2044

FOURTH QUARTER 1994
MONITORING REPORT

UNION PACIFIC RAILROAD

UNION PACIFIC MOTOR
FREIGHT FACILITY
OAKLAND, CALIFORNIA
USPCI PROJECT NO. 96120-844

PREPARED FOR:
UNION PACIFIC RAILROAD
ENVIRONMENTAL MANAGEMENT
1416 DODGE STREET, ROOM 930
OMAHA, NEBRASKA 68179

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

January 27, 1995

USPCI
LAIDLAW
ENVIRONMENTAL
SERVICES

USPCI
A Subsidiary of
Union Pacific Corporation

Consulting Services

January 30, 1995

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

RE: **"Fourth Quarter 1994 Monitoring Report"** Oakland Motor Freight Facility, Oakland, California

Dear Harry:

Enclosed is the final **"Fourth Quarter 1994 Monitoring Report"**, dated January 24, 1995 for the Union Pacific Motor Freight (UPMF) Facility at 1750 Ferro Street in Oakland, California.

Based on the information obtained during the most recent monitoring event, the following recommendations are included in the report:

- The quarterly monitoring program should be continued.
- The monitoring of bunker C and product near the Union Pacific Motor Freight facility should be continued.
- The operation and monitoring of the product skimming system in recovery well RW should be continued.

5665 Flatiron Parkway
Boulder, Colorado 80301
303/938-5500
Fax 303/938-5520

24125 Aldine Westfield
Spring, Texas 77373
713/350-7240
Fax 713/350-7246

If you have any questions, please call me at (303) 938-5539.

Sincerely,

Denton Mauldin
Engineer III

cc: [redacted]
John Amdur, Port of Oakland
Philip Herden, APL
Sam Marquis, USPCI
K. Fossey, USPCI
Mark McCormick, USPCI

Enclosures
DM/tjh

FOURTH QUARTER 1994 MONITORING REPORT
UNION PACIFIC RAILROAD
UNION PACIFIC MOTOR FREIGHT FACILITY
OAKLAND, CALIFORNIA
USPCI 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 Consulting Services
5665 Flatiron Parkway
Boulder, Colorado 80301

Denton Mauldin
Engineer III

Sam Marquis, R.G. 5110, P.G. 2477
Project Hydrogeologist

January 27, 1995

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1. INTRODUCTION

The Fourth Quarter 1994 Monitoring Report has been prepared for Union Pacific Railroad (UPRR) by USPCI 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 fourth quarterly monitoring event involved:

- Gauging the static water levels, purging, and sampling the nine existing monitoring wells;
- Monitoring the performance of the product skimmer in recovery well RW;
- Collecting and analyzing groundwater samples from the monitoring wells where non-aqueous phase liquid petroleum hydrocarbon (product) was not measured. Samples were analyzed for total petroleum hydrocarbons as diesel (TPH-G) 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;
- Determining the local hydraulic gradient based on the groundwater level measurements; and
- Preparing the Fourth Quarter 1994 Monitoring Report.

Product was measured in monitoring wells OKUS-W5, OKUS-W6 and recovery well RW during the Fourth Quarter 1994 Monitoring Event. Groundwater samples were collected from the seven remaining monitoring wells at the facility on November 15 and 16, 1994.

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 north 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 field activities, including data recording procedures, decontamination methods, groundwater sample collection, and purge water disposal, were completed following USPCI's standard operating procedures (USPCI, 1994) previously supplied to the ACDEH. The quarterly monitoring event was conducted by USPCI Consulting Services personnel under the direct supervision of Christopher Byerman, Geologist I.

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 four separate occasions during the fourth quarter. The dates of the field investigation were October 27, November 15 and 16, and December 8, 1994. Groundwater level measurements and samples were collected on November 15 and 16, 1994. Product level monitoring was performed on October 27, 1994 and the skimming system was checked on December 8, 1994. The following subsections present the findings and activities completed during the fourth 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 demonstrate dissolved concentrations of TPH-D, TPH-G and BTEX in groundwater samples from monitoring wells OKUS-W2 through 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 wells OKUS-W1 to approximately 660 micrograms per liter (μg/L) in the sample collected from OKUS-W2. TPH-G concentrations ranged from below the method detection limit (MDL) of 50 μg/L in samples collected from OKUS-W1 and OKUS-W7 to 10,000 μg/L in sample OKUS-W2. TPH-D concentrations ranged from 51 μg/L in sample OKUS-W1 to 5500 μg/L in sample OKUS-W2. Analytical results appear to be consistent with previous monitoring events, with the exception of decreases in BTEX for monitoring wells OKUS-W2, -W3 and -W4. Analytical results 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 November 15 and 16, 1994 (Table 2) were used to produce the groundwater elevation map presented as Figure 4. A decrease in groundwater elevations was noted throughout most of the site since the second quarter 1994 sampling. The groundwater gradient at the site was to the east and was consistent with the gradient observed during the previous (Third 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, and OKUS-W5, and recovery well RW have been monitored at the site since January 31, 1994, on a monthly basis at a minimum. Water level information has been collected at monitoring well OKUS-W6 on a quarterly 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 0.06 and 0.22 feet of product during the October and November 1994 monitoring events. Monitoring well OKUS-W6 continues to contain bunker C.

A product skimming system was installed in recovery well RW on April 29, 1994 and began operation during the week of May 2, 1994. Operation of the skimmer system was checked on September 26, October 27 and December 8, 1994. Between the September and December monitoring events, approximately 27 gallons of product was recovered by the skimming system. The corresponding recovery rate is approximately equal to two gallons of product recovery per week, which is greater rate than the amount of product recovered by the previous hand bailing activities.

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

Based on the results from the Fourth Quarter 1994 monitoring event, the following conclusions have been reached:

- 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. 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. A decrease in BTEX concentrations for wells near the previous source area was observed.

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

- The product skimming system has continued to remove product from recovery well RW.

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 4, 1994.**

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

SAMPLE LOCATION	SAMPLE DATE	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	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
	08/25/83	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
	11/16/94	NA	51	<50	<0.50	<0.50	<0.50	<0.50	ND	NA	NA
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
	11/16/94	NA	5500	10000	290	79	130	160	660	NA	NA
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
	11/16/94	NA	4700	9100	260	64	95	<0.50	420	NA	NA
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
	11/16/94	NA	2800	5500	320	52	<0.50	120	490	NA	NA
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
	11/16/94	PHASE SEPARATED HYDROCARBONS – WELL NOT SAMPLED									
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									
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

TABLE 1 (cont)
ANALYTICAL RESULTS – GROUNDWATER MONITORING WELLS
UNION PACIFIC RAILROAD
OAKLAND MOTOR FREIGHT FACILITY

SAMPLE LOCATION	SAMPLE DATE	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	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
	11/16/94	NA	830	110	0.77	<0.50	<0.50	<0.50	0.77	NA	NA
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	68	<0.10	NA
	11/15/94	NA	480	470	36	3.6	9.6	12	61	NA	NA
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
DUPLICATES											
OKUS–W5	01/15/93	ND	2800	510	50	10	170	19	250	NA	NA
OKUS–W1	05/12/93	ND	140	ND	ND	ND	ND	ND	ND	ND	ND
APL/UP–W1	07/16/93	12	ND	0.21	22.4	ND	ND	2.4	25	0.012	ND
OKUS–W4	08/26/93	ND	2700	6200	340	78	4500	100	5000	0.1	ND
OKUS–W8	11/11/93	ND	1300	120	1.3	ND	4	1.4	6.7	2.4	ND
OKUS–W3	02/08/94	NA	2900	15000	280	64	5800	<0.50	6100	0.12	0.12
OKUS–W4	05/03/94	NA	2500	5400	300	41	5200	130	5700	0.12	<0.02
OKUS–W8	08/24/94	NA	950	92	1.6	<0.50	<0.50	<0.50	1.6	<0.10	NA
APL/UP–W2	11/16/94	NA	310	190	10	<0.50	62	4.7	77	NA	NA
TRIP BLANKS											
UPMF	07/16/93	NA	NA	NA	ND	ND	ND	ND	ND	NA	NA
UPMF	07/16/93	NA	NA	NA	ND	ND	ND	ND	ND	NA	NA
UPMF	08/27/93	NA	NA	NA	ND	ND	ND	ND	ND	NA	NA
UPMF	08/27/93	NA	NA	NA	ND	ND	ND	ND	ND	NA	NA
UPMF	11/12/93	NA	NA	NA	ND	ND	ND	ND	ND	NA	NA
UPMF	08/24/94	NA	NA	NA	ND	ND	ND	ND	ND	NA	NA
UPMF	11/16/94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TPH – TPH is total petroleum hydrocarbons. TPH/IR is a semi–quantitative analysis by infared radiation f
TPHd it total petroleum hydrocarbons as diesel and TPHg is total petroleum hydrocarbons as gaso
BTEX – Benzene (B), Toluene (T), Ethylbenzene (E) and Xylenes (X); BTEX is the summation of the B, T,
As – Arsenic and Pb is Lead.
mg/L – milligram per liter
ug/L – microgram per liter
ND – Not Detected
NA – Not Analyzed

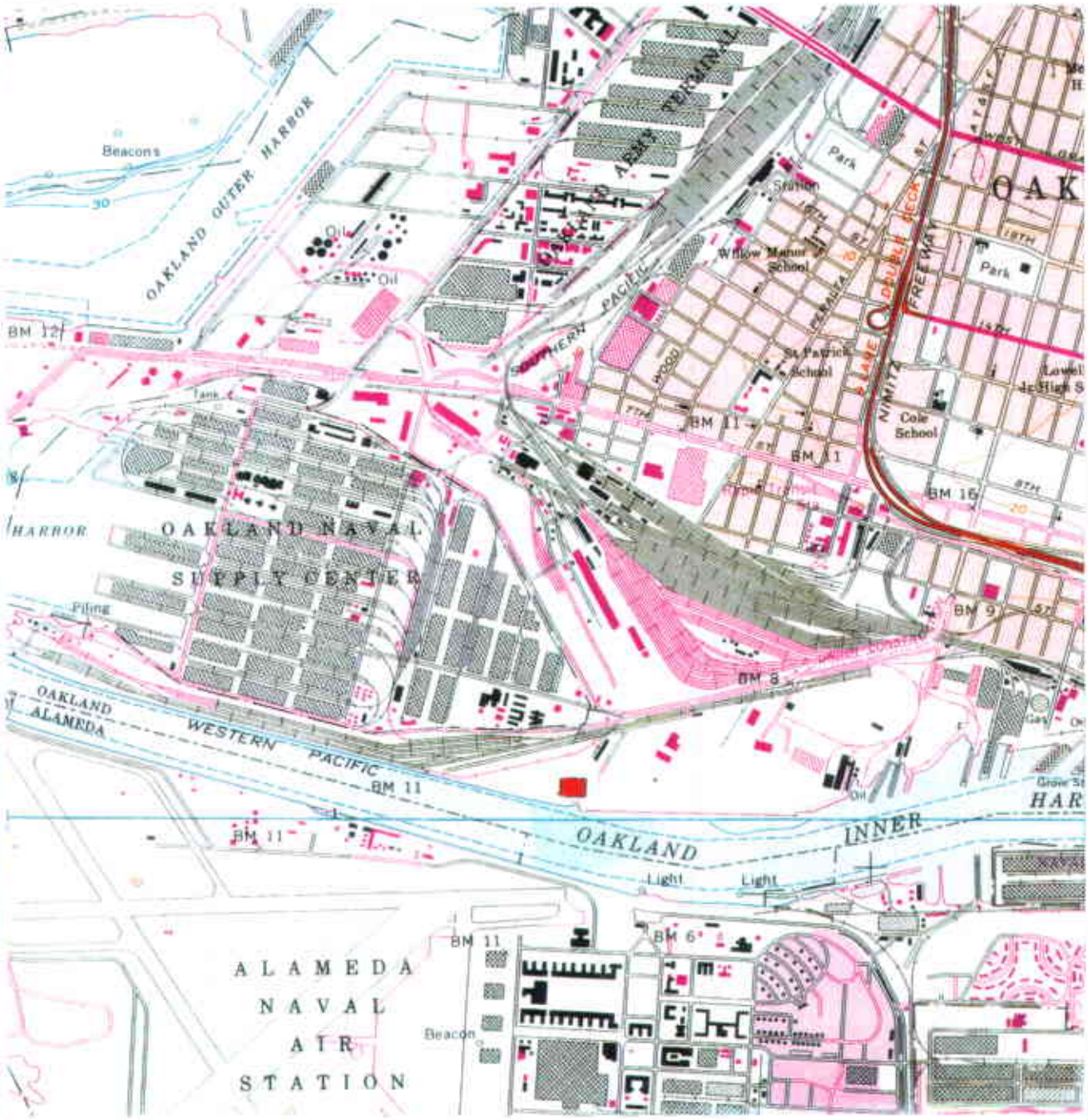
TABLE 2
FLUID LEVEL MEASUREMENT DATA
UNION PACIFIC RAILROAD
OAKLAND MOTOR FREIGHT FACILITY

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
		01/15/93	N/A	N/A	NP	8.45	0.72	0.72
		02/18/93	N/A	N/A	NP	7.79	1.38	1.38
		05/12/93	N/A	N/A	NP	8.04	1.13	1.13
		08/25/93	N/A	N/A	NP	8.61	0.56	0.56
		11/11/93	N/A	N/A	NP	9.24	-0.07	-0.07
		02/08/94	N/A	N/A	NP	8.47	0.70	0.70
		05/03/94	N/A	N/A	NP	8.49	0.68	0.68
		08/24/94	N/A	N/A	NP	8.89	0.28	0.28
		11/16/94	N/A	N/A	NP	8.56	0.61	0.61
OKUS-W2	9.71	01/14/93	N/A	N/A	NP	9.08	0.63	0.63
		01/15/93	N/A	N/A	NP	9.12	0.59	0.59
		02/18/93	N/A	N/A	NP	8.70	1.01	1.01
		05/12/93	N/A	N/A	NP	9.04	0.67	0.67
		08/25/93	N/A	N/A	NP	9.61	0.10	0.10
		11/11/93	N/A	N/A	NP	10.20	-0.49	-0.49
		02/08/94	N/A	N/A	NP	9.46	0.25	0.25
		05/03/94	N/A	N/A	NP	9.50	0.21	0.21
		08/24/94	N/A	N/A	NP	9.74	-0.03	-0.03
		11/16/94	N/A	N/A	NP	9.74	-0.03	-0.03
OKUS-W3	9.80	01/14/93	N/A	N/A	NP	9.39	0.41	0.41
		01/15/93	N/A	N/A	NP	9.33	0.47	0.47
		02/18/93	N/A	N/A	NP	8.85	0.95	0.95
		05/12/93	N/A	N/A	NP	9.23	0.57	0.57
		08/25/93	N/A	N/A	NP	9.82	-0.02	-0.02
		11/11/93	N/A	N/A	NP	10.30	-0.50	-0.50
		02/08/94	N/A	N/A	NP	9.73	0.07	0.07
		05/03/94	N/A	N/A	NP	9.75	0.05	0.05
		08/24/94	N/A	N/A	NP	9.98	-0.18	-0.18
		11/16/94	N/A	N/A	NP	9.61	0.19	0.19
OKUS-W4	7.35	01/14/93	N/A	N/A	NP	6.43	0.92	0.92
		01/15/93	N/A	N/A	NP	6.44	0.91	0.91
		02/18/93	N/A	N/A	NP	5.77	1.58	1.58
		05/12/93	6.39	0.96	0.01	6.40	0.95	0.95
		08/25/93	N/A	N/A	NP	6.63	0.72	0.72
		11/11/93	N/A	N/A	NP	7.10	0.25	0.25
		02/07/94	N/A	N/A	NP	6.64	0.71	0.71
		03/07/94	N/A	N/A	NP	6.45	0.90	0.90
		04/18/94	N/A	N/A	NP	6.58	0.77	0.77
		05/03/94	N/A	N/A	NP	6.55	0.80	0.80
		06/07/94	N/A	N/A	NP	6.62	0.73	0.73
		07/29/94	N/A	N/A	NP	6.65	0.70	0.70
		08/24/94	N/A	N/A	NP	6.80	0.55	0.55
		09/01/94	N/A	N/A	NP	6.93	0.42	0.42
		09/26/94	N/A	N/A	NP	6.95	0.40	0.40
		10/27/94	N/A	N/A	NP	7.05	0.30	0.30
		11/16/94	N/A	N/A	NP	6.71	0.64	0.64
OKUS-W5	9.25	01/14/93	N/A	N/A	NP	9.13	0.12	0.12
		01/15/93	N/A	N/A	NP	9.15	0.10	0.10
		02/18/93	N/A	N/A	NP	8.85	0.40	0.40
		05/12/93	9.18	0.07	0.02	9.20	0.05	0.05
		08/25/93	8.82	0.43	0.02	8.84	0.41	0.41
		11/11/93	N/A	N/A	NP	10.15	-0.90	-0.90
		02/07/94	N/A	N/A	NP	9.61	-0.36	-0.36
		03/07/94	N/A	N/A	NP	9.51	-0.26	-0.26
		04/18/94	N/A	N/A	NP	9.78	-0.53	-0.53
		05/03/94	N/A	N/A	NP	9.77	-0.52	-0.52
		06/07/94	N/A	N/A	NP	9.71	-0.46	-0.46
		07/29/94	N/A	N/A	NP	9.83	-0.58	-0.58
		08/24/94	N/A	N/A	NP	9.93	-0.68	-0.68
		09/01/94	9.91	-0.66	0.01	9.92	-0.67	-0.67
		09/26/94	N/A	N/A	NP	9.92	-0.67	-0.67
		10/27/94	10.08	-0.83	0.06	10.14	-0.89	-0.89
		11/16/94	9.59	-0.34	0.22	9.81	-0.56	-0.56

TABLE 2 (cont)
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
		08/25/93	N/A	N/A	NP	6.52	0.50	0.50
		11/12/93	N/A	N/A	NP	7.22	–0.20	–0.20
		02/07/94	5.89	1.13	P	––	––	––
		05/03/94	5.90	1.12	P	––	––	––
		08/24/94	6.27	0.75	P	––	––	––
		09/26/94	6.50	0.52	P	––	––	––
		10/27/94	6.68	0.34	P	––	––	––
		11/16/94	5.13	1.89	P	––	––	––
OKUS–W7	6.91	07/16/93	N/A	N/A	NP	5.72	1.19	1.19
		08/25/93	N/A	N/A	NP	5.94	0.97	0.97
		11/12/93	N/A	N/A	NP	6.50	0.41	0.41
		02/07/94	N/A	N/A	NP	5.81	1.10	1.10
		05/03/94	N/A	N/A	NP	5.69	1.22	1.22
		08/24/94	N/A	N/A	NP	6.11	0.80	0.80
		11/16/94	N/A	N/A	NP	5.90	1.01	1.01
OKUS–W8	6.75	07/16/93	N/A	N/A	NP	5.56	1.19	1.19
		08/27/93	N/A	N/A	NP	5.88	0.87	0.87
		11/11/93	N/A	N/A	NP	6.43	0.32	0.32
		02/07/94	N/A	N/A	NP	5.59	1.16	1.16
		05/03/94	N/A	N/A	NP	5.55	1.20	1.20
		08/24/94	N/A	N/A	NP	5.98	0.77	0.77
		11/16/94	N/A	N/A	NP	5.75	1.00	1.00
APL/UP–W1	8.12	07/16/93	N/A	N/A	NP	10.02	–1.90	–1.90
		08/26/93	N/A	N/A	NP	9.93	–1.81	–1.81
		11/11/93	N/A	N/A	NP	10.25	–2.13	–2.13
		02/07/94	N/A	N/A	NP	9.71	–1.59	–1.59
		05/03/94	N/A	N/A	NP	10.10	–1.98	–1.98
		08/24/94	N/A	N/A	NP	10.25	–2.13	–2.13
		11/15/94	N/A	N/A	NP	10.08	–1.96	–1.96
APL/UP–W2	7.31	07/16/93	N/A	N/A	NP	9.38	–2.07	–2.07
		08/26/93	N/A	N/A	NP	9.20	–1.89	–1.89
		11/11/93	N/A	N/A	NP	9.65	–2.34	–2.34
		02/07/94	N/A	N/A	NP	8.85	–1.54	–1.54
		05/03/94	N/A	N/A	NP	10.02	–2.71	–2.71
		08/24/94	N/A	N/A	NP	9.13	–1.82	–1.82
		11/15/94	N/A	N/A	NP	9.40	–2.09	–2.09
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	––	––
	––	06/07/94	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	––	––

* 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.



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Remedial Services

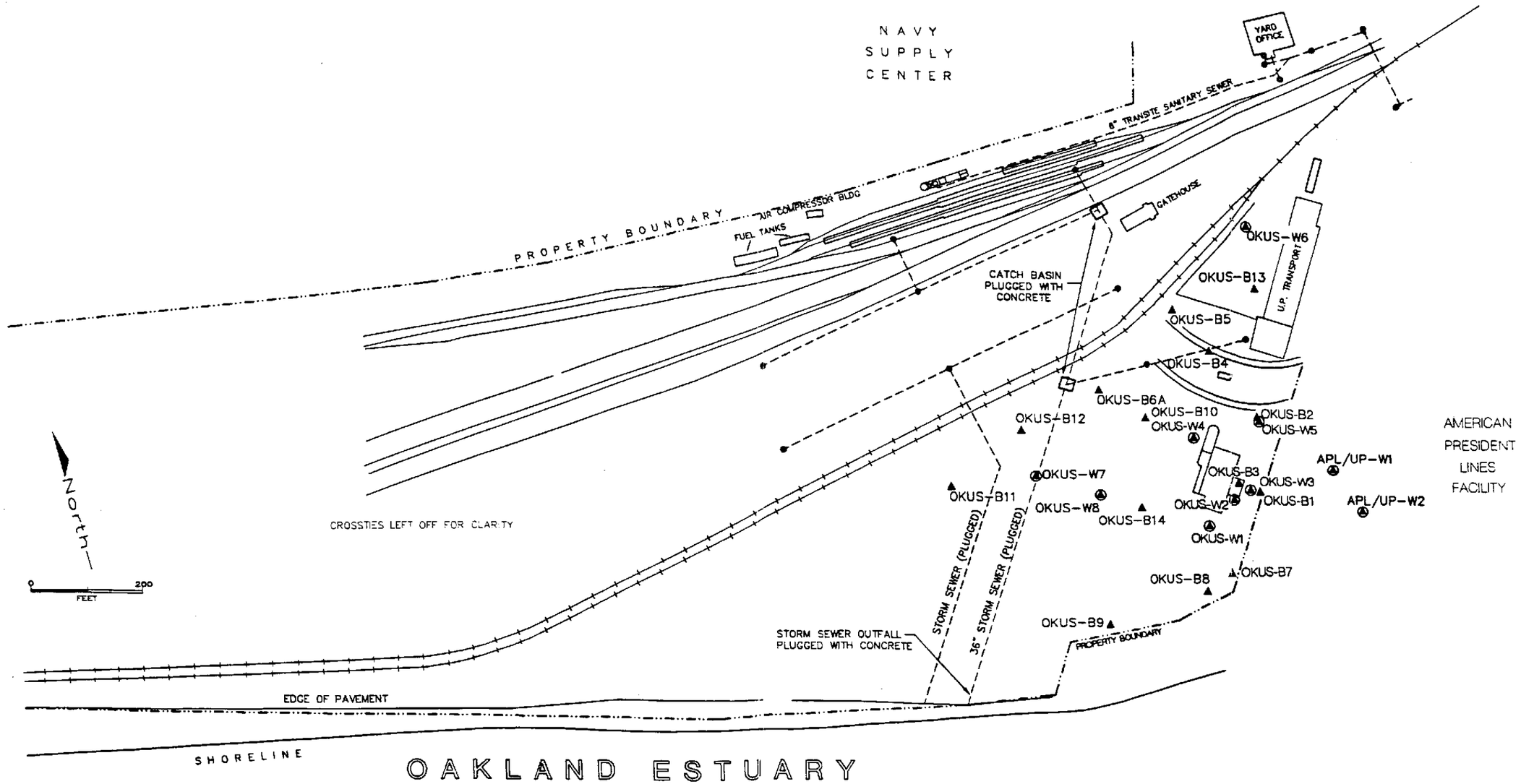
UPRR TOFC YARD, OAKLAND, CA

FIGURE 1

SITE LOCATION MAP

SCALE: 1" = 2000'

USGS 7.5 TOPO: OAKLAND WEST



LEGEND

◉ OKUS-W1	MONITORING WELL LOCATION AND NUMBER
▲ OKUS-B1	BORING LOCATION AND NUMBER
•	CATCH BASIN FOR STORM SEWER

	BY	DATE
DRAWN	BILL	9/93
CHECKED		
APPROVED		
APPROVED		
APPROVED		

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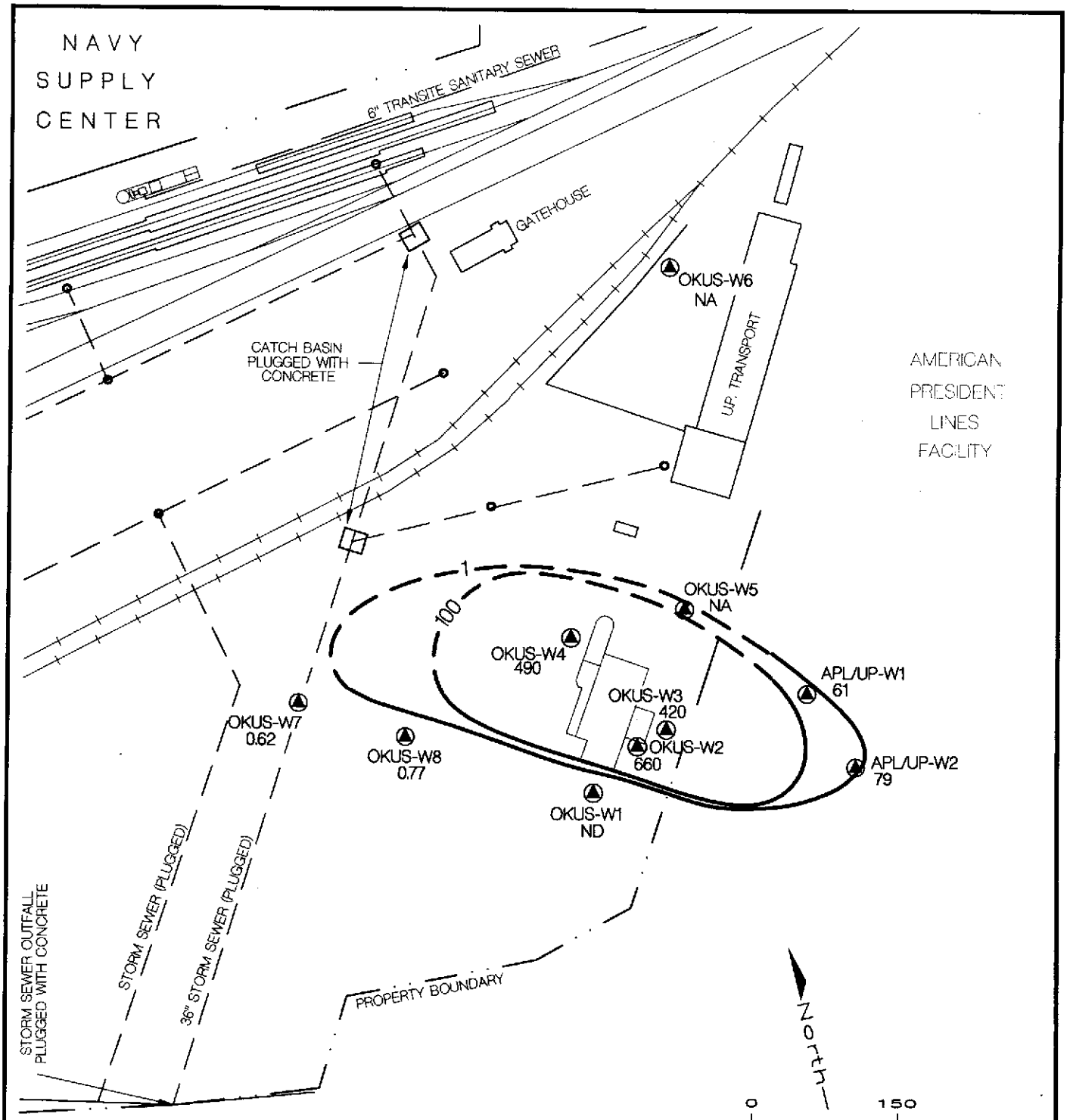
UPRR TOFC RAILYARD
UPMF REPAIR SHOP, OAKLAND, CALIFORNIA

FIGURE 2
SITE VICINITY MAP

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



LEGEND

OKUS-W8 ▲ 3.0	MONITOR WELL LOCATION AND NUMBER WITH TOTAL DISSOLVED BTEX CONCENTRATION ug/L
●	CATCH BASIN FOR STORM SEWER
—100—	BTEX DISTRIBUTION CONTOUR
ND	NOT DETECTED
NA	NOT ANALYZED

NOTE: ALL ANALYTICAL RESULTS IN µg/L

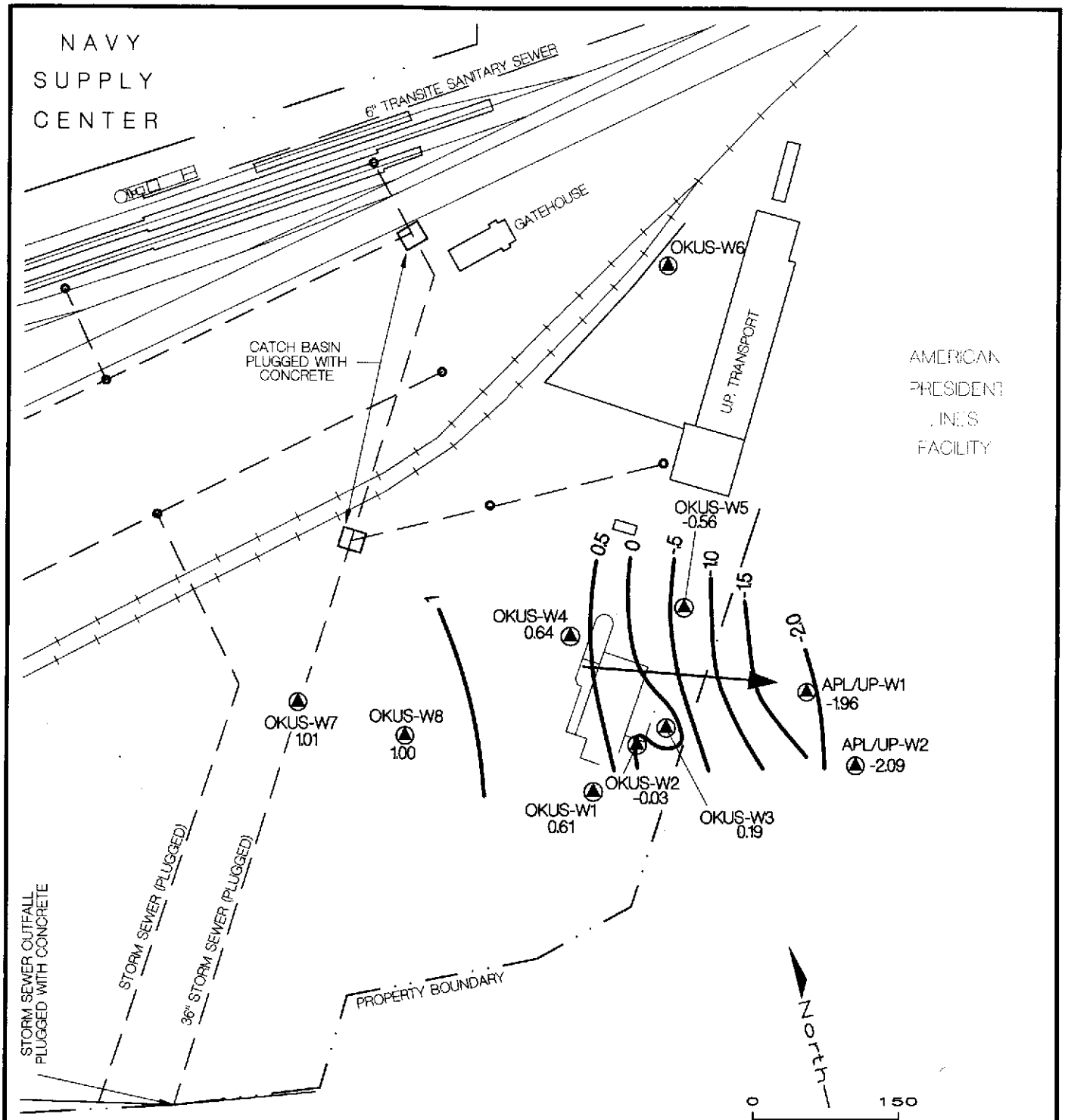
96120-701

USPCI

OAKLAND, CALIFORNIA

FIGURE 3
DISSOLVED PHASE BTEX DISTRIBUTION MAP
UPMF REPAIR SHOP

SCALE:	APPROVED/DATE
1" = 150'	1/17/95



LEGEND

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

USPCI

OAKLAND, CALIFORNIA

FIGURE 4
GROUNDWATER ELEVATION MAP

SCALE: 1" = 150'	APPROVED/DATE 1/17/95

96120-700

APPENDIX A

ANALYTICAL REPORTS

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

U.S.P.C.I.
5665 Flat Iron Parkway
Boulder, CO 80301
Attention: Denton Mauldin

Client Project ID: 96120-844, UPMF Oakland
Sample Matrix: Water
Analysis Method: EPA 5030/8015/8020
First Sample #: 411-0783

Sampled: Nov 15-16, 1994
Received: Nov 16, 1994
Reported: Dec 2, 1994

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 411-0783 OKUS-W1	Sample I.D. 411-0784 OKUS-W2	Sample I.D. 411-0785 OKUS-W3	Sample I.D. 411-0786 OKUS-W4	Sample I.D. 411-0787 APL-W1	Sample I.D. 411-0788 APL-W2
Purgeable Hydrocarbons	50	N.D.	10,000	9,100	5,500	470	190
Benzene	0.50	N.D.	290	260	320	36	11
Toluene	0.50	N.D.	79	64	52	3.6	N.D.
Ethyl Benzene	0.50	N.D.	130	95	N.D.	9.6	63
Total Xylenes	0.50	N.D.	160	N.D.	120	12	5.4
Chromatogram Pattern:		--	Gasoline	Gasoline	Gasoline	Gasoline	Gasoline

Quality Control Data

Report Limit Multiplication Factor:	1.0	20	40	20	1.0	1.0
Date Analyzed:	11/21/94	11/21/94	11/21/94	11/21/94	11/21/94	11/21/94
Instrument Identification:	HP-5	HP-5	HP-5	HP-5	HP-5	HP-4
Surrogate Recovery, %: (QC Limits = 70-130%)	91	90	88	87	83	94

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

Karen L. Enstrom
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

U.S.P.C.I.
5665 Flat Iron Parkway
Boulder, CO 80301
Attention: Denton Mauldin

Client Project ID: 96120-844, UPMF Oakland
Sample Matrix: Water
Analysis Method: EPA 5030/8015/8020
First Sample #: 411-0789

Sampled: Nov 16, 1994
Received: Nov 16, 1994
Reported: Dec 2, 1994

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 411-0789 OKUS-W7	Sample I.D. 411-0790 OKUS-W8	Sample I.D. 411-0791 OKUS-QC1
Purgeable Hydrocarbons	50	N.D.	110	190
Benzene	0.50	0.62	0.77	10
Toluene	0.50	N.D.	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.	62
Total Xylenes	0.50	N.D.	N.D.	4.7
Chromatogram Pattern:		--	Unidentified Hydrocarbons >C9	Gasoline

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0
Date Analyzed:	11/21/94	11/21/94	11/21/94
Instrument Identification:	HP-4	HP-4	HP-4
Surrogate Recovery, %: (QC Limits = 70-130%)	89	87	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

Karen L. Enstrom
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

U.S.P.C.I.
5665 Flat Iron Parkway
Boulder, CO 80301
Attention: Denton Mauldin

Client Project ID: 96120-844, UPMF Oakland
Sample Matrix: Water
Analysis Method: EPA 3510/8015
First Sample #: 411-0783

Sampled: Nov 16, 1994
Received: Nov 16, 1994
Reported: Dec 2, 1994

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 411-0783 OKUS-W1	Sample I.D. 411-0784 OKUS-W2	Sample I.D. 411-0785 OKUS-W3	Sample I.D. 411-0786 OKUS-W4	Sample I.D. 411-0787 APL-W1	Sample I.D. 411-0788 APL-W2
Extractable Hydrocarbons	50	51	5,500	4,700	2,800	480	320
Chromatogram Pattern:		Unidentified Hydrocarbons >C20	Diesel and Unidentified Hydrocarbons <C16	Diesel and Unidentified Hydrocarbons <C16	Diesel and Unidentified Hydrocarbons <C16	Diesel and Unidentified Hydrocarbons <C16 & >C20	Diesel and Unidentified Hydrocarbons <C16 & >C20

Quality Control Data

Report Limit Multiplication Factor:	1.0	20	20	10	1.0	1.0
Date Extracted:	11/23/94	11/23/94	11/23/94	11/23/94	11/23/94	11/23/94
Date Analyzed:	11/30/94	12/1/94	12/1/94	12/1/94	11/30/94	11/30/94
Instrument Identification:	HP-3A	HP-3A	HP-3A	HP-3A	HP-3A	HP-3A

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

Karen L. Enstrom
Project Manager

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680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

U.S.P.C.I.
5665 Flat Iron Parkway
Boulder, CO 80301
Attention: Denton Mauldin

Client Project ID: 96120-844, UPMF Oakland
Sample Matrix: Water
Analysis Method: EPA 3510/8015
First Sample #: 411-0789

Sampled: Nov 15-16, 1994
Received: Nov 16, 1994
Reported: Dec 2, 1994

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 411-0789 OKUS-W7	Sample I.D. 411-0790 OKUS-W8	Sample I.D. 411-0791 OKUS-QC1
Extractable Hydrocarbons	50	820	830	310
Chromatogram Pattern:		Diesel and Unidentified Hydrocarbons >C20	Diesel and Unidentified Hydrocarbons >C20	Diesel and Unidentified Hydrocarbons <C16 & >C20

Quality Control Data

Report Limit Multiplication Factor:	5.0	5.0	1.0
Date Extracted:	11/23/94	11/23/94	11/23/94
Date Analyzed:	12/1/94	12/1/94	11/30/94
Instrument Identification:	HP-3B	HP-3B	HP-3A

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

Karen L. Enstrom
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

U.S.P.C.I.
5665 Flat Iron Parkway
Boulder, CO 80301
Attention: Denton Mauldin

Client Project ID: 96120-844, UPMF Oakland
Matrix: Liquid
QC Sample Group: 4110783-791

Reported: Dec 12, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes	Diesel
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015 Mod
Analyst:	AT	AT	AT	AT	KVS
MS/MSD Batch#:	4110778	4110778	4110778	4110778	BLK112394
Date Prepared:	11/21/94	11/21/94	11/21/94	11/21/94	11/23/94
Date Analyzed:	11/21/94	11/21/94	11/21/94	11/21/94	11/28/94
Instrument I.D.#:	HP-5	HP-5	HP-5	HP-5	HP-3A
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L	300 µg/L
Matrix Spike % Recovery:	100	105	105	102	93
Matrix Spike Duplicate % Recovery:	100	105	105	100	87
Relative % Difference:	0.0	0.0	0.0	1.9	6.7
LCS Batch#:	3LCS112194	3LCS112194	3LCS112194	3LCS112194	BLK112394
Date Prepared:	11/21/94	11/21/94	11/21/94	11/21/94	11/23/94
Date Analyzed:	11/21/94	11/21/94	11/21/94	11/21/94	11/28/94
Instrument I.D.#:	HP-5	HP-5	HP-5	HP-5	HP-3A
LCS % Recovery:	93	99	99	96	93
% Recovery Control Limits:	71-133	72-128	72-130	71-120	28-122

SEQUOIA ANALYTICAL, #1271

Karen L. Enstrom
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.

USPCI
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Ship To: USPCI Remedial Services
24125 Aldine Westfield
Spring, TX 77373
(713) 350-7240

REPORT TO
CONTACT [redacted]
COMPANY USPCI
ADDRESS 5665 Flatiron Pkwy
CITY Boulder ST. CO ZIP 80301
PHONE 303-938-5539 FAX 303-938-5520

BILL TO
CONTACT [redacted]
COMPANY —
ADDRESS
CITY ST. ZIP
PHONE PO #

CHAIN OF CUSTODY RECORD

PROJ. NO. 96120-844
PROJECT NAME UPMF OAKLAND
SAMPLERS (SIGNATURE)

STANDARD TURNAROUND X
RUSH TURNAROUND
(specify required date)

1 of 3

CUSTOMER SAMPLE I.D.	DATE	TIME	MATRIX	# CONTAINERS	BTEX 8020	TPH-G 8015	TPH-D 8015	LABORATORY SAMPLE I.D.	REMARKS
OKUS-W1	11-16-94	12:25	H2O	1	X			4110783	A-C
OKUS-W1				1		X			
OKUS-W1				1			X		
OKUS-W2		12:55		1	X			4110784	A-C
OKUS-W2				1		X			
OKUS-W2				1			X		
OKUS-W3		13:05		1	X			4110785	A-C
OKUS-W3				1		X			
OKUS-W3				1			X		
OKUS-W4		11:35		1	X			4110786	A-C
OKUS-W4				1		X			
OKUS-W4				1			X		

RELINQUISHED BY	DATE / TIME	RECEIVED BY	DATE / TIME	COURIER
[signature]	11-16-94 1510			
RELINQUISHED BY	DATE / TIME	RECEIVED BY	DATE / TIME	AIRBILL NO.
		[signature]	11/16/94 3:10 pm	

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Ship To: USPCI Remedial Services
24125 Aldine Westfield
Spring, TX 77373
(713) 350-7240

[redacted] N[redacted] 01[redacted]

REPORT TO
CONTACT LENTON MAULDIN
COMPANY USPCI
ADDRESS 5665 FLATIRON PKWY
CITY BOULDER ST CO ZIP 80301
PHONE 303 938 5500 FAX 938 5520

BILL TO
CONTACT ~~[illegible]~~
COMPANY USPCI
ADDRESS 5665 FLATIRON PKWY
CITY BOULDER ST CO ZIP 80301
PHONE 303 938 5500 PO #

CHAIN OF CUSTODY RECORD

PROJ. NO. 96120-844
PROJECT NAME UPMF OAKLAND
SAMPLERS (SIGNATURE) [signature] [signature]

STANDARD TURNAROUND X
RUSH TURNAROUND (specify required date)
2 of 3

CUSTOMER SAMPLE I.D.	DATE	TIME	MATRIX	# CONTAINERS	BTEX 8020	TPH-G 8015	TPH-D 8015	LABORATORY SAMPLE I.D.	REMARKS
APLW-1	11-15-94	1800	H_2O	1	X			4110787	A-C
APL-W1	↓	↓	↓	1		X			
APL-W1	↓	↓	↓	1			X		
APL-W2	↓	1725	↓	1	X			4110788	A-C
APL-W2	↓	↓	↓	1		X			
APL-W2	↓	↓	↓	1			X		
OKWS-W7	11-16-94	1105	↓	1	X			4110789	A-C
" W7	↓	↓	↓	1		X			
" W7	↓	↓	↓	1			X		
" W8	↓	1030	↓	1	X			4110790	A-C
" W8	↓	↓	↓	1		X			
" W8	↓	↓	↓	1			X		

RELINQUISHED BY	DATE / TIME	RECEIVED BY	DATE / TIME	COURIER
[signature]	11-16-94 1510			
RELINQUISHED BY	**DATE / TIME**	**RECEIVED BY**	**DATE / TIME**	**AIRBILL NO.**
		RD Kelley	11/16/94	3:10 pm

USPCI
A Subsidiary of Union Pacific Corporation
Ship To: USPCI Remedial Services
24125 Aldine Westfield
Spring, TX 77373
(713) 350-7240

No. 001290

REPORT TO
CONTACT: [illegible] C'Paulini
COMPANY: USPCI
ADDRESS: 5665 Flatiron Pkwy
CITY: Boulder ST. CO ZIP 80301
PHONE: 303-938-5539 FAX: 303-938-5520

BILL TO
CONTACT: Same
COMPANY:
ADDRESS:
CITY: ST. ZIP
PHONE: PO #

CHAIN OF CUSTODY RECORD

PROJ. NO. 96120-844
PROJECT NAME UPMF OAKLAND
SAMPLERS (SIGNATURE) [signature]

STANDARD TURNAROUND ✓
RUSH TURNAROUND (specify required date)
3 of 3

CUSTOMER SAMPLE I.D.	DATE	TIME	MATRIX	# CONTAINERS	BTEX 8020	TPH-G 8015	TPH-D 8015	LABORATORY SAMPLE I.D.	REMARKS
OKUS-QC1	11-15-94	1200	H_2O	1	✓			4110791	A-C
OKUS-QC1	↓	↓	↓	1		✓			
OKUS-QC1	↓	↓	↓	1			✓		

RELINQUISHED BY	DATE / TIME	RECEIVED BY	DATE / TIME	COURIER
[signature]	11-15-94 1800			
RELINQUISHED BY	DATE / TIME	RECEIVED BY: RD Kelley	11/16/94	AIRBILL NO.

APPENDIX B

WELL STABILIZATION AND SAMPLING REPORTS

USPCI Project Name:	UPMF Oakland Facility Quarterly Monitoring			USPCI Project Number:	96120-844
Measuring Point (MP)	Top of casing			Well No.	OKUS-W1
Well Depth: (Below MP):	18.70	Feet			
Casing diameter:	2	Inches		Sampling Date:	11/16/94
Depth To Ground Water (Below MP):	8.56	Feet		Sample ID No.	OKUS-W1
Depth To Product (Below MP):	N/A				
Method Of Well Development				Time:	1118
[ ] Tap	[ ] Submersible Pump	[ ] Inertia Pump		Riser Elevation (MP):	9.17
[X] Bailer	[ ] Centrifugal Pump	[ ] Other	Top of Screen Elevation:	6.85	Feet
Sampling Collection Method:			Sample Appearance:	slightly turbid	
[ ] Tap	[ ] Submersible Pump	[ ] Inertia Pump:	Odor:	none	
[X] Bailer	Type: [ ] Teflon	[ ] Stainless Steel	Sampling Problems (if any):		
	[X] HDPE Plastic	[ ] PVC	[X] Disposable		
Pump Intake Or Bailer Set At:		Feet Below MP	Decontamination Performed:		
Tubing Type (if Used):					
Tubing Used for:	[ ]SampleCollection	[ ] 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)
Begin purge at 1211						
1215	7.9	1800	18.5		2.0	
1218	7.7	1800	18.5		4.0	
1221	7.8	2100	18.0		6.0	
Samples collected at 1225						

At Least 3 Well Bore Volumes Were Purged Before Sampl Discharge Rate = GPM x 0.00223 = cfs

Comments: groundwater photo sensitive, moderate bacteria level

total depth has change from 21.75 to 18.7 feet

Form Completed By: C. Byerman Witnessed By: M. McCormick

USPCI Project Name:	UPMF Oakland Facility Quarterly Monitoring	USPCI Project Number:	96120-844
Measuring Point (MP)	Top of casing	Well No.	OKUS-W2
Well Depth: (Below MP):	22.00 Feet		
Casing diameter:	2 Inches	Sampling Date:	11/16/94
Depth To Ground Water (Below MP):	9.74 Feet	Sample ID No.	OKUS-W2
Depth To Product (Below MP):	N/A		
Method Of Well Development		Time:	1123
[ ] Tap [ ] Submersible Pump	[ ] Inertia Pump	Riser Elevation (MP):	9.71
[X] Bailer [ ] Centrifugal Pump	[ ] Other	Top of Screen Elevation:	7.05 Feet
Sampling Collection Method:		Sample Appearance:	clear
[ ] Tap [ ] Submersible Pump	[ ] Inertia Pump:	Odor:	modorate to strong
[X] Bailer Type: [ ] Teflon	[ ] Stainless Steel	Sampling Problems (if any):	
[X] HDPE Plastic	[ ] PVC	[X] Disposable	
Pump Intake Or Bailer Set At:	Feet Below MP	Decontamination Performed:	
Tubing Type (if Used):			
Tubing Used for: [ ]SampleCollection	[ ] 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)
Begin purge at 1230						
1235	7.4	4900	18.5		2.0	
1244	7.4	5000	19.0		4.0	
1250	7.4	5200	18.5		6.0	
Samples collected at 1255						

At Least 3 Well Bore Volumes Were Purged Before Sampl Discharge Rate = GPM x 0.00223 = cfs

Comments:

Form Completed By: C. Byerman Witnessed By: M. McCormick

USPCI Project Name:	UPMF Oakland Facility Quarterly Monitoring			USPCI Project Number:	96120-844
Measuring Point (MP)	Top of casing			Well No.	OKUS-W3
Well Depth: (Below MP):	21.50	Feet			
Casing diameter:	2	Inches		Sampling Date:	11/16/94
Depth To Ground Water (Below MP):	9.61	Feet		Sample ID No.	OKUS-W3
Depth To Product (Below MP):	N/A				
Method Of Well Development				Time:	1121
[ ] Tap	[ ] Submersible Pump	[ ] Inertia Pump		Riser Elevation (MP):	9.80
[X] Bailer	[ ] Centrifugal Pump	[ ] Other	Top of Screen Elevation:	6.55	Feet
Sampling Collection Method:			Sample Appearance:	slightly turbid	
[ ] Tap	[ ] Submersible Pump	[ ] Inertia Pump:	Odor:	modorate	
[X] Bailer	Type: [ ] Teflon	[ ] Stainless Steel	Sampling Problems (if any):		
	[X] HDPE Plastic	[ ] PVC	[X] Disposable		
Pump Intake Or Bailer Set At:		Feet Below MP	Decontamination Performed:		
Tubing Type (if Used):					
Tubing Used for:	[ ]SampleCollection	[ ] 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)
Begin purge at 1234						
1242	7.5	4800	18		2.0	
1248	7.5	4500	17		4.0	
1252	7.8	4700	17		6.0	
Samples collected at 1305						

At Least 3 Well Bore Volumes Were Purged Before Sampl Discharge Rate = GPM x 0.00223 = cfs

Comments:

Form Completed By: C. Byerman Witnessed By: M. McCormick

USPCI Project Name:	UPMF Oakland Facility Quarterly Monitoring			USPCI Project Number:	96120-844
Measuring Point (MP)	Top of casing			Well No.	OKUS-W4
Well Depth: (Below MP):	20.69	Feet			
Casing diameter:	2	Inches		Sampling Date:	11/16/94
Depth To Ground Water (Below MP):	6.71	Feet		Sample ID No.	OKUS-W4
Depth To Product (Below MP):	N/A				
Method Of Well Development				Time:	0930
[ ] Tap	[ ] Submersible Pump	[ ] Inertia Pump		Riser Elevation (MP):	7.35
[X] Bailer	[ ] Centrifugal Pump	[ ] Other	Top of Screen Elevation:	6.08	Feet
Sampling Collection Method:			Sample Appearance:	slightly turbid	
[ ] Tap	[ ] Submersible Pump	[ ] Inertia Pump:	Odor:	moderate	
[X] Bailer	Type: [ ] Teflon	[ ] Stainless Steel	Sampling Problems (if any):		
	[X] HDPE Plastic	[ ] PVC	[X] Disposable		
Pump Intake Or Bailer Set At:		Feet Below MP	Decontamination Performed:		
Tubing Type (if Used):					
Tubing Used for:	[ ]SampleCollection	[ ] 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)
Begin purge at 1116						
1121	7.8	4000	18.5		2.5	
1125	7.8	3700	18.0		5.0	
1130	7.7	4000	18.0		7.5	
Samples collected at 1135						

At Least 3 Well Bore Volumes Were Purged Before Sampl Discharge Rate = GPM x 0.00223 = cfs

Comments:

Form Completed By: C. Byerman Witnessed By: M. McCormick

USPCI Project Name:	UPMF Oakland Facility Quarterly Monitoring		USPCI Project Number: 96120-844
Measuring Point (MP)	Top of casing		Well No. OKUS-W5
Well Depth: (Below MP):	21.00	Feet	
Casing diameter:	2	Inches	Sampling Date: 11/16/94
Depth To Ground Water (Below MP): 9.81		Feet	Sample ID No. N/A
Depth To Product (Below MP): 9.59			
Method Of Well Development			Time: 0935
[ ] Tap [ ] Submersible Pump		[ ] Inertia Pump	Riser Elevation (MP): 9.25
[ ] Bailer [ ] Centrifugal Pump		[ ] Other	Top of Screen Elevation: 5.95 Feet
Sampling Collection Method:			Sample Appearance: PSH on probe
[ ] Tap [ ] Submersible Pump		[ ] Inertia Pump:	Odor: moderate
[ ] Bailer Type: [ ] Teflon		[ ] Stainless Steel	Sampling Problems (if any):
[ ] HDPE Plastic		[ ] PVC	[ ] Disposable
Pump Intake Or Bailer Set At:		Feet Below MP	Decontamination Performed:
Tubing Type (if Used):			
Tubing Used for: [ ]SampleCollection		[ ] Well Development/Field Tests	Samples Collected: none

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)
PSH IN WELL						
WELL NOT SAMPLED						

At Least 3 Well Bore Volumes Were Purged Before Sampl Discharge Rate = GPM x 0.00223 = cfs

Comments: 0.22 feet of PSH measured in well

Form Completed By: C. Byerman Witnessed By: M. McCormick

USPCI Project Name:	UPMF Oakland Facility Quarterly Monitoring			USPCI Project Number:	96120-844
Measuring Point (MP)	Top of casing			Well No.	OKUS-W6
Well Depth: (Below MP):	16.30	Feet			
Casing diameter:	2	Inches		Sampling Date:	11/16/94
Depth To Ground Water (Below MP): 5.17		Feet		Sample ID No.	N/A
Depth To Product (Below MP): 5.13					
Method Of Well Development				Time: 1320	
[ ] Tap	[ ] Submersible Pump	[ ] Inertia Pump		Riser Elevation (MP):	7.29
[ ] Bailer	[ ] Centrifugal Pump	[ ] Other	Top of Screen Elevation:	2.29	Feet
Sampling Collection Method:			Sample Appearance:	PSH on probe	
[ ] Tap	[ ] Submersible Pump	[ ] Inertia Pump:	Odor:	slight	
[ ] Bailer	Type: [ ] Teflon	[ ] Stainless Steel	Sampling Problems (if any):		
	[ ] HDPE Plastic	[ ] PVC	[ ] Disposable		
Pump Intake Or Bailer Set At:		Feet Below MP	Decontamination Performed:		
Tubing Type (if Used):					
Tubing Used for:	[ ]SampleCollection	[ ] Well Development/Field Tests		Samples Collected:	none

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)
PSH IN WELL						
WELL NOT SAMPLED						

At Least	3	Well Bore Volumes Were Purged Before Sampl	Discharge Rate =	GPM x 0.00223 = cfs

Comments: well contained 0.04 feet of PSH (noted in the field as a Bunker C oil material)

Form Completed By: C. Byerman Witnessed By: M. McCormick

USPCI Project Name:	UPMF Oakland Facility Quarterly Monitoring			USPCI Project Number:	96120-844
Measuring Point (MP)	Top of casing			Well No.	OKUS-W7
Well Depth: (Below MP):	19.78	Feet			
Casing diameter:	2	Inches		Sampling Date:	11/16/94
Depth To Ground Water (Below MP): 5.90		Feet		Sample ID No.	OKUS-W7
Depth To Product (Below MP): N/A					
Method Of Well Development				Time: 1025	
[ ] Tap	[ ] Submersible Pump	[ ] Inertia Pump		Riser Elevation (MP):	7.4
[X] Bailer	[ ] Centrifugal Pump	[ ] Other	Top of Screen Elevation:	2.4	Feet
Sampling Collection Method:			Sample Appearance:	slightly turbid	
[ ] Tap	[ ] Submersible Pump	[ ] Inertia Pump:	Odor:	none	
[X] Bailer	Type: [ ] Teflon	[ ] Stainless Steel	Sampling Problems (if any):		
	[X] HDPE Plastic	[ ] PVC	[X] Disposable		
Pump Intake Or Bailer Set At:		Feet Below MP	Decontamination Performed:		
Tubing Type (if Used):					
Tubing Used for:	[ ]SampleCollection	[ ] 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)
Begin purge at 1045						
1051	7.6	3500	18.0		2.5	
1055	7.7	3700	18.0		5.0	
1101	7.9	3400	18.0		7.5	
Samples collected at 1105						

At Least 3 Well Bore Volumes Were Purged Before Sampl Discharge Rate = GPM x 0.00223 = cfs

Comments:

Form Completed By: C. Byerman Witnessed By: M. McCormick

USPCI Project Name:	UPMF Oakland Facility			USPCI Project Number:	96120-844
Measuring Point (MP)	Top of casing			Well No.	OKUS-W8
Well Depth: (Below MP):	14.87	Feet			
Casing diameter:	2	Inches		Sampling Date:	11/16/94
Depth To Ground Water (Below MP): 5.75		Feet		Sample ID No.	OKUS-W8
Depth To Product (Below MP): N/A					
Method Of Well Development				Time: 1012	
[ ] Tap	[ ] Submersible Pump	[ ] Inertia Pump		Riser Elevation (MP):	7.11
[X] Bailer	[ ] Centrifugal Pump	[ ] Other	Top of Screen Elevation:	2.11	Feet
Sampling Collection Method:			Sample Appearance:	slightly turbid	
[ ] Tap	[ ] Submersible Pump	[ ] Inertia Pump:	Odor:	none	
[X] Bailer	Type: [ ] Teflon	[ ] Stainless Steel	Sampling Problems (if any):		
	[X] HDPE Plastic	[ ] PVC	[X] Disposable		
Pump Intake Or Bailer Set At:		Feet Below MP	Decontamination Performed:		
Tubing Type (if Used):					
Tubing Used for:	[ ]SampleCollection	[ ] 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)
Begin purge at 1015						
1018	7.8	5600	18		1.5	
1023	7.8	5900	17		3.0	
1027	7.8	5500	17		4.5	
Samples collected at 1030						

At Least 3 Well Bore Volumes Were Purged Before Sampl Discharge Rate = GPM x 0.00223 = cfs

Comments:

Form Completed By: C. Byerman Witnessed By: M. McCormick

USPCI Project Name:	UPMF Oakland Facility Quarterly Monitoring			USPCI Project Number:	96120-844
Measuring Point (MP)	Top of casing			Well No.	APL-W1
Well Depth: (Below MP):	21.87	Feet			
Casing diameter:	2	Inches		Sampling Date:	11/15/94
Depth To Ground Water (Below MP):	10.08	Feet		Sample ID No.	APL-W1
Depth To Product (Below MP):	N/A				
Method Of Well Development				Time:	1740
[ ] Tap	[ ] Submersible Pump	[ ] Inertia Pump		Riser Elevation (MP):	7.11
[X] Bailer	[ ] Centrifugal Pump	[ ] Other	Top of Screen Elevation:	2.11	Feet
Sampling Collection Method:			Sample Appearance:	slightly turbid	
[ ] Tap	[ ] Submersible Pump	[ ] Inertia Pump:	Odor:	slight to moderate	
[X] Bailer	Type: [ ] Teflon	[ ] Stainless Steel	Sampling Problems (if any):		
	[X] HDPE Plastic	[ ] PVC	[X] Disposable		
Pump Intake Or Bailer Set At:		Feet Below MP	Decontamination Performed:		
Tubing Type (if Used):					
Tubing Used for:	[ ]SampleCollection	[ ] 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)
Begin purge at 1745						
1750	7.4	3100	17		2.0	
1753	7.4	3000	17		4.0	
1756	7.4	3100	17		6.0	
Samples collected at 1800						

At Least 3 Well Bore Volumes Were Purged Before Sampl Discharge Rate = GPM x 0.00223 = cfs

Comments:

Form Completed By: C. Byerman Witnessed By: M. McCormick

USPCI Project Name:	UPMF Oakland Facility Quarterly Monitoring		USPCI Project Number: 96120-844
Measuring Point (MP)	Top of casing		Well No. APL-W2
Well Depth: (Below MP):	11.17	Feet	
Casing diameter:	2	Inches	Sampling Date: 11/15/94
Depth To Ground Water (Below MP): 9.40		Feet	Sample ID No. APL-W2
Depth To Product (Below MP): N/A			
Method Of Well Development			Time: 1712
[ ] Tap	[ ] Submersible Pump	[ ] Inertia Pump	Riser Elevation (MP): 7.62
[X] Bailer	[ ] Centrifugal Pump	[ ] Other	Top of Screen Elevation: 2.62 Feet
Sampling Collection Method:			Sample Appearance: very slightly turbid
[ ] Tap	[ ] Submersible Pump	[ ] Inertia Pump:	Odor: slight
[X] Bailer	Type: [ ] Teflon	[ ] Stainless Steel	Sampling Problems (if any):
	[X] HDPE Plastic	[ ] PVC	[X] Disposable
Pump Intake Or Bailer Set At:		Feet Below MP	Decontamination Performed:
Tubing Type (if Used):			
Tubing Used for:	[ ]SampleCollection	[ ] 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)
Begin purge at 1716						
1718	7.5	3000	17		0.5	
1720	7.5	3000	16		1.0	
1722	7.6	3000	17		1.5	
Samples collected at 1725						

At Least 3 Well Bore Volumes Were Purged Before Sampl Discharge Rate = GPM x 0.00223 = cfs

Comments: TD only 11.17 feet, seems to be a bailer or some other type of obstacle in the bottom of well

duplicate sample collected at this well labeled OKUS-QC1

Form Completed By: C. Byerman Witnessed By: M. McCormick