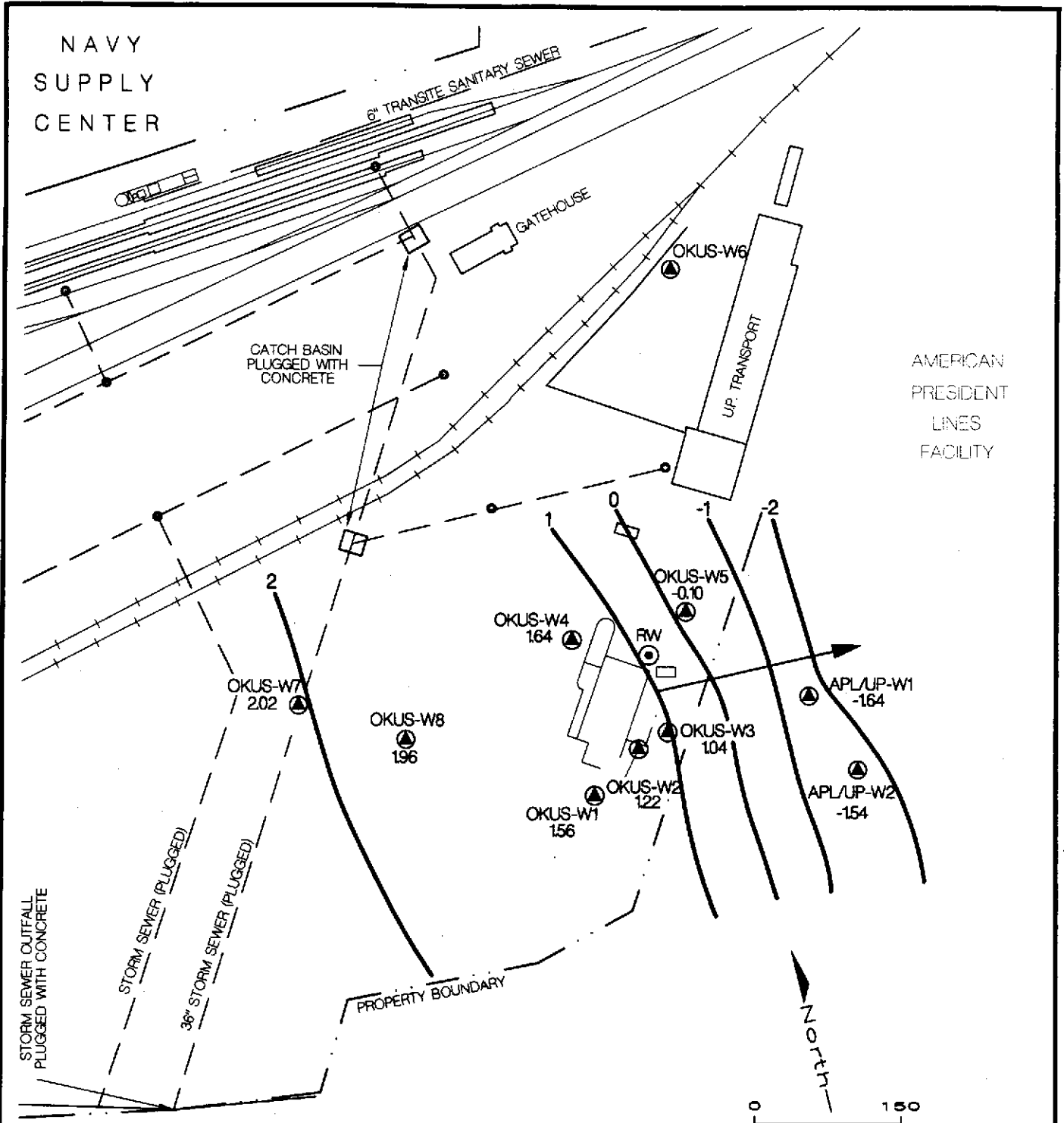
- OKUS-W8  
● 30  
○ RW  
●  
—100—  
ND  
NA
- MONITOR WELL LOCATION AND NUMBER WITH TOTAL DISSOLVED BTEX CONCENTRATION µg/L
- RECOVERY WELL
- CATCH BASIN FOR STORM SEWER
- BTEX DISTRIBUTION CONTOUR
- NOT DETECTED
- NOT ANALYZED

NOTE: ALL ANALYTICAL RESULTS IN µg/L



<b>LAI DLAW</b> ENVIRONMENTAL SERVICES	
OAKLAND, CALIFORNIA	
FIGURE 3 DISSOLVED PHASE BTEX DISTRIBUTION (2/95) UPMF REPAIR SHOP	
SCALE: 1" = 150'	APPROVED/DATE: 4/20/95

96120-701



**LEGEND**

- OKUS-W1  
0.80      MONITOR WELL LOCATION AND NUMBER WITH GROUNDWATER ELEVATION
- RW      RECOVERY WELL
- CATCH BASIN FOR STORM SEWER
- 0      GROUNDWATER ELEVATION CONTOUR (FEET RELATIVE TO SEA LEVEL)
- GROUNDWATER FLOW DIRECTION



<b>LAI DLAW</b> ENVIRONMENTAL SERVICES	
OAKLAND, CALIFORNIA	
FIGURE 4 GROUNDWATER ELEVATION MAP (2/95)	
SCALE    1" = 150'	APPROVED/DATE    4/20/95

95120-700



**APPENDIX A**  
**ANALYTICAL REPORTS**



USPCI/Laidlaw	Client Project ID: UPMF Oakland (96120-844)	Sampled: Feb 22, 1995
5665 Flatiron Pkwy.	Sample Matrix: Water	Received: Feb 22, 1995
Boulder, CO 80301	Analysis Method: EPA 5030/8015/8020	Reported: Mar 15, 1995
Attention: Denton Mauldin	First Sample #: 502-1303	

**TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION**

Analyte	Reporting Limit µg/L	Sample I.D. 502-1303 APL-W2	Sample I.D. 502-1304 APL-W12	Sample I.D. 502-1305 APL-W1	Sample I.D. 502-1306 OKUS-W8	Sample I.D. 502-1307 OKUS-W7	Sample I.D. 502-1308 OKUS-W4
Purgeable Hydrocarbons	50	320	360	470	150	N.D.	4,300
Benzene	0.50	19	20	33	0.96	0.54	250
Toluene	0.50	N.D.	N.D.	2.8	N.D.	N.D.	47
Ethyl Benzene	0.50	100	110	170	N.D.	N.D.	2,900
Total Xylenes	0.50	9.5	6.7	9.0	1.2	N.D.	160
Chromatogram Pattern:		Gasoline	Gasoline	Gasoline	Unidentified Hydrocarbons >C10	--	Gasoline

**Quality Control Data**

Report Limit Multiplication Factor:	2.0	2.0	1.0	1.0	1.0	10
Date Analyzed:	2/27/95	2/27/95	2/27/95	2/27/95	2/27/95	2/27/95
Instrument Identification:	HP-4	HP-4	HP-2	HP-5	HP-2	HP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	84	85	104	84	102	107

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.  
 Analytes reported as N.D. were not detected above the stated reporting limit.

**SEQUOIA ANALYTICAL, #1271**

*Kevin Van Slambrook*  
 Kevin Van Slambrook  
 Project Manager





USPCI/Laidlaw  
5665 Flatiron Pkwy.  
Boulder, CO 80301  
Attention: Denton Mauldin

Client Project ID: UPMF Oakland (96120-844)  
Sample Matrix: Water  
Analysis Method: EPA 5030/8015/8020  
First Sample #: 502-1309

Sampled: Feb 22, 1995  
Received: Feb 22, 1995  
Reported: Mar 15, 1995

**TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION**

Analyte	Reporting Limit µg/L	Sample I.D. 502-1309 OKUS-W1	Sample I.D. 502-1310 OKUS-W2	Sample I.D. 502-1311 OKUS-W3	Sample I.D. 502-1345 Trip Blank
Purgeable Hydrocarbons	50	N.D.	3,500	7,400	N.D.
Benzene	0.50	N.D.	100	250	N.D.
Toluene	0.50	N.D.	18	51	N.D.
Ethyl Benzene	0.50	N.D.	1,600	4,400	N.D.
Total Xylenes	0.50	N.D.	66	150	N.D.
Chromatogram Pattern:		--	Gasoline	Gasoline	--

**Quality Control Data**

Report Limit Multiplication Factor:	1.0	10	20	1.0
Date Analyzed:	2/27/95	3/1/95	3/1/95	2/27/95
Instrument Identification:	HP-2	HP-2	HP-2	HP-4
Surrogate Recovery, %: (QC Limits = 70-130%)	100	106	100	92

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.  
Analytes reported as N.D. were not detected above the stated reporting limit.

**SEQUOIA ANALYTICAL, #1271**

*Kevin Van Slambrook*  
Kevin Van Slambrook  
Project Manager





USPCI/Laidlaw	Client Project ID: UPMF Oakland (96120-844)	Sampled: Feb 22, 1995
5665 Flatiron Pkwy.	Sample Matrix: Water	Received: Feb 22, 1995
Boulder, CO 80301	Analysis Method: EPA 3510/3520/8015	Reported: Mar 15, 1995
Attention: Denton Mauldin	First Sample #: 502-1303	

**TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS**

Analyte	Reporting Limit µg/L	Sample I.D. 502-1303 APL-W2	Sample I.D. 502-1304 APL-W12	Sample I.D. 502-1305 APL-W1	Sample I.D. 502-1306 OKUS-W8	Sample I.D. 502-1307 OKUS-W7	Sample I.D. 502-1308 OKUS-W4
Extractable Hydrocarbons	50	550	490	510	370	830	2,000
Chromatogram Pattern:		Diesel	Diesel	Diesel	Diesel	Diesel	Diesel

**Quality Control Data**

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Extracted:	2/27/95	2/27/95	2/27/95	2/27/95	2/27/95	2/27/95
Date Analyzed:	3/1/95	3/1/95	3/1/95	3/1/95	3/1/95	3/1/95
Instrument Identification:	HP-3B	HP-3B	HP-3B	HP-3B	HP-3B	HP-3B

Extractable Hydrocarbons are quantitated against a fresh diesel standard.  
 Analytes reported as N.D. were not detected above the stated reporting limit.

**SEQUOIA ANALYTICAL, #1271**

*Kevin Van Slambrook*  
 Kevin Van Slambrook  
 Project Manager





USPCI/Laidlaw  
5665 Flatiron Pkwy.  
Boulder, CO 80301  
Attention: Denton Mauldin

Client Project ID: UPMF Oakland (96120-844)  
Sample Matrix: Water  
Analysis Method: EPA 3510/3520/8015  
First Sample #: 502-1309

Sampled: Feb 22, 1995  
Received: Feb 22, 1995  
Reported: Mar 15, 1995

**TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS**

Analyte	Reporting Limit µg/L	Sample I.D. 502-1309 OKUS-W1	Sample I.D. 502-1310 OKUS-W2	Sample I.D. 502-1311 OKUS-W3
Extractable Hydrocarbons	50	120	2,000	2,400
Chromatogram Pattern:		Diesel	Diesel	Diesel

**Quality Control Data**

Report Limit Multiplication Factor:	1.0	1.0	1.0
Date Extracted:	2/27/95	2/27/95	2/27/95
Date Analyzed:	3/1/95	3/1/95	3/1/95
Instrument Identification:	HP-3A	HP-3A	HP-3B

Extractable Hydrocarbons are quantitated against a fresh diesel standard.  
Analytes reported as N.D. were not detected above the stated reporting limit.

**SEQUOIA ANALYTICAL, #1271**

*Kevin Van Slambrook*  
Kevin Van Slambrook  
Project Manager





# 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

USPCI/Laidlaw  
5665 Flatiron Pkwy.  
Boulder, CO 80301  
Attention: Denton Mauldin

Client Project ID: UPMF Oakland (96120-844)  
Matrix: Liquid

QC Sample Group: 5021303-45

Reported: Mar 15, 1995

## QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes	Diesel
<b>Method:</b>	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015 Mod.
<b>Analyst:</b>	A. Tuzon	A. Tuzon	A. Tuzon	A. Tuzon	K. Wimer

MS/MSD	Benzene	Toluene	Ethyl Benzene	Xylenes	Diesel
<b>Batch#:</b>	5020993	5020993	5020993	5020993	BLK022795
<b>Date Prepared:</b>	2/27/95	2/27/95	2/27/95	2/27/95	2/27/95
<b>Date Analyzed:</b>	2/27/95	2/27/95	2/27/95	2/27/95	3/1/95
<b>Instrument I.D.#:</b>	HP-2	HP-2	HP-2	HP-2	HP-3A
<b>Conc. Spiked:</b>	20 µg/L	20 µg/L	20 µg/L	60 µg/L	300 µg/L
<b>Matrix Spike % Recovery:</b>	100	95	100	100	90
<b>Matrix Spike Duplicate % Recovery:</b>	100	100	105	100	91
<b>Relative % Difference:</b>	0.0	5.1	4.9	0.0	1.1

LCS Batch#:	1LCS022795	1LCS022795	1LCS022795	1LCS022795	BLK022795
<b>Date Prepared:</b>	2/27/95	2/27/95	2/27/95	2/27/95	2/27/95
<b>Date Analyzed:</b>	2/27/95	2/27/95	2/27/95	2/27/95	3/1/95
<b>Instrument I.D.#:</b>	HP-2	HP-2	HP-2	HP-2	HP-3A
<b>LCS % Recovery:</b>	108	105	110	107	90

% Recovery Control Limits:	71-133	72-128	72-130	71-120	28-122
----------------------------	--------	--------	--------	--------	--------

**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.

SEQUOIA ANALYTICAL, #1271

*Kevin Van Slambrook*  
Kevin Van Slambrook  
Project Manager





USPCI/Laidlaw  
5665 Flatiron Pkwy.  
Boulder, CO 80301  
Attention: Denton Mauldin

Client Project ID: UPMF Oakland (96120-844)  
Matrix: Liquid

QC Sample Group: 5021303-45

Reported: Mar 15, 1995

**QUALITY CONTROL DATA REPORT**

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	A. Tuzon	A. Tuzon	A. Tuzon	A. Tuzon

MS/MSD	Benzene	Toluene	Ethyl Benzene	Xylenes
Batch#:	5021234	5021234	5021234	5021234
Date Prepared:	2/27/95	2/27/95	2/27/95	2/27/95
Date Analyzed:	2/27/95	2/27/95	2/27/95	2/27/95
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
Matrix Spike % Recovery:	89	95	95	96
Matrix Spike Duplicate % Recovery:	95	100	100	101
Relative % Difference:	6.5	5.1	5.1	5.1

LCS Batch#:	2LCS022795	2LCS022795	2LCS022795	2LCS022795
Date Prepared:	2/27/95	2/27/95	2/27/95	2/27/95
Date Analyzed:	2/27/95	2/27/95	2/27/95	2/27/95
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4
LCS % Recovery:	86	92	92	92

% Recovery Control Limits:	71-133	72-128	72-130	71-120
----------------------------	--------	--------	--------	--------

**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.

SEQUOIA ANALYTICAL, #1271

*Kevin Van Slambrook*  
Kevin Van Slambrook  
Project Manager





USPCI/Laidlaw  
5665 Flatiron Pkwy.  
Boulder, CO 80301  
Attention: Denton Mauldin

Client Project ID: UPMF Oakland (96120-844)  
Matrix: Liquid

QC Sample Group: 5021303-45

Reported: Mar 15, 1995

**QUALITY CONTROL DATA REPORT**

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analytst:	A. Tuzon	A. Tuzon	A. Tuzon	A. Tuzon

MS/MSD Batch#:	5021249	5021249	5021249	5021249
Date Prepared:	3/1/95	3/1/95	3/1/95	3/1/95
Date Analyzed:	3/1/95	3/1/95	3/1/95	3/1/95
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
Matrix Spike % Recovery:	100	95	100	100
Matrix Spike Duplicate % Recovery:	100	95	100	100
Relative % Difference:	0.0	0.0	0.0	0.0

LCS Batch#:	1LCS030195	1LCS030195	1LCS030195	1LCS030195
Date Prepared:	3/1/95	3/1/95	3/1/95	3/1/95
Date Analyzed:	3/1/95	3/1/95	3/1/95	3/1/95
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2
LCS % Recovery:	105	104	107	107

% Recovery Control Limits:	71-133	72-128	72-130	71-120
-------------------------------	--------	--------	--------	--------

**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.

SEQUOIA ANALYTICAL, #1271

*Kevin Van Slambrook*  
Kevin Van Slambrook  
Project Manager







# SEQUOIA ANALYTICAL CHAIN OF CUSTODY

- 680 Chesapeake Drive • Redwood City, CA 94063 • (415) 364-9600 FAX (415) 364-9233
- 819 West Striker Ave. • Sacramento, CA 95834 • (916) 921-9600 FAX (916) 921-0100
- 1900 Bates Ave., Suite LM • Concord, CA 94520 • (510) 686-9600 FAX (510) 686-9689

Company Name: <u>USPC/ LAIDLAW</u>			Project Name: <u>UPMF OAKLAND (96120-844)</u>		
Address: <u>5665 FLATIRON PKWY</u>			Billing Address (if different):		
City: <u>BOULDER</u>	State: <u>CO</u>	Zip Code: <u>80301</u>			
Telephone: <u>303 938 5500</u>		FAX#:	P.O. #: <u>96120-844</u>		
Report To: <u>DENTON MAULDIN</u>	Sampler: <u>MARK MCCORMICK</u>	QC Data: <input type="checkbox"/> Level A (Standard) <input type="checkbox"/> Level B <input type="checkbox"/> Level C <input type="checkbox"/> Level D			

Turnaround  10 Working Days  3 Working Days  2 - 8 Hours  Drinking Water

Time:  7 Working Days  2 Working Days  Waste Water

5 Working Days  24 Hours  **STD**  Other

Analyses Requested

Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Sequoia's Sample #	Analyses Requested										Comments				
						1	2	3	4	5	6	7	8	9	10		11	12		
1. APL-WZ	7/24/95 08:12	GW	3	40ml	5021303		X	X												
2. APL-WZ			1	1L	AD	X														
3. APL-W12	08:22		3	40ml	5021304		X	X												
4. APL-W12			1	1L	AD	X														
5. APL-W1	08:58		3	40ml	5021305		X	X												
6. APL-W1			1	1L	AD	X														
7. DKUS-WB	11:40		3	40ml	5021306		X	X												
8. DKUS-WB			1	1L	AD	X														
9. DKUS-W7	12:35		3	40ml	5021307		X	X												
10. DKUS-W7			1	1L	AD	X														

Relinquished By: <u>[Signature]</u>	Date: <u>2/22/95</u>	Time: <u>16:05</u>	Received By: <u>[Signature]</u>	Date: <u>2/22/95</u>	Time: <u>16:05</u>
Relinquished By: <u>[Signature]</u>	Date: <u>      </u>	Time: <u>      </u>	Received By: <u>      </u>	Date: <u>      </u>	Time: <u>      </u>
Relinquished By: <u>      </u>	Date: <u>      </u>	Time: <u>      </u>	Received By Lab: <u>Melissa Cruse</u>	Date: <u>2/22/95</u>	Time: <u>1745</u>

Pink - Client  
Yellow - Sequoia  
White - Sequoia



# SEQUOIA ANALYTICAL CHAIN OF CUSTODY

680 Chesapeake Drive • Redwood City, CA 94063 • (415) 364-9600 FAX (415) 364-9233  
 819 West Striker Ave. • Sacramento, CA 95834 • (916) 921-9600 FAX (916) 921-0100  
 1900 Bates Ave., Suite LM • Concord, CA 94520 • (510) 686-9600 FAX (510) 686-9689

Company Name: <u>USPC/LADLAN</u>		Project Name: <u>UPMF OAKLAND (96120-844)</u>	
Address: <u>5665 FLATIRON PKWY</u>		Billing Address (if different):	
City: <u>BOULDER</u>	State: <u>CO</u>	Zip Code: <u>80301</u>	
Telephone: <u>303 938 5500</u>		FAX #: <u>303 938 5500</u>	
Report To: <u>DENTON MAULDIN</u>		Sampler: <u>M. MCCORMICK</u>	
Turnaround: <input checked="" type="checkbox"/> 10 Working Days		P.O. #: <u>96120-844</u>	
Time: <input type="checkbox"/> 7 Working Days		QC Data: <input type="checkbox"/> Level A (Standard) <input type="checkbox"/> Level B <input type="checkbox"/> Level C <input type="checkbox"/> Level D	
<input type="checkbox"/> 3 Working Days			
<input type="checkbox"/> 2 - 8 Hours			
<input type="checkbox"/> 5 Working Days			
<input type="checkbox"/> 24 Hours			

Analyses Requested

Drinking Water  
 Waste Water  
 Other

*MDD BOUL  
 TPH DIESEL  
 TAN-BAT  
 BUZO GASOLINE  
 BUZO BTEX*

Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Sequoia's Sample #	Analyses Requested										Comments				
1. OKUS-W4	2/22/95 13:20	GW	3	40ml	5021308		X	X												
2. OKUS-W4	↓		1	1L	AD	X														
3. OKUS-W1	14:02		3	40ml	5021309		X	X												
4. OKUS-W1	↓		1	1L	AD	X														
5. OKUS-W2	14:41		3	40ml	5021310		X	X												
6. OKUS-W2	↓		1	1L	AD	X														
7. OKUS-W3	15:23		3	40ml	5021311		X	X												
8. OKUS-W3	↓		1	1L	AD	X														
9. Trip Blank					5021345	X														
10.																				

Relinquished By: <u>M. McCormick</u>	Date: <u>2/22/95</u>	Time: <u>16:10</u>	Received By: <u>[Signature]</u>	Date: <u>2/22/95</u>	Time: <u>16:10</u>
Relinquished By: <u>[Signature]</u>	Date: <u>_____</u>	Time: <u>_____</u>	Received By: <u>_____</u>	Date: <u>_____</u>	Time: <u>_____</u>
Relinquished By: <u>_____</u>	Date: <u>_____</u>	Time: <u>_____</u>	Received By Lab: <u>Melissa Crosser</u>	Date: <u>2/22/95</u>	Time: <u>1745</u>

Were Samples Received in Good Condition?  Yes  No

Samples on Ice?  Yes  No Method of Shipment \_\_\_\_\_

Pink - Client

Yellow - Sequoia

White - Sequoia

**APPENDIX B**

**WELL STABILIZATION AND  
SAMPLING REPORTS**

**USPCI SAMPLING AND WELL STABILIZATION FORM**

USPCI Project Name: UPMF Oakland

USPCI Project Number: 96120-844

Measuring Point (MP) Location **Top of casing**

**Well No. OKUS-W1**

Well Depth: (Below MP): **18.70 Feet**

Casing diameter: **2 Inches**

Sampling Date: **02/22/95**

Depth To Ground Water (Below MP): **7.61 Feet**

Sample ID No. **OKUS-W1**

**Method Of Well Development:**

Time: **13:36**     AM,  PM

Tap     Submersible Pump     Bladder Pump

Riser Elevation (MP): **9.17'**

Bailer     Centrifugal Pump     Other

Top of Screen Elevation: **6.85'**

**Sampling Collection Method:**

Sample Appearance: **Clear**

Tap     Submersible Pump     Bladder Pump Sample

Odor: **Moderate**

Bailer Type:     Teflon     Stainless Steel

Sampling Problems (if any):

ABS Plastic     PVC     HDPE plastic disposable

Pump Intake Or Bailer Set At \_\_\_\_\_ Feet Below MP

Decontamination Performed: **Probe**

Tubing Type (if Used):

Tubing Used for:     Sample Collection     Well Development/Field Tests

Samples Collected: **BTEX, TPH-G, TPH-D**

Time	pH (Units)	Temperature Corrected Conductance (umho/cm)	Temperature (Centigrade)	Water Level (Nearest 0.01 Ft.)	Cumulative Volume of Water Removed From well (Gallons)	Pumping Rate in Gallons/Minute (GPM)
13:36	Begin well					
13:45	7.9	900	18.0		2.5	
13:52	7.5	1000	18.0		4.0	
13:57	7.5	1100	18.0		6.0	
14:02	Sample well					

At Least 3 Well Bore Volumes Were Evacuated Before Sampling

Discharge Rate =    GPM x 0.00223 =    cfs

Comments:

[Comments may continue on back]

Form Completed By: **Mark McCormick**

Witnessed By:

**USPCI SAMPLING AND WELL STABILIZATION FORM**

USPCI Project Name: **UPMF Oakland**

USPCI Project Number: **96120-844**

Measuring Point (MP) Location **Top of casing**

**Well No. OKUS-W2**

Well Depth: (Below MP): **22.00 Feet**

Casing diameter: **2 Inches**

Sampling Date: **02/22/95**

Depth To Ground Water (Below MP): **8.49 Feet**

Sample ID No. **OKUS-W2**

**Method Of Well Development:**

Time: **14:12**     AM,  PM

Tap     Submersible Pump     Bladder Pump

Riser Elevation (MP): **9.71'**

Bailer     Centrifugal Pump     Other

Top of Screen Elevation: **7.05'**

**Sampling Collection Method:**

Sample Appearance: **Clear**

Tap     Submersible Pump     Bladder Pump    Sample

Odor: **Moderate**

Bailer Type:     Teflon     Stainless Steel

Sampling Problems (if any):

ABS Plastic     PVC     HDPE plastic disposable

Pump Intake Or Bailer Set At \_\_\_\_\_ Feet Below MP

Decontamination Performed: **Probe**

Tubing Type (if Used):

Tubing Used for:     Sample Collection     Well Development/Field Tests

Samples Collected: **BTEX, TPH-G, TPH-D**

Time	pH (Units)	Temperature Corrected Conductance (umho/cm)	Temperature (Centigrade)	Water Level (Nearest 0.01 Ft.)	Cumulative Volume of Water Removed From well (Gallons)	Pumping Rate in Gallons/Minute (GPM)
14:12	Begin well					
14:19	7.4	3500	18.0		2.25	
14:25	7.2	3800	18.0		4.50	
14:35	7.2	3700	18.0		6.75	
14:41	Sample well					

At Least 3 Well Bore Volumes Were Evacuated Before Sampling

Discharge Rate =    GPM x 0.00223 =    cfs

Comments:

[Comments may continue on back]

Form Completed By: **Mark McCormick**

Witnessed By:

**USPCI SAMPLING AND WELL STABILIZATION FORM**

USPCI Project Name: <b>UPMF Oakland</b>			USPCI Project Number: <b>96120-844</b>			
Measuring Point (MP) Location <b>Top of casing</b>			<b>Well No. OKUS-W3</b>			
Well Depth: (Below MP): <b>21.5 Feet</b>						
Casing diameter: <b>2 Inches</b>			Sampling Date: <b>02/22/95</b>			
Depth To Ground Water (Below MP): <b>8.76 Feet</b>			Sample ID No. <b>OKUS-W3</b>			
<b>Method Of Well Development:</b>			Time: <b>14:54</b> <input type="checkbox"/> AM, <input checked="" type="checkbox"/> PM			
<input type="checkbox"/> Tap <input type="checkbox"/> Submersible Pump <input type="checkbox"/> Bladder Pump			Riser Elevation (MP): <b>9.17'</b>			
<input checked="" type="checkbox"/> Bailer <input type="checkbox"/> Centrifugal Pump <input type="checkbox"/> Other			Top of Screen Elevation: <b>6.85'</b>			
<b>Sampling Collection Method:</b>			Sample Appearance: <b>Slightly turbid</b>			
<input type="checkbox"/> Tap <input type="checkbox"/> Submersible Pump <input type="checkbox"/> Bladder Pump    Sample			Odor: <b>Moderate</b>			
<input checked="" type="checkbox"/> Bailer    Type: <input type="radio"/> Teflon <input type="radio"/> Stainless Steel			Sampling Problems (if any): <b>Water is reactive</b>			
<input type="radio"/> ABS Plastic <input type="radio"/> PVC <input checked="" type="checkbox"/> HDPE plastic disposable						
Pump Intake Or Bailer Set At _____ Feet Below MP			Decontamination Performed: <b>Probe</b>			
Tubing Type (if Used):						
Tubing Used for: <input type="checkbox"/> Sample Collection <input type="checkbox"/> Well Development/Field Tests			Samples Collected: <b>BTEX, TPH-G, TPH-D</b>			

Time	pH (Units)	Temperature Corrected Conductance (umho/cm)	Temperature (Centigrade)	Water Level (Nearest 0.01 Ft.)	Cumulative Volume of Water Removed From well (Gallons)	Pumping Rate in Gallons/Minute (GPM)
14:54	Begin well					
15:05	7.3	3200	18.0		2.5	
15:13	7.1	3300	18.0		5.0	
15:19	7.2	3400	18.0		7.5	
15:23	Sample well					

At Least 3 Well Bore Volumes Were Evacuated Before Sampling      Discharge Rate =      GPM x 0.00223 =      cfs

Comments: **Groundwater photo-reactive, heavy bacteria level obscuring water/air interface. Several attempts were made at gauging well.**

[Comments may continue on back]

Form Completed By: **Mark McCormick**      Witnessed By: \_\_\_\_\_

**USPCI SAMPLING AND WELL STABILIZATION FORM**

USPCI Project Name: UPMF Oakland

USPCI Project Number: 96120-844

Measuring Point (MP) Location **Top of casing**

**Well No. OKUS-W4**

Well Depth: (Below MP): **20.69 Feet**

Casing diameter: **2 Inches**

Sampling Date: **02/22/95**

Depth To Ground Water (Below MP): **5.71 Feet**

Sample ID No. **OKUS-W4**

**Method Of Well Development:**

Time: **12:51**     AM,  PM

Tap     Submersible Pump     Bladder Pump

Riser Elevation (MP): **7.35'**

Bailer     Centrifugal Pump     Other

Top of Screen Elevation: **6.08'**

**Sampling Collection Method:**

Sample Appearance: **Clear - v. slightly turbid**

Tap     Submersible Pump     Bladder Pump Sample

Odor: **Moderate**

Bailer Type:     Teflon     Stainless Steel

Sampling Problems (if any):

ABS Plastic     PVC     HDPE plastic disposable

Pump Intake Or Bailer Set At \_\_\_\_\_ Feet Below MP

Decontamination Performed: **Probe**

Tubing Type (if Used):

Tubing Used for:     Sample Collection     Well Development/Field Tests

Samples Collected: **BTEX, TPH-G, TPH-D**

Time	pH (Units)	Temperature Corrected Conductance (umho/cm)	Temperature (Centigrade)	Water Level (Nearest 0.01 Ft.)	Cumulative Volume of Water Removed From well (Gallons)	Pumping Rate in Gallons/Minute (GPM)
12:51	Begin well					
13:01	7.3	3700	17.0		2.5	
13:08	7.2	3600	16.5		5.0	
13:15	7.3	3500	17.0		7.5	
13:20	Sample well					

At Least 3 Well Bore Volumes Were Evacuated Before Sampling

Discharge Rate =    GPM x 0.00223 =    cfs

Comments:

[Comments may continue on back]

Form Completed By: **Mark McCormick**

Witnessed By:







**USPCI SAMPLING AND WELL STABILIZATION FORM**

USPCI Project Name: UPMF Oakland

USPCI Project Number: 96120-844

Measuring Point (MP) Location Top of casing

**Well No. OKUS-W7**

Well Depth: (Below MP): 19.78 Feet

Casing diameter: 2 Inches

Sampling Date: 02/22/95

Depth To Ground Water (Below MP): 4.89 Feet

Sample ID No. OKUS-W7

**Method Of Well Development:**

Time: 12:09  AM,  PM

Tap  Submersible Pump  Bladder Pump

Riser Elevation (MP): 7.4'

Bailer  Centrifugal Pump  Other

Top of Screen Elevation: 2.4'

**Sampling Collection Method:**

Sample Appearance: Slightly turbid

Tap  Submersible Pump  Bladder Pump Sample

Odor: Slight

Bailer Type:  Teflon  Stainless Steel

Sampling Problems (if any):

ABS Plastic  PVC  HDPE plastic disposable

Pump Intake Or Bailer Set At \_\_\_\_\_ Feet Below MP

Decontamination Performed: Probe

Tubing Type (if Used):

Tubing Used for:  Sample Collection  Well Development/Field Tests

Samples Collected: BTEX, TPH-G, TPH-D

Time	pH (Units)	Temperature Corrected Conductance (umho/cm)	Temperature (Centigrade)	Water Level (Nearest 0.01 Ft.)	Cumulative Volume of Water Removed From well (Gallons)	Pumping Rate in Gallons/Minute (GPM)
12:09	Begin well					
12:18	7.6	3100	18.5		2.5	
12:23	7.4	3300	18.5		5.0	
12:31	7.3	3200	18.0		7.5	
12:35	Sample well					

At Least 3 Well Bore Volumes Were Evacuated Before Sampling

Discharge Rate = GPM x 0.00223 = cfs

Comments:

[Comments may continue on back]

Form Completed By: Mark McCormick

Witnessed By:

**USPCI SAMPLING AND WELL STABILIZATION FORM**

USPCI Project Name: <b>UPMF Oakland</b>		USPCI Project Number: <b>96120-844</b>	
Measuring Point (MP) Location <b>Top of casing</b>		<b>Well No. OKUS-W8</b>	
Well Depth: (Below MP): <b>14.87 Feet</b>			
Casing diameter: <b>2 Inches</b>	Sampling Date: <b>02/22/95</b>		
Depth To Ground Water (Below MP): <b>4.79 Feet</b>	Sample ID No. <b>OKUS-W8</b>		
<b>Method Of Well Development:</b>		Time: <b>11:20</b> <input checked="" type="checkbox"/> AM, <input type="checkbox"/> PM	
<input type="checkbox"/> Tap <input type="checkbox"/> Submersible Pump <input type="checkbox"/> Bladder Pump		Riser Elevation (MP): <b>7.11'</b>	
<input checked="" type="checkbox"/> Bailer <input type="checkbox"/> Centrifugal Pump <input type="checkbox"/> Other		Top of Screen Elevation: <b>2.11'</b>	
<b>Sampling Collection Method:</b>		Sample Appearance: <b>Slightly turbid</b>	
<input type="checkbox"/> Tap <input type="checkbox"/> Submersible Pump <input type="checkbox"/> Bladder Pump    Sample		Odor: <b>Very slight</b>	
<input checked="" type="checkbox"/> Bailer Type: <input type="radio"/> Teflon <input type="radio"/> Stainless Steel		Sampling Problems (if any):	
<input type="radio"/> ABS Plastic <input type="radio"/> PVC <input checked="" type="checkbox"/> HDPE plastic disposable			
Pump Intake Or Bailer Set At _____ Feet Below MP		Decontamination Performed: <b>Probe</b>	
Tubing Type (if Used):			
Tubing Used for: <input type="checkbox"/> Sample Collection <input type="checkbox"/> Well Development/Field Tests		Samples Collected: <b>BTEX, TPH-G, TPH-D</b>	

Time	pH (Units)	Temperature Corrected Conductance (umho/cm)	Temperature (Centigrade)	Water Level (Nearest 0.01 Ft.)	Cumulative Volume of Water Removed From well (Gallons)	Pumping Rate in Gallons/Minute (GPM)
11:20	Begin well					
11:29	7.7	5100	16.5		1.75	
11:33	7.4	5300	16.5		3.50	
11:37	7.5	5300	16.5		5.25	
11:40	Sample well					

At Least 3 Well Bore Volumes Were Evacuated Before Sampling      Discharge Rate =      GPM x 0.00223 =      cfs

Comments:

---



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[Comments may continue on back]

Form Completed By: **Mark McCormick**      Witnessed By: \_\_\_\_\_

**USPCI SAMPLING AND WELL STABILIZATION FORM**

USPCI Project Name: UPMF Oakland			USPCI Project Number: 96120-844			
Measuring Point (MP) Location Top of casing			<b>Well No. APL-W1</b>			
Well Depth: (Below MP): 21.87 Feet						
Casing diameter: 2 Inches			Sampling Date: 02/22/95			
Depth To Ground Water (Below MP): 9.76 Feet			Sample ID No. APL-W1			
<b>Method Of Well Development:</b>			Time: 08:35 <input checked="" type="checkbox"/> AM, <input type="checkbox"/> PM			
<input type="checkbox"/> Tap <input type="checkbox"/> Submersible Pump <input type="checkbox"/> Bladder Pump			Riser Elevation (MP): 7.11'			
<input checked="" type="checkbox"/> Bailer <input type="checkbox"/> Centrifugal Pump <input type="checkbox"/> Other			Top of Screen Elevation: 2.11'			
<b>Sampling Collection Method:</b>			Sample Appearance: Clear - silty bottom			
<input type="checkbox"/> Tap <input type="checkbox"/> Submersible Pump <input type="checkbox"/> Bladder Pump Sample			Odor: Moderate			
<input checked="" type="checkbox"/> Bailer <u>Type:</u> <input type="radio"/> Teflon <input type="radio"/> Stainless Steel			Sampling Problems (if any):			
<input type="radio"/> ABS Plastic <input type="radio"/> PVC <input checked="" type="checkbox"/> HDPE plastic disposable						
Pump Intake Or Bailer Set At _____ Feet Below MP			Decontamination Performed: Probe			
Tubing Type (if Used):						
Tubing Used for: <input type="checkbox"/> Sample Collection <input type="checkbox"/> Well Development/Field Tests			Samples Collected: BTEX, TPH-G, TPH-D			
Time	pH (Units)	Temperature Corrected Conductance (umho/cm)	Temperature (Centigrade)	Water Level (Nearest 0.01 Ft.)	Cumulative Volume of Water Removed From well (Gallons)	Pumping Rate in Gallons/Minute (GPM)
08:35	Begin well					
08:43	7.4	2800	17.0		2.0	
08:49	7.2	2600	16.5		4.0	
08:56	7.3	2700	16.5		6.0	
08:58	Sample well					

At Least 3 Well Bore Volumes Were Evacuated Before Sampling      Discharge Rate =      GPM x 0.00223 =      cfs

Comments:

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[Comments may continue on back]

Form Completed By: **Mark McCormick**      Witnessed By:

**USPCI SAMPLING AND WELL STABILIZATION FORM**

USPCI Project Name: <b>UPMF Oakland</b>			USPCI Project Number: <b>96120-844</b>			
Measuring Point (MP) Location <b>Top of casing</b>			<b>Well No. APL-W2</b>			
Well Depth: (Below MP): <b>11.17 Feet</b>						
Casing diameter: <b>2 Inches</b>			Sampling Date: <b>02/22/95</b>			
Depth To Ground Water (Below MP): <b>8.85 Feet</b>			Sample ID No. <b>APL-W2</b>			
<b>Method Of Well Development:</b>			Time: <b>07:49</b> <input checked="" type="checkbox"/> AM, <input type="checkbox"/> PM			
<input type="checkbox"/> Tap <input type="checkbox"/> Submersible Pump <input type="checkbox"/> Bladder Pump			Riser Elevation (MP): <b>7.62'</b>			
<input checked="" type="checkbox"/> Bailer <input type="checkbox"/> Centrifugal Pump <input type="checkbox"/> Other			Top of Screen Elevation: <b>2.62'</b>			
<b>Sampling Collection Method:</b>			Sample Appearance: <b>Clear - silty bottom</b>			
<input type="checkbox"/> Tap <input type="checkbox"/> Submersible Pump <input type="checkbox"/> Bladder Pump			Odor: <b>Slight</b>			
<b>Bailer Type:</b> <input type="radio"/> Teflon <input type="radio"/> Stainless Steel			Sampling Problems (if any):			
<input type="radio"/> ABS Plastic <input type="radio"/> PVC <input checked="" type="checkbox"/> HDPE plastic disposable						
Pump Intake Or Bailer Set At _____ Feet Below MP			Decontamination Performed: <b>Probe</b>			
Tubing Type (if Used):						
Tubing Used for: <input type="checkbox"/> Sample Collection <input type="checkbox"/> Well Development/Field Tests			Samples Collected: <b>BTEX, TPH-G, TPH-D</b>			

Time	pH (Units)	Temperature Corrected Conductance (umho/cm)	Temperature (Centigrade)	Water Level (Nearest 0.01 Ft.)	Cumulative Volume of Water Removed From well (Gallons)	Pumping Rate in Gallons/Minute (GPM)
07:49	Begin well					
08:03	8.3	2800	18.5		0.5	
08:06	7.9	2900	18.0		1.0	
08:08	8.1	2800	18.0		1.5	
08:12	Sample well					

At Least 3 Well Bore Volumes Were Evacuated Before Sampling      Discharge Rate =      GPM x 0.00223 =      cfs

Comments: Duplicate sample = APL-W12

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[Comments may continue on back]

Form Completed By: **Mark McCormick**      Witnessed By: \_\_\_\_\_