

**FIRST QUARTER 1995 MONITORING  
REPORT**

**OAKLAND FUELING AREA  
UNION PACIFIC RAILROAD  
1717 MIDDLE HARBOR ROAD  
OAKLAND, CALIFORNIA**

**USPCI PROJECT No. 96199**

**APRIL 26, 1995**

**Prepared for:  
Union Pacific Railroad**

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

**USPCI  
LAIDLAW  
ENVIRONMENTAL  
SERVICES**

ENVIRONMENTAL  
PROTECTION

95 APR 28 AM 11:08

April 26, 1995

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

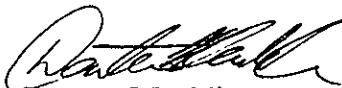
RE: "First Quarter 1995 Monitoring Report", Oakland Fueling Area in the Oakland TOFC  
Railyard, Oakland, California, USPCI Project No. 96199

Dear Mr. Patterson:

Enclosed is the final copy of the "First Quarter 1995 Monitoring Report", dated April 26,  
1995, for the Union Pacific Railroad Fueling Area at the trailer-on-flat-car (TOFC) loading  
facility at 1717 Middle Harbor Road 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: Charley Pinkerton, USPCI  
Jennifer Eberle, ACDEH  
John Amdur, Port of Oakland  
Philip Herden, APL  
Ken Fossey, USPCI (cover letter)

Enclosure  
DM/tjh

**FIRST QUARTER 1995 MONITORING  
REPORT  
OAKLAND FUELING AREA  
UNION PACIFIC RAILROAD  
1717 MIDDLE HARBOR ROAD  
OAKLAND, CALIFORNIA  
USPCI/Laidlaw Project No. 96199**

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



Charley Pinkerton  
Environmental Assistant



Sam Marquis  
Project Hydrogeologist  
R.G. No. 5110

April 26, 1995

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## 1. INTRODUCTION

This report was prepared by USPCI/Laidlaw in accordance with the Alameda County Department of Environmental Health letter dated September 21, 1994. The purpose of this report is to provide quarterly groundwater monitoring information pertaining to the hydrocarbon recovery system located at the fueling area of the Union Pacific Railroad (UPRR) Oakland Trailer on Flat Car (TOFC) railyard at 1717 Middle Harbor Road in Oakland, California. The objective of the quarterly groundwater monitoring is to evaluate migration potential of the contaminant and the effectiveness of the hydrocarbon recovery system.

The results from prior investigations and environmental engineering activities conducted by USPCI have been documented in previous reports and are, therefore, not included in detail in this report. The modeling efforts discussed in the September 24, 1994, letter were included in the "**Third Quarter 1994 Monitoring Report**," dated October 28, 1994. Background information about the site was presented in the "**Hydrocarbon Investigation and Remediation Design**" report dated June 10, 1991. The results of the hydrocarbon investigation and a conceptual design of the hydrocarbon recovery and treatment system were also presented in the June 10, 1991 report. The system design was outlined in the "**Preliminary Design Report**," dated September 5, 1991. As-built information for the groundwater recovery and treatment system has been presented in the "**Hydrocarbon Recovery System, As-Built Construction Report**," dated July 20, 1992. Any process changes in the hydrocarbon recovery and treatment system were presented in the letter from UPRR dated March 22, 1993, which represented the permit renewal application.

## 2. GROUNDWATER MONITORING

First quarter fluid level measurements were obtained from seven of the ten groundwater monitoring wells at the TOFC railyard on January 25, 1995. A site map including monitoring well locations is presented in Figure 1. Historical fluid levels for each well are provided in Table 1.

Fluid levels in three of the ten groundwater monitoring wells (OMW-3, OMW-5, and OMW-10) at the site were not measured due to unforeseen obstructions. Well OMW-3 was submerged in standing water at the time the wells were gauged. Due to a layer of fill placed to the west of the fuel tanks, OMW-10 could not be found. Well OMW-5 also could not be located due to paving activities at the site. A metal detector will be employed during subsequent gauging events to determine well locations.

Fluid level measurements were obtained from seven groundwater monitoring wells (OMW-1, OMW-2, OMW-4, OMW-6, OMW-7, OMW-8, and OMW-9). Wells OMW-1, OMW-8, and OMW-9 showed an increase in water levels since the November 1994 gauging event. Wells OMW-2, OMW-4, OMW-6, and OMW-7 showed decreases in water levels. The average change in water

levels for the seven monitoring wells was a decrease of less than one half of a foot. A potentiometric surface map for the January 1995 gauging event is presented in Figure 2. Fluid level measurements used in this map included those wells in which light non-aqueous phase liquids (LNAPLs) were present. The groundwater elevations in these wells were corrected to account for the LNAPL overlying the water column in the well. This correction is performed by multiplying the specific gravity of the LNAPL by the LNAPL thickness and adding it to the water elevation measurement from the well. Due to the lack of groundwater elevation data in the immediate area of the recovery wells, the groundwater depression created by the recovery wells is not well defined. The contour lines do show an inclined groundwater gradient towards the recovery system in the eastern portion of the site.

Some maintenance problems with the pumps in recovery wells ORW-1 and ORW-2 in January had limited the production of these wells. This would account for the lack of drawdown around the western portion of the recovery system. The problems have since been corrected, and drawdowns consistent with previous gauging events are expected to return. Detailed performance records for the recovery system are included in the semi-annual reports prepared during the second and fourth quarters of each year.

The presence of LNAPLs was observed in monitoring wells OMW-4, OMW-7, and OMW-9 during the January 1995 gauging event. This is consistent with previous gauging events. Figure 3 illustrates the LNAPL thicknesses as measured in the monitoring wells. The LNAPL thickness in OMW-4 increased by 0.14 feet since the November 1994 gauging event. The LNAPL thickness in OMW-7 and OMW-9 increased by 5.82 and 2.38 feet, respectively. The increase in the latter two wells was most likely due to the poor recovery performance in recovery wells ORW-1 and ORW-2 in January 1995. The LNAPL thickness in these wells is expected to diminish in future gauging events now that the problems associated with the recovery pumps have been addressed.

Groundwater sampling of the monitoring wells not exhibiting the presence of LNAPL will occur during the second quarter. The results of the sampling will appear in the semi-annual report. The results of previous sampling events are included in Table 2.



On March 24 and 25, 1995, four piezometers were installed on the site around the recovery system. The water level data from these piezometers will provide additional information regarding the groundwater gradient in that area. The piezometers will also allow for better assessment of the system's performance. Detailed information regarding the installation of the piezometers will be included in the semi-annual report.

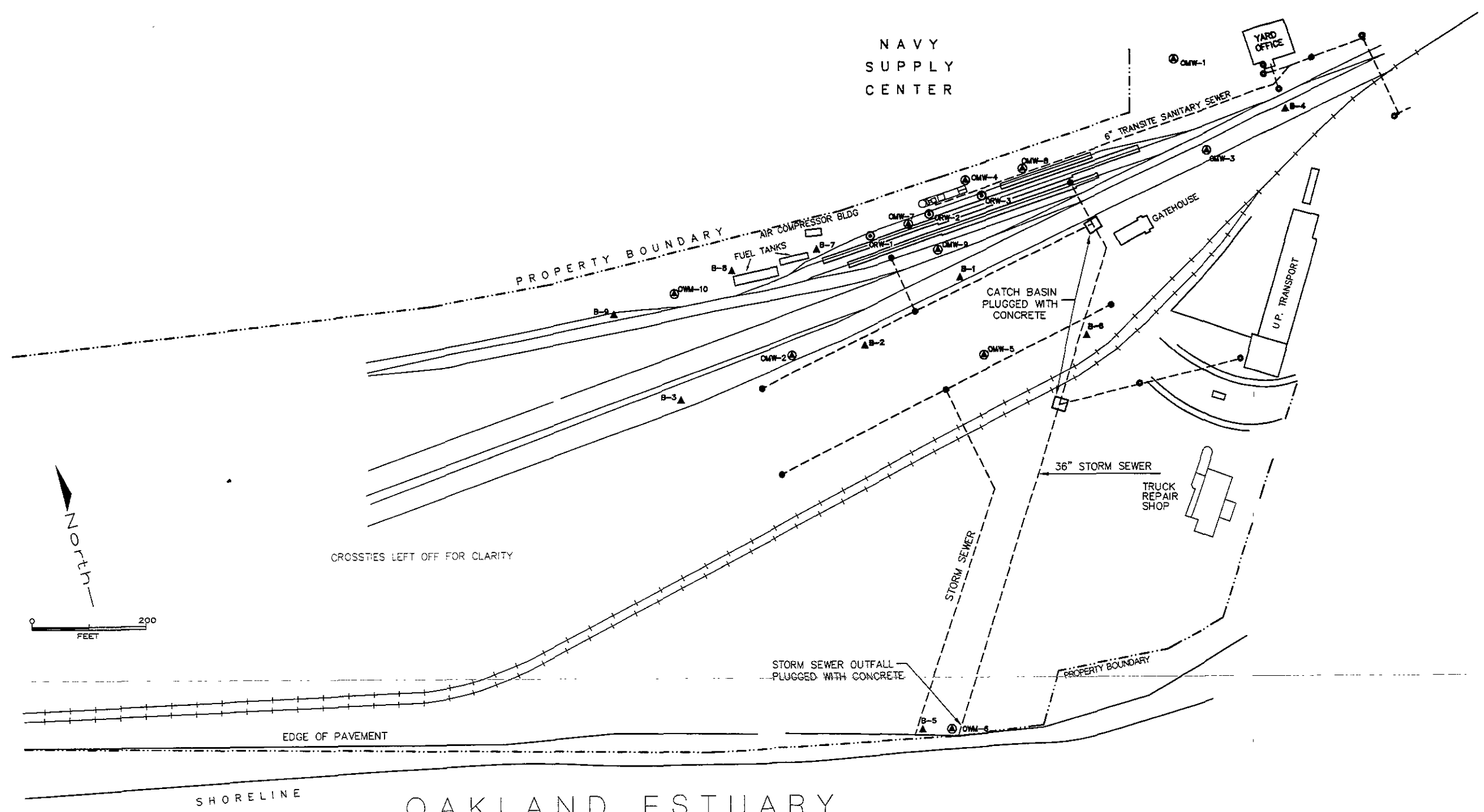
### 3. CONCLUSIONS

Fluid level measurement results from the first quarter event have demonstrated a groundwater gradient in the eastern portion of the site that is inclined towards the recovery system. The water level data in the western portion of the site is limited, and the cone of depression and groundwater elevations in this area could not be adequately delineated. It is estimated that the drawdowns around recovery wells ORW-1 and ORW-2 were less than those measured in previous gauging events due to maintenance problems with the pumps in these recovery wells. LNAPL thicknesses increased in the area between wells ORW-1 and ORW-2; these increases are most likely attributable to the recovery well down-time. Drawdowns are expected to increase as system performance problems are minimized through implementation of future maintenance operations at the site.

**FIGURES**



NAVY  
SUPPLY  
CENTER



LEGEND

- ▲ MONITORING WELL LOCATION AND NUMBER
- ▲ BURIED MONITORING WELL
- MONITORING WELL
- MONITORING WELL

DATE	1-24
BY	
CHECKED	
APPROVED	

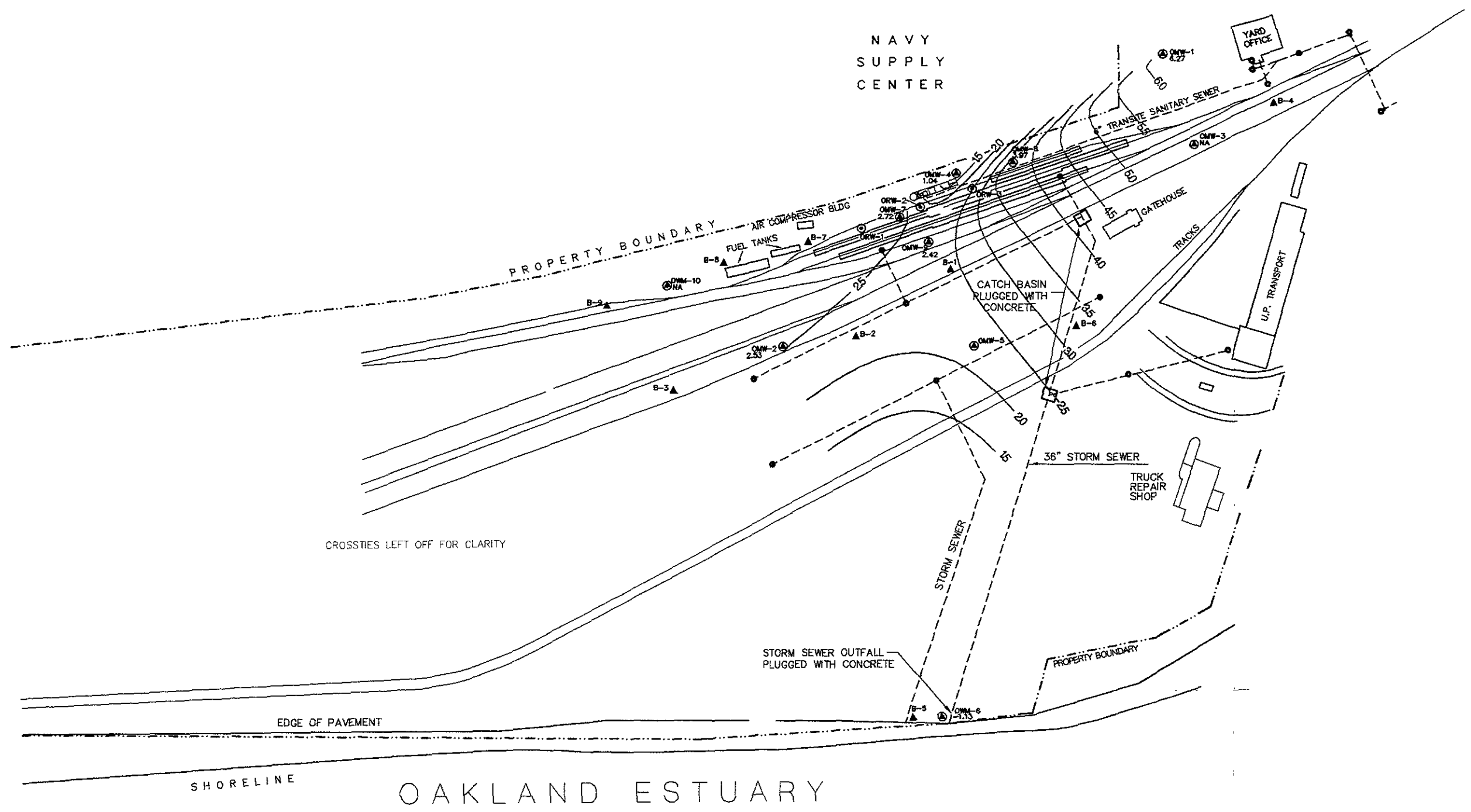


UPRR TOFC RAILYARD - OAKLAND CALIFORNIA

FIGURE 1  
SITE MAP

1" = 200'

96'99-35



CROSSTIES LEFT OFF FOR CLARITY

EDGE OF PAVEMENT

SHORELINE

OAKLAND ESTUARY

LEGEND	
⊙	MONITORING WELL LOCATION AND NUMBER
▲	BORING LOCATION AND NUMBER
○	CATCH BASIN FOR STORM SEWER
⊙	RECOVERY WELLS
	GROUNDWATER ELEVATION IN FT

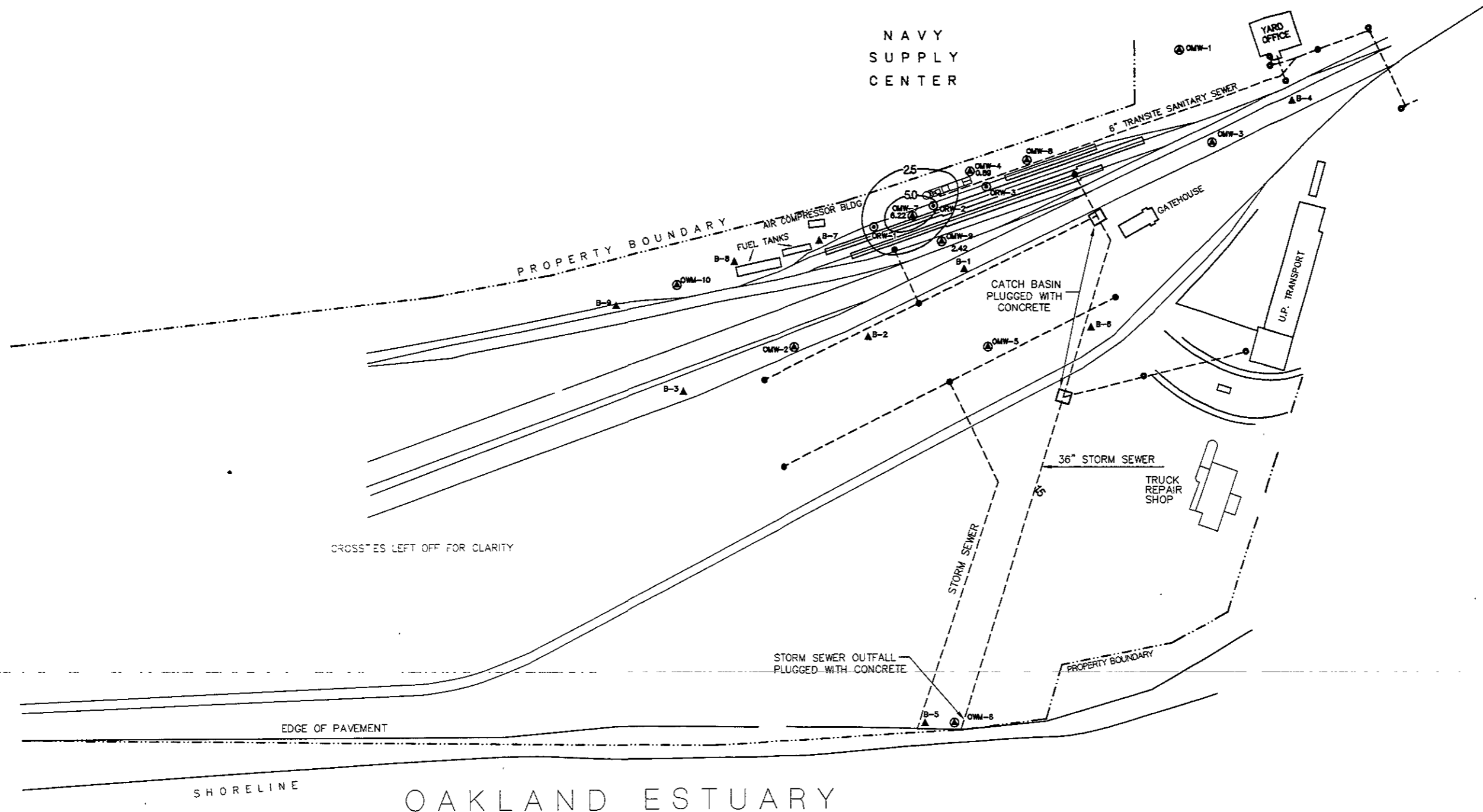


BY	DATE
DRAWN: WRB	4/25/96
CHECKED:	
APPROVED:	
APPROVED:	
APPROVED:	



UPRR TOFC RAILYARD - OAKLAND CALIFORNIA	
FIGURE 2 POTENTIOMETRIC SURFACE MAP JANUARY 1995	
SCALE	1" = 200'
DWG NO	96199-50

NAVY  
SUPPLY  
CENTER



CROSSES LEFT OFF FOR CLARITY

EDGE OF PAVEMENT

SHORELINE

OAKLAND ESTUARY

**LEGEND**

- ▲ MONITORING WELL LOCATION AND DEPTH
- ▲ TRANSPIER LOCATION
- TRANSPIER TIP OF PENETRATOR
- MONITORING WELL LOCATION
- MONITORING WELL LOCATION

25' = 1" (VERTICAL SCALE)



DATE	25/96
BY	WPS
CHECKED	
APPROVED	



UPRR TOFC RAILYARD - OAKLAND CALIFORNIA

FIGURE 3  
LNAPL THICKNESS MEASURED IN MONITORING WELLS  
JANUARY 1995

1" = 200'

96-99-5'

**TABLES**

TABLE 1  
Water Level Data  
Union Pacific Railroad  
Oakland Fueling Area

Well No.	Date	Well Elev. Above M.S.L. (FT)	Depth to Product (FT)	Depth to Water (FT)	Water Level Elevation (FT)	Product Thickness (FT)	Corr Water Level Elevation* (FT)	
OMW-1	04/09/91	8.79		5.54	3.25		3.25	
	06/19/91			6.89	1.90		1.90	
	05/11/92			6.34	2.45		2.45	
	06/09/92			6.91	1.88		1.88	
	07/07/92			7.21	1.58		1.58	
	08/11/92			7.55	1.24		1.24	
	09/04/92			7.82	0.97		0.97	
	10/13/92			7.96	0.83		0.83	
	11/12/92			7.64	1.15		1.15	
	12/17/92			6.64	2.15		2.15	
	03/18/93			5.98	2.81		2.81	
	05/14/93			6.39	2.40		2.40	
	07/13/93			7.12	1.67		1.67	
	09/30/93			7.84	0.95		0.95	
	11/10/93			8.08	0.71		0.71	
	01/24/94			7.54	1.25		1.25	
	03/23/94			6.69	2.10		2.10	
	05/02/94			6.61	2.18		2.18	
	07/29/94			7.32	1.47		1.47	
	09/26/94			7.67	1.12		1.12	
11/15/94			3.67	5.12		5.12		
01/25/95			2.52	6.27		6.27		
OMW-2	04/09/91	5.88		2.10	3.78		3.78	
	06/19/91			3.59	2.29		2.29	
	05/11/92			3.22	2.66		2.66	
	06/09/92			3.97	1.91		1.91	
	07/07/92			4.21	1.67		1.67	
	08/11/92			4.46	1.42		1.42	
	09/04/92			4.77	1.11		1.11	
	10/13/92			4.96	0.92		0.92	
	11/12/92			4.08	1.80		1.80	
	12/17/92			1.70	4.18		4.18	
	03/18/93			1.94	3.94		3.94	
	05/14/93			3.29	2.59		2.59	
	07/13/93			4.28	1.60		1.60	
	09/30/93			4.99	0.89		0.89	
	11/10/93			5.23	0.65		0.65	
	01/24/94			3.30	2.58		2.58	
	03/23/94			3.55	2.33		2.33	
	05/02/94			4.95	0.93		0.93	
	07/29/94			4.49	1.39		1.39	
	09/26/94			4.92	0.96		0.96	
11/16/94			1.03	4.85		4.85		
01/25/95			3.35	2.53		2.53		
OMW-3	04/09/91	7.16		3.93	3.23		3.23	
	06/19/91			5.33	1.83		1.83	
	05/11/92			5.92	1.24		1.24	
	06/09/92			5.48	1.68		1.68	
	07/07/92			5.78	1.38		1.38	
	08/11/92			6.09	1.07		1.07	
	09/04/92			6.33	0.83		0.83	
	10/13/92			6.55	0.61		0.61	
	11/12/92			6.16	1.00		1.00	
	12/17/92			5.15	2.01		2.01	
	03/18/93			2.58	4.58		4.58	
	05/14/93			4.91	2.25		2.25	
	07/13/93			5.70	1.46		1.46	
	09/30/93			6.43	0.73		0.73	
	11/10/93			6.92	0.24		0.24	
	01/24/94			3.50	3.66		3.66	
	03/23/94			5.90	1.26		1.26	
	05/02/94			5.84	1.32		1.32	
	07/29/94			5.98	1.18		1.18	
	09/26/94			6.32	0.84		0.84	
11/15/94			2.36	4.80		4.80		
01/25/95			NOT GAUGED - WELL UNDER WATER					

TABLE 1  
Water Level Data  
Union Pacific Railroad  
Oakland Fueling Area

Well No.	Date	Well Elev. Above M.S.L. (FT)	Depth to Product (FT)	Depth to Water (FT)	Water Level Elevation (FT)	Product Thickness (FT)	Corr Water Level Elevation* (FT)
OMW-4	04/09/91	7.41	3.79	6.23	1.18	2.44	3.23
	06/19/91		4.44	8.68	-1.27	4.24	2.29
	05/11/92						not available
	06/09/92		5.88	9.81	-2.40	3.93	0.90
	07/07/92		6.00	9.88	-2.47	3.88	0.79
	08/11/92		6.13	8.23	-0.82	2.10	0.94
	09/04/92		6.78	8.37	-0.96	1.59	0.38
	10/13/92**			6.58	0.83		0.83
	11/12/92		5.74	7.33	0.08	1.59	1.42
	12/17/92		5.77	7.28	0.13	1.51	1.40
	03/18/93		3.82	5.73	1.68	1.91	3.28
	05/14/93		5.76	8.45	-1.04	2.69	1.22
	07/13/93		5.94	7.78	-0.37	1.84	1.18
	09/30/93		6.85	8.17	-0.76	1.32	0.35
	11/10/93		7.03	7.59	-0.18	0.56	0.29
	01/24/94		6.15	6.76	0.65	0.61	1.16
	03/23/94		6.09	6.80	0.61	0.71	1.21
	05/02/94		5.25	5.54	1.87	0.29	2.11
	07/29/94		6.40	7.15	0.26	0.75	0.89
	09/26/94		6.31	6.93	0.48	0.62	1.00
11/16/94		4.30	5.05	2.36	0.75	2.99	
01/25/95			6.23	7.12	0.29	0.89	1.04
OMW-5	04/09/91	7.62		4.64	2.98		2.98
	06/19/91			5.35	2.27		2.27
	05/11/92			5.18	2.44		2.44
	06/09/92			5.85	1.77		1.77
	07/07/92			6.02	1.60		1.60
	08/11/92			6.18	1.44		1.44
	09/04/92			6.59	1.03		1.03
	10/13/92			6.54	1.08		1.08
	11/12/92			6.23	1.39		1.39
	12/17/92			5.23	2.39		2.39
	03/18/93			3.33	4.29		4.29
	05/14/93			5.06	2.56		2.56
	07/13/93			5.96	1.66		1.66
	09/30/93			6.70	0.92		0.92
	11/10/93			5.92	1.70		1.70
	01/24/94			NA	7.62		7.62
	03/23/94			5.74	1.88		1.88
	05/02/94			5.71	1.91		1.91
	07/29/94			6.27	1.35		1.35
	09/26/94			6.56	1.06		1.06
11/16/94			5.31	2.31		2.31	
01/25/95			NOT GAUGED				
OMW-6	04/09/91	5.78		7.60	-1.82		-1.82
	06/19/91			6.98	-1.20		-1.20
	05/11/92			7.41	-1.63		-1.63
	06/09/92			7.18	-1.40		-1.40
	07/07/92			6.61	-0.83		-0.83
	08/11/92			7.14	-1.36		-1.36
	09/04/92			6.58	-0.80		-0.80
	10/13/92**			6.16	-0.38		-0.38
	11/12/92			6.91	-1.13		-1.13
	12/17/92			6.16	-0.38		-0.38
	03/18/93			7.31	-1.53		-1.53
	05/14/93			6.59	-0.81		-0.81
	07/13/93			6.58	-0.80		-0.80
	09/30/93			5.49	0.29		0.29
	11/10/93			5.08	0.70		0.70
	01/24/94			5.40	0.38		0.38
	03/23/94			6.90	-1.12		-1.12
	05/02/94			7.44	-1.66		-1.66
	07/29/94			5.65	0.13		0.13
	09/26/94			6.88	-1.10		-1.10
11/16/94			5.35	0.43		0.43	
01/25/95			6.91	-1.13		-1.13	

TABLE 1  
Water Level Data  
Union Pacific Railroad  
Oakland Fueling Area

Well No.	Date	Well Elev. Above M.S.L. (FT)	Depth to Product (FT)	Depth to Water (FT)	Water Level Elevation (FT)	Product Thickness (FT)	Corr Water Level Elevation* (FT)
OMW-7	04/09/91	7.03	3.26	7.48	-0.45	4.22	3.09
	06/19/91		4.13	7.66	-0.63	3.53	2.34
	05/11/92		3.70	7.32	-0.29	3.62	2.75
	06/09/92		5.79	7.78	-0.75	1.99	0.92
	07/07/92		5.98	7.88	-0.85	1.90	0.75
	08/11/92		6.01	9.22	-2.19	3.21	0.51
	09/04/92		6.53	8.92	-1.89	2.39	0.12
	10/13/92		5.97	8.00	-0.97	2.03	0.74
	11/12/92		5.29	8.69	-1.66	3.40	1.20
	12/17/92		5.60	8.66	-1.63	3.06	0.94
	03/18/93		3.93	7.97	-0.94	4.04	2.45
	05/14/93		5.34	8.21	-1.18	2.87	1.23
	07/13/93		5.95	7.49	-0.46	1.54	0.83
	09/30/93		6.65	9.75	-2.72	3.10	-0.12
	11/10/93		6.75	9.12	-2.09	2.37	-0.10
	01/24/94		6.00	7.87	-0.84	1.87	0.73
	03/23/94		5.79	8.56	-1.53	2.77	0.80
	05/02/94		4.79	6.64	0.39	1.85	1.94
	07/29/94		6.15	8.46	-1.43	2.31	0.51
	09/26/94		6.14	7.11	-0.08	0.97	0.73
11/16/94		4.23	4.63	2.40	0.40	2.74	
01/25/95		3.31	9.53	-2.50	6.22	2.72	
OMW-8	04/09/91	7.52		4.25	3.27		3.27
	06/19/91			5.27	2.25		2.25
	05/11/92			5.05	2.47		2.47
	06/09/92			6.25	1.27		1.27
	07/07/92			6.33	1.19		1.19
	08/11/92			6.48	1.04		1.04
	09/04/92			7.00	0.52		0.52
	10/13/92			6.23	1.29		1.29
	11/12/92			6.34	1.18		1.18
	12/17/92			6.10	1.42		1.42
	03/18/93			4.51	3.01		3.01
	05/14/93			5.78	1.74		1.74
	07/13/93			6.26	1.26		1.26
	09/30/93			7.06	0.46		0.46
	11/10/93			7.12	0.40		0.40
	01/24/94			6.58	0.94		0.94
	03/23/94			6.15	1.37		1.37
	05/02/94			6.06	1.46		1.46
	07/29/94			6.47	1.05		1.05
	09/26/94			6.50	1.02		1.02
11/15/94			4.74	2.78		2.78	
01/25/95			TRACE	3.55	3.97		3.97
OMW-9	05/11/92	6.64	3.41	7.65	-1.01	4.24	2.55
	06/09/92		5.09	8.17	-1.53	3.08	1.06
	07/07/92		5.28	8.42	-1.78	3.14	0.86
	08/11/92		5.29	9.45	-2.81	4.16	0.68
	09/04/92		5.70	9.56	-2.92	3.86	0.32
	10/13/92		5.70	6.88	-0.24	1.18	0.75
	11/12/92		5.23	6.44	0.20	1.21	1.22
	12/17/92		5.08	6.40	0.24	1.32	1.35
	03/18/93		3.01	6.69	-0.05	3.68	3.04
	05/14/93		4.38	10.37	-3.73	5.99	1.30
	07/13/93		5.57	6.79	-0.15	1.22	0.87
	09/30/93		5.86	9.81	-3.17	3.95	0.15
	11/10/93		6.06	9.61	-2.97	3.55	0.01
	01/24/94		5.41	7.71	-1.07	2.30	0.86
	03/23/94		4.91	9.10	-2.46	4.19	1.06
	05/02/94		4.52	4.54	2.10	0.02	2.12
	07/29/94		5.46	8.40	-1.76	2.94	0.71
	09/26/94		5.74	6.39	0.25	0.65	0.80
	11/16/94		4.91	4.95	1.69	0.04	1.72
	01/25/95		3.83	6.25	0.39	2.42	2.42

TABLE 1  
Water Level Data  
Union Pacific Railroad  
Oakland Fueling Area

Well No.	Date	Well Elev. Above M.S.L. (FT)	Depth to Product (FT)	Depth to Water (FT)	Water Level Elevation (FT)	Product Thickness (FT)	Corr Water Level Elevation* (FT)	
OMW-10	05/11/92	7.56		4.76	2.80		2.80	
	06/09/92			5.42	2.14		2.14	
	07/07/92			5.58	1.98		1.98	
	08/11/92			5.83	1.73		1.73	
	09/04/92			6.18	1.38		1.38	
	10/13/92**			5.30	2.26		2.26	
	11/12/92			5.41	2.15		2.15	
	12/17/92			4.20	3.36		3.36	
	03/18/93		3.93	4.00	3.56	0.07	3.62	
	05/14/93		4.83	4.92	2.64	0.09	2.72	
	07/13/93		5.64	5.67	1.89	0.03	1.92	
	09/30/93		6.36	6.38	1.18	0.02	1.20	
	11/10/93			6.55	1.01		1.01	
	01/24/94			5.55	2.01		2.01	
	03/23/94			4.81	2.75		2.75	
	05/02/94			5.06	2.50		2.50	
	07/29/94			6.94	0.62		0.62	
	09/26/94			6.36	1.20		1.20	
	11/15/94			4.01	3.55		3.55	
	01/25/95	NOT GAUGED - WELL COVERED						
ORW-1	06/19/91	6.59	3.91	9.36	-2.77	5.45	1.81	
	05/11/92	NOT GAUGED						
	06/09/92	NOT GAUGED						
	07/07/92	NOT GAUGED						
	08/11/92			8.39	-1.80		-1.80	
	09/04/92			8.35	-1.76		-1.76	
	10/13/92		6.95	8.15	-1.56	1.20	-0.55	
	11/12/92	NOT GAUGED						
	12/17/92		8.30	8.35	-1.76	0.05	-1.72	
	03/18/93		3.60	7.39	-0.80	3.79	2.38	
	05/14/93			8.63	-2.04		-2.04	
	07/13/93			8.60	-2.01		-2.01	
	09/30/93	NOT GAUGED						
	11/10/93	NOT GAUGED						
	01/24/94	NOT GAUGED						
	03/23/94	NOT GAUGED						
	05/02/94	NOT GAUGED						
	07/29/94	NOT GAUGED						
	09/26/94	NOT GAUGED						
	11/15/94	NOT GAUGED						
01/25/95	NOT GAUGED							
ORW-2	06/19/91	6.79	4.36	4.38	2.41	0.02	2.43	
	05/11/92		3.55	6.34	0.45	2.79	2.79	
	06/09/92	NOT GAUGED						
	07/07/92	NOT GAUGED						
	08/11/92			9.30	-2.51		-2.51	
	09/04/92			9.31	-2.52		-2.52	
	10/13/92		8.20	9.20	-2.41	1.00	-1.57	
	11/12/92	NOT GAUGED						
	12/17/92			9.45	-2.66		-2.66	
	03/18/93		2.94	7.48	-0.69	4.54	3.12	
	05/14/93			8.21	-1.42		-1.42	
	07/13/93		9.30	9.41	-2.62	0.11	-2.53	
	09/30/93	NOT GAUGED						
	11/10/93	NOT GAUGED						
	01/24/94	NOT GAUGED						
	03/23/94	NOT GAUGED						
	05/02/94	NOT GAUGED						
	07/29/94	NOT GAUGED						
	09/26/94	NOT GAUGED						
	11/15/94	NOT GAUGED						
01/25/95	NOT GAUGED							



TABLE 1  
Water Level Data  
Union Pacific Railroad  
Oakland Fueling Area

Well No.	Date	Well Elev. Above M.S.L. (FT)	Depth to Product (FT)	Depth to Water (FT)	Water Level Elevation (FT)	Product Thickness (FT)	Corr Water Level Elevation* (FT)
ORW-3	06/19/91	6.30	4.07	4.10	2.20	0.03	2.23
	05/11/92		3.24	5.31	0.99	2.07	2.73
	06/09/92		NOT GAUGED				
	07/07/92		NOT GAUGED				
	08/11/92			8.90	-2.60		-2.60
	09/04/92			8.75	-2.45		-2.45
	10/13/92			8.59	-2.29		-2.29
	11/12/92		NOT GAUGED				
	12/17/92			8.35	-2.05		-2.05
	03/18/93		2.90	5.71	0.59	2.81	2.95
	05/14/93			8.16	-1.86		-1.86
	07/13/93		9.08	9.46	-3.16	0.38	-2.84
	09/30/93		NOT GAUGED				
	11/10/93		NOT GAUGED				
	01/24/94		NOT GAUGED				
	03/23/94		NOT GAUGED				
	05/02/94		NOT GAUGED				
	07/29/94		NOT GAUGED				
	09/26/94		NOT GAUGED				
	11/15/94		NOT GAUGED				
	01/25/95		NOT GAUGED				

\* Corrected water level elevation assumes product density of 0.84 g/cm<sup>3</sup>

\*\* Gauging data for these may have been switched.

M.S.L = Mean Sea Level

TABLE 2  
**Analytical Results**  
**Groundwater Monitoring Wells**  
**Union Pacific Railroad**  
**Oakland Fueling Area**

Well Number	Date Sampled	Total Petroleum Hydrocarbons (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)
OMW-1	05/11/92	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	08/11/92	0.060	<0.0005	<0.0005	<0.0005	<0.0005
	11/13/92	0.067	<0.0005	0.00061*	<0.0005	<0.0005
	05/14/93	<0.050	<0.0003	<0.0003	<0.0003	<0.0009
	11/10/93	<0.050	<0.0003	<0.0003	<0.0003	<0.0009
	05/02/94	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	11/15/94	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
OMW-2	05/11/92	4.5	<0.0005	<0.0005	<0.0005	<0.0005
	08/11/92	2.7	<0.0005	<0.0005	<0.0005	<0.0005
	11/13/92	3.4	<0.0005	0.00057*	0.0011	0.0033
	05/14/93	<0.050	<0.0003	<0.0003	<0.0003	<0.0009
	11/10/93	<0.050	<0.0003	<0.0003	<0.0003	<0.0009
	05/02/94	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	11/16/94	0.26	<0.0005	<0.0005	<0.0005	<0.0005
OMW-3	05/11/92	2.3	.0003J	0.0013	.0003J	0.0034
	08/11/92	5.8	<0.0005	0.00071	<0.0005	.0017
	11/13/92	110	<0.0005	0.00089*	0.0015	.0084
	05/14/93	0.180	<0.0003	0.036	<0.0003	.0027
	11/10/93	1.80	<0.0003	0.0005	<0.0003	<0.0009
	05/02/94	1.80	<0.0005	0.0023	<0.0005	0.00089
	11/15/94	1.20	<0.0005	<0.0005	<0.0005	<0.0005
OMW-5	05/11/92	2.1	<0.0005	.0004J	<0.0005	0.0003
	08/11/92	2.1	<0.0005	<0.0005	<0.0005	<0.0005
	11/13/92	4.4	<0.0005	0.00078*	<0.0005	<0.0005
	05/14/93	11	<0.0003	0.0018	<0.0003	<0.0009
	11/10/93	<0.050	<0.0003	0.0006	<0.0003	<0.0009
	05/02/94	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	11/16/94	0.52	<0.0005	0.0012	0.0014	0.0077
OMW-6	05/11/92	0.52	<0.0005	<0.0005	<0.0005	0.0016
	08/11/92	0.55	<0.0005	<0.0005	<0.0005	<0.0005
	11/13/92	6.0	<0.0005	0.00077*	<0.0005	<0.0005
	05/14/93	0.18	<0.0003	<0.0003	<0.0003	<0.0009
	11/10/93	<0.050	<0.0003	<0.0003	<0.0003	<0.0009
	05/02/94	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	11/16/94	0.46	<0.0005	<0.0005	<0.0005	<0.0005
OMW-8	05/11/92	0.24	<0.0005	<0.0005	<0.0005	<0.0005
	08/11/92	0.22	<0.0005	<0.0005	<0.0005	<0.0005
	11/13/92	0.26	<0.0005	0.00058*	<0.0005	<0.0005
	05/14/93	<0.050	<0.0003	<0.0003	<0.0003	<0.0009
	11/10/93	<0.050	<0.0003	<0.0003	<0.0003	<0.0009
	05/02/94	<0.050	<0.0005	<0.0005	<0.0005	<0.0005
	11/15/94	0.26	<0.0005	<0.0005	<0.0005	<0.0005

TABLE 2  
**Analytical Results**  
**Groundwater Monitoring Wells**  
**Union Pacific Railroad**  
**Oakland Fueling Area**

Well Number	Date Sampled	Total Petroleum Hydrocarbons (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)
OMW-10	05/11/92	2.1	0.033	<0.0005	<0.0005	0.0027
	08/11/92	1.3	0.0096	<0.0005	<0.0005	.00062
	11/13/92	2.8	0.0066	0.00084*	<0.0005	.00062
	05/14/93	***** NOT SAMPLED - Well Contained Product*****				
	11/10/93	2.6	0.0043	0.0011	<0.0003	.00012
	05/02/94	2.6	0.00052	<0.0005	<0.0005	<0.0005
	11/16/94	***** NOT SAMPLED - Well Contained Product*****				

NOTES

J = Estimated value below reporting limit.  
 Due to the presence of product, recovery wells ORW-1, ORW-2, ORW-3, and monitoring wells OMW-4, OMW-7, and OMW-9 are not sampled.  
 \* 0.00062 mg/L was detected in the Trip Blank.