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May 27, 1998
File No. 10-1682-09/802

Mr. Derek Lee
California Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

**SUBJECT: Semi-Annual and Annual Groundwater Monitoring Report,
Industrial Asphalt Facility, 52 El Charro Road, Pleasanton, California**

Dear Mr. Lee:

Kleinfelder, Inc. (Kleinfelder) is pleased to present this semi-annual and annual groundwater monitoring report on behalf of Industrial Asphalt for the above-referenced site (Plate 1). The site is located on a portion (approximately 5 acres) of the 177-acre parcel owned by the Jamieson Company. Industrial Asphalt has occupied the site since 1963.

SITE BACKGROUND

Industrial Asphalt operated six underground storage tanks (USTs) for storing asphalt, and two USTs for storing diesel fuel at the site. In 1985, a leaking fuel pipe serving the diesel USTs was identified and repaired. Upon removal of two diesel USTs in February 1987, diesel product was observed in the bottom of the excavation. This product was sampled and analyzed for total petroleum hydrocarbons as diesel (TPH-d) and polychlorinated biphenyls (PCBs). The product was found to contain 340,000 milligrams per kilogram (mg/kg) of TPH-d, and 12 mg/kg of PCBs (Arochlor 1260). At that time, free product recovery operations began, and several phases of soil and groundwater investigations were performed. In September 1987, the remaining four asphalt USTs were removed, and contaminated soil and backfill material were excavated.

There are 13 monitoring wells and 11 groundwater extraction wells onsite (Plate 2). Following several phases of site investigation, a groundwater remediation system was constructed and started in 1994. Plate 3 shows a layout of the groundwater treatment system. The system was operated for approximately two years. During that period, about 7 million gallons of groundwater were extracted, and approximately 22 pounds of dissolved petroleum hydrocarbons were removed from groundwater (Plate 4). Kleinfelder submitted a letter in May 1996 to the San Francisco Bay Region of the California Regional

Water Quality Control Board (RWQCB) requesting shutdown of the active groundwater remediation system and requesting approval to install oxygen releasing socks in extraction wells (after system shutdown) to enhance passive bioremediation processes. Following installation of the oxygen releasing socks in September 1996, dissolved oxygen (DO) measurement was added to the groundwater monitoring program.

A detailed discussion of the site history including site investigation, groundwater monitoring and remediation, is enclosed in Appendix A.

SEMI-ANNUAL AND ANNUAL GROUNDWATER MONITORING RESULTS

In June 1996, a semi-annual (twice yearly) groundwater monitoring program for the site was authorized by the RWQCB. As part of the revised monitoring program, all groundwater samples are analyzed for TPH-d and motor oil (TPH-mo). Samples from selected wells (MW-1, MW-2, MW-3, and MW-8) are analyzed for PCBs. Monitoring wells MW-1 through MW-3, MW-8, MW-10, and MW-15 are scheduled to be sampled semi-annually, and 11 other monitoring wells are on an annual sampling frequency in the spring (Table 1).

Semi-annual and annual groundwater monitoring was performed on April 28 and 30, 1998, in accordance with the revised groundwater monitoring program approved by the RWQCB.

Dissolved Oxygen and Water Level Monitoring Data

DO measurements were recorded at 5, 15, and 25 feet below static water level in all accessible monitoring wells on April 28, 1998. Depth to water was also measured at that time. DO measurements are summarized in Table 2, and water-level data are presented in Table 3. Water levels in the 11 groundwater extraction wells were not measured. Groundwater elevations in monitoring wells rose approximately 12 feet compared with April 1997 and 16 feet compared with November 1997 data, and were similar to groundwater elevations in March 1996.

On April 28, 1998, the groundwater flow direction beneath the site was to the northwest with an average gradient of approximately 0.001 foot per foot (ft/ft) as shown on Plate 5. The flow direction was to the northeast during April and November 1997. However, the groundwater direction observed during April 1998 was consistent with groundwater direction observed during April 1996.

Groundwater Monitoring Analytical Results - April 1998

The April 1998 groundwater monitoring event represented the fourth monitoring event under the revised monitoring program (Table 1).

Groundwater monitoring wells MW-2, MW-4, MW-5, MW-6, MW-7, MW-8, MW-14, MW-15 and MW-16 were purged with a submersible pump, and sampled with disposable bailers. Monitoring wells MW-1 and MW-3 were purged and sampled with a disposable bailer. In addition, off-site water supply well 14A2 was sampled from its tap. Please refer to Appendix B for purge logs. Monitoring wells MW-9, MW-10, MW-11, MW-12, and MW-13 were not accessible at the time of sampling due to physical site constraints.

Groundwater samples collected from the site were analyzed by Onsite Laboratories, Inc., a state-certified analytical laboratory. All samples were analyzed for TPH-d and TPH-mo using modified EPA Test Method 8015 (extraction). Samples MW-1, MW-2, MW-3 and MW-8 were also analyzed for PCBs using EPA Test Method 8080. Analytical data are summarized on Table 4. Complete analytical laboratory reports for the April 1998 sampling event along with chain of custody records are included in Appendix C.

A hydrocarbon sheen of immeasurable thickness was observed in purged water and samples collected from monitoring wells MW-1, MW-2, MW-3 and MW-8. In January 1996, monitoring well MW-2 was not sampled because of similar observations. Since that time, Kleinfelder has proceeded with purging and sampling in these source area wells if no *measurable* free product is present *after* purging.

PCBs were not detected at concentrations at or above the detection limits in samples collected from monitoring wells during the April 1998 monitoring event.

Petroleum hydrocarbons were not detected in samples from wells MW-4, MW-6, MW-7, MW-15, and 14A2 during this event. The other wells contained TPH-d ranging from 0.055 to 6.4 milligrams per liter (mg/L) and TPH-mo from 0.33 to 3.5 mg/L.

Duplicate samples were collected from well MW-2 in the April 1998 event and labeled as sample number MW-22. The difference in analytical results for these samples appeared to be larger than normal but this difference can be explained by the presence of a petroleum sheen on the samples.

SUMMARY OF GROUNDWATER MONITORING DATA

A review of the data from the April 1998 sampling event and comparison with historical monitoring results at the Industrial Asphalt site indicates the following:

- The groundwater elevations beneath the site rose an average of about 16 feet since November 1997, and were consistent with March 1996 measurements. The groundwater flow direction on the site was to the north-northwest with a gradient of about 0.001 ft/ft.
- Concentrations of diesel and oil range petroleum hydrocarbons above 1.0 mg/L persist in samples from monitoring wells MW-2, MW-3. A sheen was reported in

each of these wells and also in MW-1 and MW-8. Elevated TPH-d and TPH-mo concentrations continue to be reported in samples from these wells.

- PCBs were not detected at concentrations at or above the detection limit in samples collected from monitoring wells during the April 1998 monitoring event.
- TPH-d and TPH-mo were not detected in samples from wells MW-4, MW-6, MW-7, MW-15, and 14A2 in the April 1998 sampling event. This marks the second consecutive sampling event with non-detectable results for wells MW-7, MW-15, and 14A2.
- Dissolved oxygen concentrations of 2.0 mg/L or greater were recorded for all wells except wells MW-1, MW-2, MW-3, MW-8 MW-14, MW-15 and MW-16 nearer the source areas. There was up to a tenfold decrease in dissolved oxygen concentrations in these wells since November 1997. This indicates that the oxygen released from the socks in these wells is being consumed by the degradation of diesel fuel.

RECOMMENDATIONS

Based on these results, Kleinfelder recommends that one more groundwater monitoring event be conducted in the fall of 1998. If concentrations of TPH-d, TPH-mo, and PCBs decline or remain stable (within the same order of magnitude), then Kleinfelder will recommend site closure with certain restrictions on future land use or other institutional controls as appropriate.

LIMITATIONS

This report was prepared in general accordance with the accepted standard of practice which exists in Northern California at the time the investigation was performed. It should be recognized that definition and evaluation of environmental conditions is a difficult and inexact science. Judgments leading to conclusions and recommendations are generally made with an incomplete knowledge of the conditions present. More extensive studies, including additional environmental investigations, can tend to reduce the inherent uncertainties associated with such studies. If Industrial Asphalt wishes to reduce the uncertainty beyond the level associated with this study, Kleinfelder should be notified for additional consultation.

Our firm has prepared this report for the Client's exclusive use for this particular project and in accordance with generally accepted engineering practices within the area at the time of our investigation. No other representations, expressed or implied, and no warranty or guarantee is included or intended.

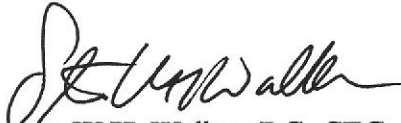
This report may be used only by the Client and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both onsite and offsite) or

other factors may change over time, and additional work may be required with the passage of time. Any party other than the Client who wishes to use this report shall notify Kleinfelder of such intended use. Based on the intended use of the report, Kleinfelder may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the Client or anyone else will release Kleinfelder from any liability resulting from the use of this report by any unauthorized party.

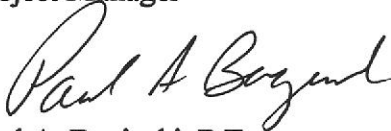
If you have any questions or comments concerning this report, please do not hesitate to call us at 925-484-1700.

Sincerely,

KLEINFELDER, INC.



Steven W.H. Walker, RG, CEG
Project Manager



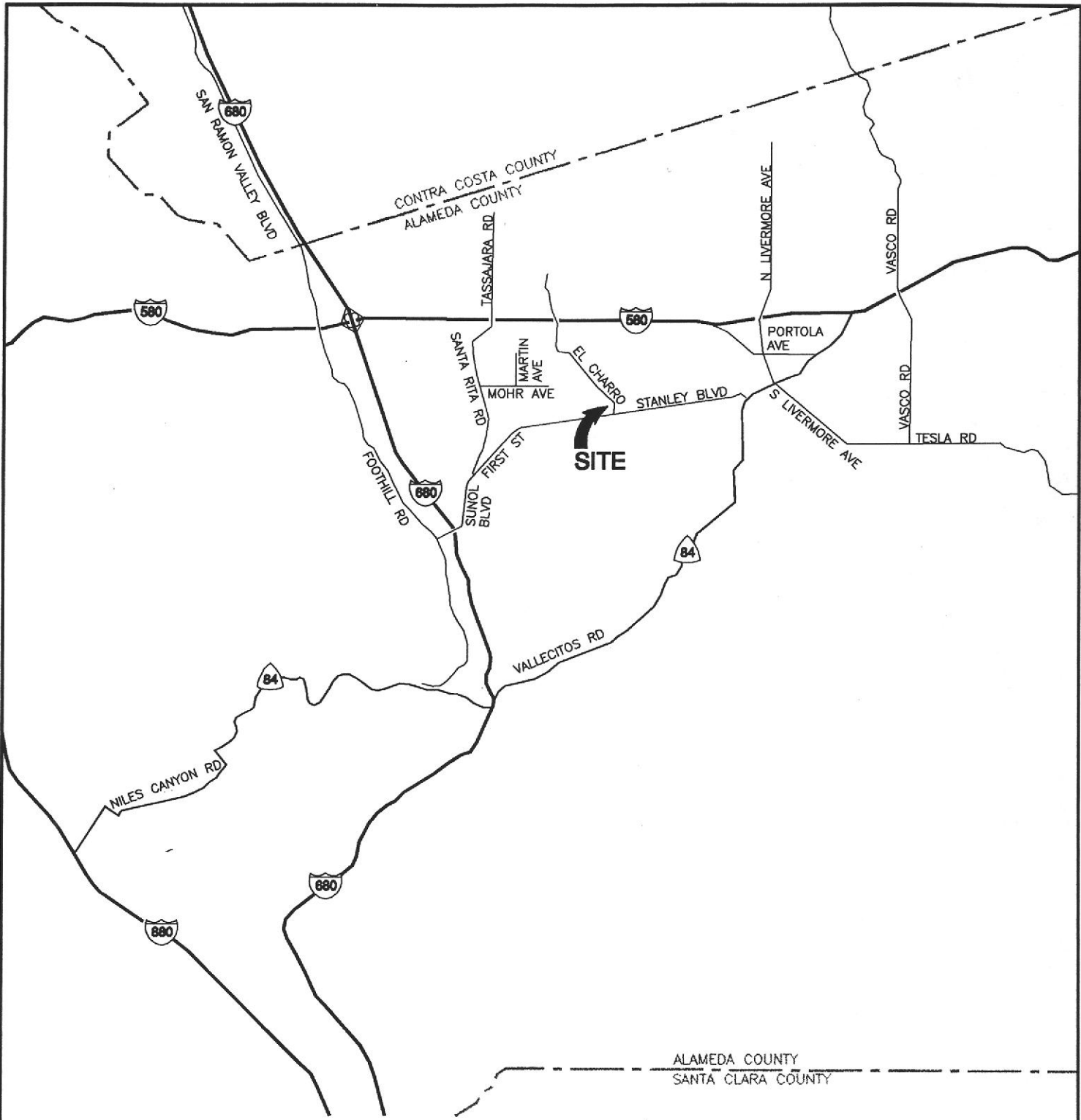
Paul A. Baginski, P.E.
Regional Environmental Manager

SWHW:PAB:sh

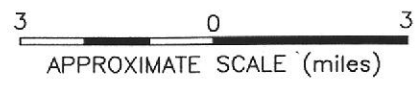
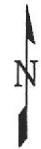
cc: Mr. Michael Munn - Industrial Asphalt
Mr. Don Atkinson-Adams - Alameda County Health Care Services Agency
Ms. Loretta Barsamian - RWQCB, San Francisco Bay Region
Mr. Craig Mayfield - Alameda County Flood Control and Water Conservation
District, Zone 7

Enclosures

PLATES



ALAMEDA COUNTY
SANTA CLARA COUNTY



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SITE VICINITY MAP

INDUSTRIAL ASPHALT
52 EL CHARRO ROAD
PLEASANTON, CALIFORNIA

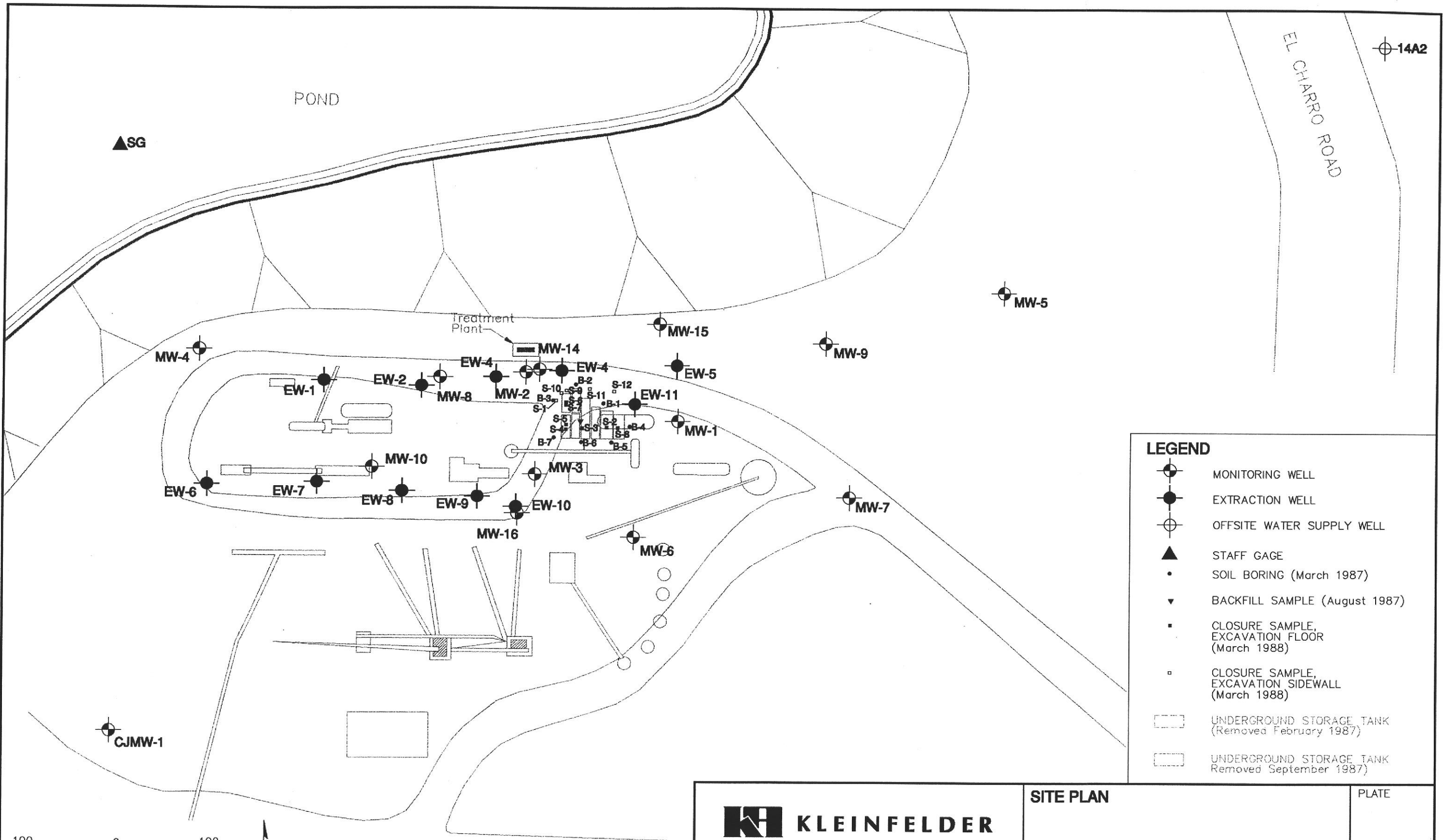
PLATE

1

DRAFTED BY: L. Sue DATE: 11-14-97

CHECKED BY: D. Carroll DATE: 11-17-97

PROJECT NO. 10-168209



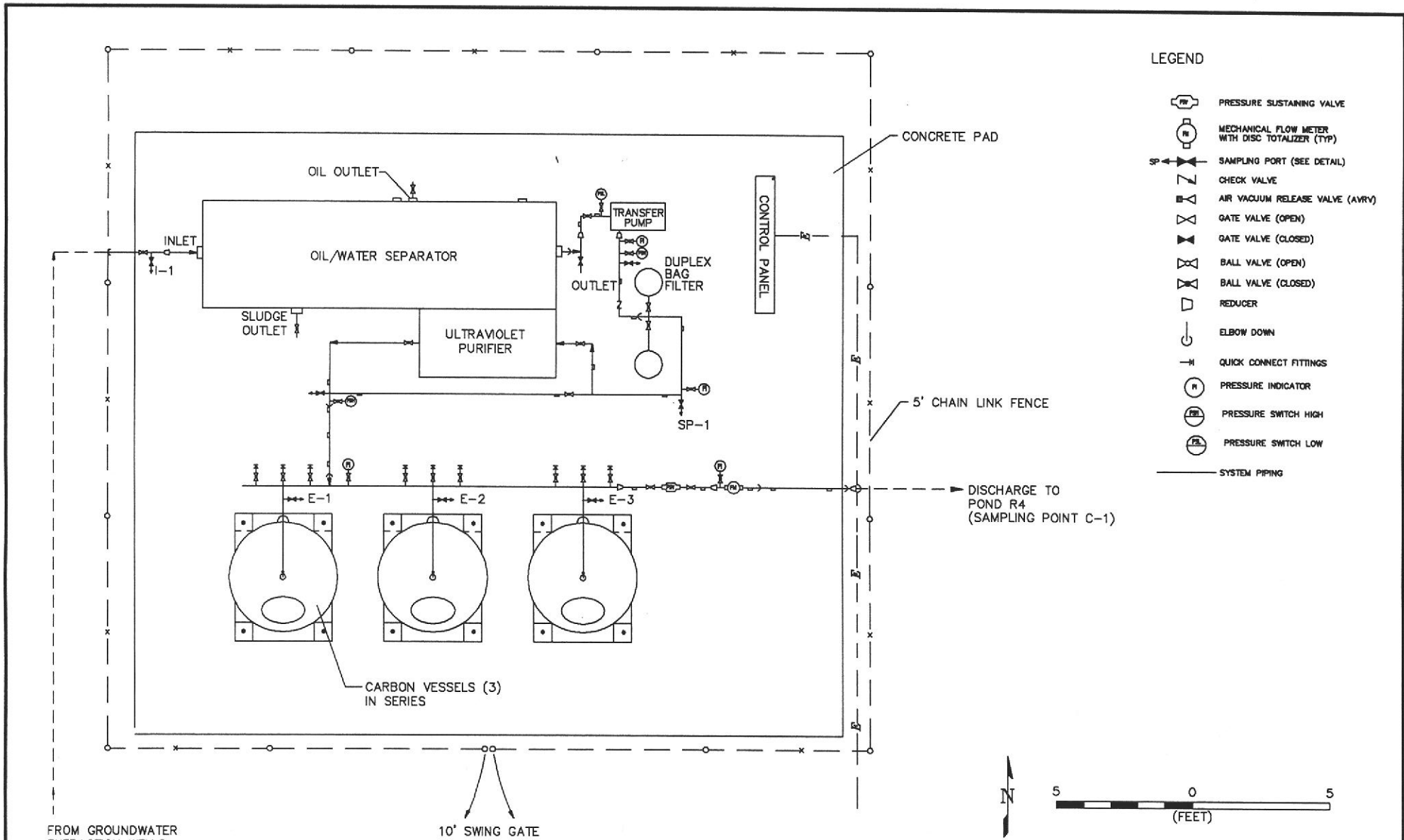
LEGEND	
	MONITORING WELL
	EXTRACTION WELL
	OFFSITE WATER SUPPLY WELL
	STAFF GAGE
	SOIL BORING (March 1987)
	BACKFILL SAMPLE (August 1987)
	CLOSURE SAMPLE, EXCAVATION FLOOR (March 1988)
	CLOSURE SAMPLE, EXCAVATION SIDEWALL (March 1988)
	UNDERGROUND STORAGE TANK (Removed February 1987)
	UNDERGROUND STORAGE TANK (Removed September 1987)

100 0 100
 APPROXIMATE SCALE (feet)

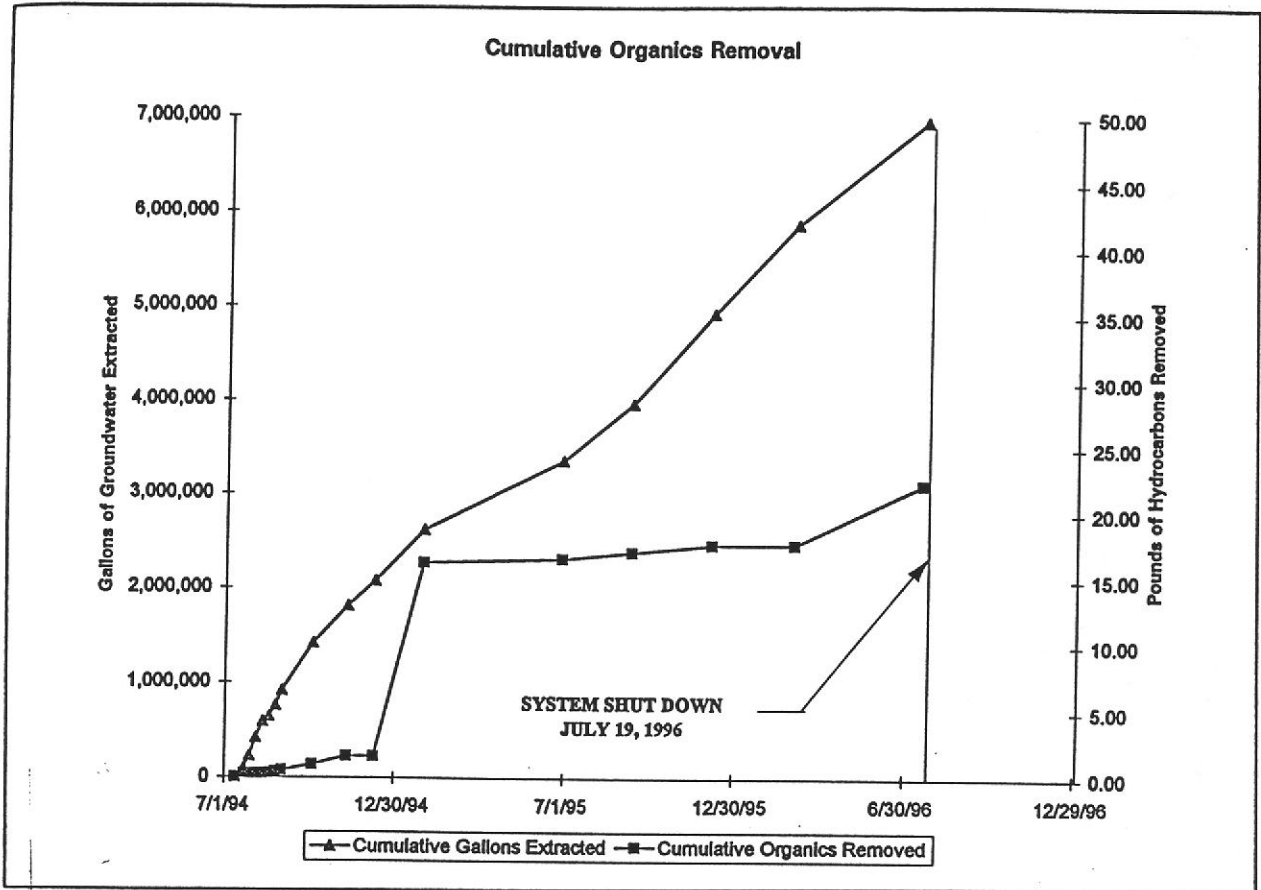
©1998, by Kleinfelder, Inc.
 CAD FILE: C:_KA-PROJ\PLEAS\10168209\801\SITEPLAN.dwg

BASE MAP SOURCE:
 Wells surveyed by Associated Professions, Inc.
 Site details from 1987 photo (No. HAP-753),
 Pacific Aerial Surveys.

	SITE PLAN		PLATE 2
	INDUSTRIAL ASPHALT 52 EL CHARRO ROAD PLEASANTON, CALIFORNIA		
DRAFTED BY: L. Sue	DATE: 5-11-98	PROJECT NO. 10-1682-801	
CHECKED BY: S. Walker	DATE: 5-26-98		



		FORMER GROUNDWATER TREATMENT SYSTEM LAYOUT		PLATE 3
		DRAFTED BY: L. Sue	DATE: 11-14-97	
CHECKED BY: D. Carroll		DATE: 11-17-97		PROJECT NO. 10-168209-704



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CUMULATIVE ORGANICS REMOVED

PLATE

INDUSTRIAL ASPHALT
52 EL CHARRO ROAD
PLEASANTON, CALIFORNIA

4

DRAFTED BY: S.T. Davis

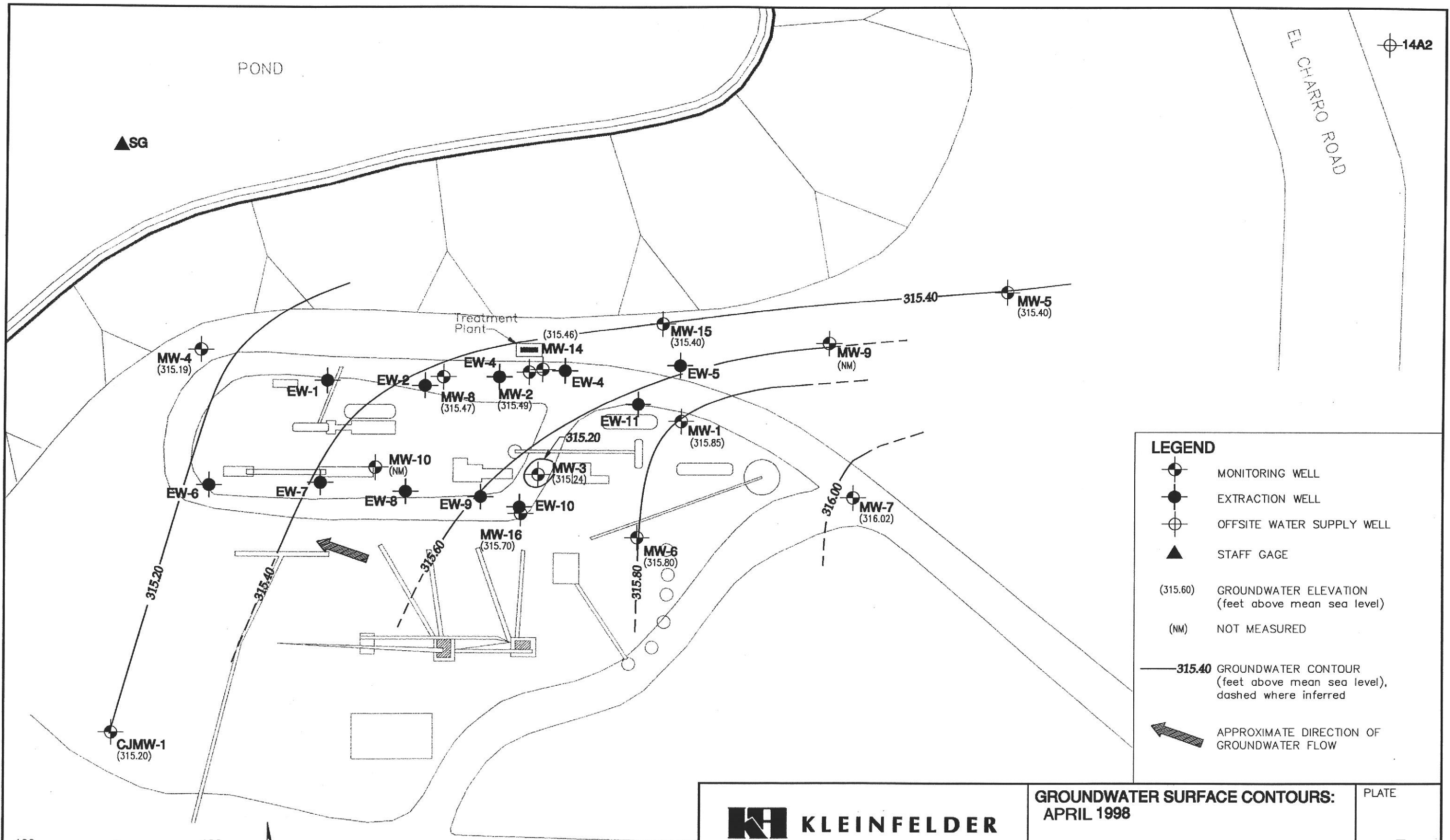
DATE: 7-15-96

CHECKED BY: D. Carroll

DATE: 7-15-96

PROJECT NO. 10-168209-603

CAD FILE:



LEGEND

- MONITORING WELL
- EXTRACTION WELL
- OFFSITE WATER SUPPLY WELL
- STAFF GAGE
- (315.60) GROUNDWATER ELEVATION (feet above mean sea level)
- (NM) NOT MEASURED
- 315.40 GROUNDWATER CONTOUR (feet above mean sea level), dashed where inferred
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW

100 0 100
 APPROXIMATE SCALE (feet)



BASE MAP SOURCE:
 Wells surveyed by Associated Professions, Inc.
 Site details from 1987 photo (No. HAP-753),
 Pacific Aerial Surveys.

		GROUNDWATER SURFACE CONTOURS: APRIL 1998		PLATE 5
		INDUSTRIAL ASPHALT 52 EL CHARRO ROAD PLEASANTON, CALIFORNIA		
DRAFTED BY: L. Sue		DATE: 5-12-98		PROJECT NO. 10-1682-801
CHECKED BY: S. Walker		DATE: 5-26-98		

TABLES

TABLE 1
REVISED GROUNDWATER MONITORING PROGRAM
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON CALIFORNIA

Monitoring Well Number	Sampling Frequency	Analyses			
		TPH-diesel (EPA Method 8015)	TPH-motor oil (EPA Method 8015)	Dissolved Oxygen	PCBs (EPA Method 8080)
MW-1	Semi-Annual	X	X	X	X
MW-2	Semi-Annual	X	X	X	X
MW-3	Semi-Annual	X	X	X	X
MW-4	Annual	X	X	X	
MW-5	Annual	X	X	X	
MW-6	Annual	X	X	X	
MW-7	Annual	X	X	X	
MW-8	Semi-Annual	X	X	X	X
MW-9	Annual	X	X	X	
MW-10	Semi-Annual	X	X	X	
MW-11	Annual	X	X	X	
MW-12	Annual	X	X	X	
MW-13	Annual	X	X	X	
MW-14	Annual	X	X	X	
MW-15	Semi-Annual	X	X	X	
MW-16	Annual	X	X	X	
14A2	Annual	X	X	X	

NOTES:

1. Revised monitoring program approved by RWQCB by letter dated June 26, 1996.
2. TPH - Total Petroleum Hydrocarbons quantified against indicated standard.
3. PCBs - Polychlorinated Biphenyls
4. PAHs were analyzed one time, in the October 1996 monitoring event. PAH analyses are not recommended for inclusion in the groundwater monitoring program.

TABLE 2
DISSOLVED OXYGEN MEASUREMENTS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Monitoring Well	Measurement Date	Dissolved Oxygen Reading (mg/L) at Indicated Depth Below SWL		
		5'	15'	25'
MW-1	10/3/96	1.60	NM	NM
	10/21/96	1.95	NM	NM
	4/29/97	0.20	0.10	NM
	11/10/97	1.0	NM	NM
	4/28/98	0.75	0.45	0.45
MW-2	10/7/96	1.20	0.70	NM
	10/21/96	1.63	NM	NM
	4/29/97	0.2	0.1	NM
	11/10/97	1.2	NM	NM
	4/28/98	0.30	0.30	0.15
MW-3	10/3/96	NM	NM	NM
	10/21/96	NM	NM	NM
	4/29/97	NM	NM	NM
	11/10/97	NM	NM	NM
	4/28/98	0.25	0.20	NM
MW-4	10/3/96	7.45	7.50	6.20
	10/4/96	7.80	7.72	NM
	4/29/97	NM	NM	NM
	11/10/97	5.0	4.4	NM
	4/28/98	7.8	8.0	7.8
MW-5	10/3/96	5.60	4.80	3.20
	10/21/96	6.03	5.93	NM
	4/29/97	2.15	1.80	1.40
	11/10/97	2.1	2.2	NM
	4/28/98	4.0	4.1	4.4
MW-6	10/3/96	3.95	3.85	3.70
	10/21/96	4.05	4.02	3.90
	4/29/97	1.80	2.00	0.20
	11/10/97	3.0	2.6	0.8
	4/28/98	2.2	2.3	2.3
MW-7	10/3/96	2.00	1.90	1.70
	10/21/96	2.10	2.00	1.90
	4/29/97	0.40	0.20	0.19
	11/10/97	2.0	1.5	1.3
	4/28/98	3.1	3.5	3.55

TABLE 2
DISSOLVED OXYGEN MEASUREMENTS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

MW-8	10/3/96	Not Accessible		
	10/21/96	Not Accessible		
	4/29/97	0.30	0.30	0.20
	11/10/97	2.2	1.4	0.7
	4/28/98	0.30	0.25	0.15
MW-9	10/3/96	Not Accessible		
	10/21/96	Not Accessible		
	4/29/97	Not Accessible		
	11/10/97	Not Accessible		
	4/28/98	Not Accessible		
MW-10	10/3/96	3.40	3.20	2.50
	10/21/96	3.50	3.60	3.00
	4/29/97	Not Accessible		
	11/10/97	Not Accessible		
	4/28/98	Not Accessible		
MW-14	10/3/96	4.50	4.55	4.45
	10/21/96	4.62	4.68	4.00
	4/29/97	2.30	2.10	0.80
	11/10/97	4.0	3.3	2.8
	4/28/98	3.6	1.85	1.9
MW-15	10/3/96	4.50	1.00	0.75
	10/21/96	3.47	1.10	0.82
	4/29/97	2.10	1.80	0.20
	11/10/97	4.0	3.2	0.5
	4/28/98	1.0	0.35	0.25
MW-16	10/3/96	Not Accessible		
	10/21/96	Not Accessible		
	4/29/97	3.20	3.40	1.80
	11/10/97	6.4	5.0	4.9
	4/28/98	2.5	0.5	2.25
MW-14A2	10/3/96	7.30	NM	NM
	10/21/96	NM	NM	NM
	4/29/97	5.30	NM	NM
	11/10/97	NM	NM	NM
	4/28/98	NM	NM	NM

Notes:

1. Dissolved oxygen (DO) readings measured in-situ using a YSI 55 DO meter with 150 foot lead
2. Temperatures also recorded at time of DO measurements, ranging from 16.8 to 18.3 degrees C.
3. SWL = static water level
4. NM = Not measured

TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Well Number	Date	Product Thickness (ft)	Depth to Water (ft)	Elevation (ft, MSL)	Trend		
MW-1	2/14/95	2/95	SHEEN	74.77	304.64		
MP Elev.	5/23/95	5/95	SHEEN	62.24	317.17		
379.41	9/5/95	9/95	SHEEN	75.73	303.68		
Well Dept	1/3/96	1/96	SHEEN	72.43	306.98		
88	3/18/96	3/96	SHEEN	65.44	313.97		
	10/3/96	10/96	SHEEN	78.79	300.62		
	10/21/96	10/96	NE	79.92	299.49		
	4/29/97	4/97	SHEEN	76.23	303.18		
	11/10/97	11/97	SHEEN	80.01	299.40		
	4/28/98	4/98	SHEEN	63.56	315.85		
MW-2	2/14/95	2/95	SHEEN	75.16	304.64		
MP Elev.	5/23/95	5/95	SHEEN	62.15	317.65		
379.80	9/5/95	9/95	SHEEN	75.99	303.81		
Well Dept	1/3/96	1/96	SHEEN	72.76	307.04		
90	3/18/96	3/96	SHEEN	66.40	313.40		
	10/3/96	10/96	SHEEN	78.91	300.89		
	10/21/96	10/96	NE	80.04	299.76		
	4/29/97	4/97	SHEEN	76.36	303.44		
	11/10/97	11/97	SHEEN	80.05	299.75		
	4/28/98	4/98	SHEEN	64.31	315.49		

TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Well Number	Date	Product Thickness (ft)	Depth to Water (ft)	Elevation (ft, MSL)	Trend	
MW-3	2/14/95	2/95	SHEEN	73.73	304.81	
MP Elev.	5/23/95	5/95	SHEEN	60.14	318.40	
378.54	9/5/95	9/95	NA	74.55	303.99	
Well Dept	1/3/96	1/96	SHEEN	71.37	307.17	
90	3/18/96	3/96	SHEEN	64.96	313.58	
	10/3/96	10/96	DRY	NA		
	10/21/96	10/96	NM	NA		
	4/29/97	4/97	DRY	NA		
	11/10/97	11/97	DRY	NA		
	4/28/98	4/98	SHEEN	63.30	315.24	
MW-4	2/14/95	2/95	NE	71.71	304.55	
MP Elev.	5/23/95	5/95	NE	57.90	318.36	
376.26	9/5/95	9/95	NE	72.25	304.01	
Well Dept	1/3/96	1/96	NE	69.15	307.11	
95	3/18/96	3/96	NE	63.34	312.92	
	10/3/96	10/96	NE	75.13	301.13	
	10/21/96	10/96	NE	77.06	299.20	
	4/29/97	4/97	NM	Not Measured		
	11/10/97	11/97	NE	76.12	300.14	
	4/28/98	4/98	NE	61.07	315.19	

TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Well Number	Date	Product Thickness (ft)	Depth to Water (ft)	Elevation (ft, MSL)	Trend	
MW-5	2/14/95	2/95	NE 78.91	303.64		
MP Elev.	5/23/95	5/95	NE 70.72	311.83		
382.55	9/5/95	9/95	NE 78.67	303.88		
Well Dept	1/3/96	1/96	NE 76.30	306.25		
110	3/18/96	3/96	NE 68.14	314.41		
	10/3/96	10/96	NE 88.09	294.46		
	10/21/96	10/96	NE 90.27	292.28		
	4/29/97	4/97	NE 83.71	298.84		
	11/10/97	11/97	NE 89.10	293.45		
	4/28/98	4/98	NE 67.15	315.40		
MW-6	2/14/95	2/95	NE 74.19	304.96		
MP Elev.	5/23/95	5/95	NE 60.80	318.35		
379.15	9/5/95	9/95	NE 75.21	303.94		
Well Dept	1/3/96	1/96	NE 71.88	307.27		
109	3/18/96	3/96	NE 65.29	313.86		
	10/3/96	10/96	NE 77.85	301.30		
	10/21/96	10/96	NE 79.05	300.10		
	4/29/97	4/97	NE 75.42	303.73		
	11/10/97	11/97	NE 79.13	300.02		
	4/28/97	4/98	NE 63.35	315.80		

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SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Well Number	Date	Product Thickness (ft)	Depth to Water (ft)	Elevation (ft, MSL)	Trend																												
MW-7	2/14/95	2/95	NE	74.20	304.74	<table border="1"> <caption>Data for MW-7 Trend Graph</caption> <thead> <tr> <th>Date</th> <th>Elevation (ft, MSL)</th> </tr> </thead> <tbody> <tr><td>1/95</td><td>304.74</td></tr> <tr><td>5/23/95</td><td>316.53</td></tr> <tr><td>9/5/95</td><td>303.46</td></tr> <tr><td>1/3/96</td><td>306.95</td></tr> <tr><td>3/18/96</td><td>314.51</td></tr> <tr><td>10/3/96</td><td>300.03</td></tr> <tr><td>10/21/96</td><td>299.81</td></tr> <tr><td>4/29/97</td><td>302.56</td></tr> <tr><td>11/10/97</td><td>298.53</td></tr> <tr><td>4/28/98</td><td>316.02</td></tr> </tbody> </table>	Date	Elevation (ft, MSL)	1/95	304.74	5/23/95	316.53	9/5/95	303.46	1/3/96	306.95	3/18/96	314.51	10/3/96	300.03	10/21/96	299.81	4/29/97	302.56	11/10/97	298.53	4/28/98	316.02					
Date	Elevation (ft, MSL)																																
1/95	304.74																																
5/23/95	316.53																																
9/5/95	303.46																																
1/3/96	306.95																																
3/18/96	314.51																																
10/3/96	300.03																																
10/21/96	299.81																																
4/29/97	302.56																																
11/10/97	298.53																																
4/28/98	316.02																																
MP Elev.	5/23/95	5/95	NE	62.41	316.53																												
378.94	9/5/95	9/95	NE	75.48	303.46																												
Well Dept	1/3/96	1/96	NE	71.99	306.95																												
109	3/18/96	3/96	NE	64.43	314.51																												
	10/3/96	10/96	NE	78.91	300.03																												
	10/21/96	10/96	NE	79.13	299.81																												
	4/29/97	4/97	NE	76.38	302.56																												
	11/10/97	11/97	NE	80.41	298.53																												
	4/28/98	4/98	NE	62.92	316.02																												
MW-8	2/14/95	2/95	ODOR	73.87	304.69	<table border="1"> <caption>Data for MW-8 Trend Graph</caption> <thead> <tr> <th>Date</th> <th>Elevation (ft, MSL)</th> </tr> </thead> <tbody> <tr><td>1/95</td><td>304.69</td></tr> <tr><td>5/23/95</td><td>318.08</td></tr> <tr><td>9/5/95</td><td>303.97</td></tr> <tr><td>1/3/96</td><td>307.17</td></tr> <tr><td>3/18/96</td><td>313.31</td></tr> <tr><td>10/3/96</td><td>Buried</td><td></td></tr> <tr><td>10/21/96</td><td>Buried</td><td></td></tr> <tr><td>4/29/97</td><td>74.89</td><td>303.67</td></tr> <tr><td>11/10/97</td><td>78.51</td><td>300.05</td></tr> <tr><td>4/28/98</td><td>63.09</td><td>315.47</td></tr> </tbody> </table>	Date	Elevation (ft, MSL)	1/95	304.69	5/23/95	318.08	9/5/95	303.97	1/3/96	307.17	3/18/96	313.31	10/3/96	Buried		10/21/96	Buried		4/29/97	74.89	303.67	11/10/97	78.51	300.05	4/28/98	63.09	315.47
Date	Elevation (ft, MSL)																																
1/95	304.69																																
5/23/95	318.08																																
9/5/95	303.97																																
1/3/96	307.17																																
3/18/96	313.31																																
10/3/96	Buried																																
10/21/96	Buried																																
4/29/97	74.89	303.67																															
11/10/97	78.51	300.05																															
4/28/98	63.09	315.47																															
MP Elev.	5/23/95	5/95	ODOR	60.48	318.08																												
378.56	9/5/95	9/95	ODOR	74.59	303.97																												
Well Dept	1/3/96	1/96	NE	71.39	307.17																												
109	3/18/96	3/96	NE	65.25	313.31																												
	10/3/96	10/96	NA	Buried																													
	10/21/96	10/96	NA	Buried																													
	4/29/97	4/97	NE	74.89	303.67																												
	11/10/97	11/97	NE	78.51	300.05																												
	4/28/98	4/98	SHEEN	63.09	315.47																												

TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Well Number	Date	Product Thickness (ft)	Depth to Water (ft)	Elevation (ft, MSL)	Trend	
MW-9	2/14/95	2/95	NA	Flooded		
MP Elev.	5/23/95	5/95	NA	Buried		
377.40	9/5/95	9/95	NA	Buried		
Well Dept	1/3/96	1/96	NA	Buried		
108	3/18/96	3/96	NA	Buried		
	10/3/96	10/96	NA	Buried		
	10/21/96	10/96	NA	Buried		
	4/29/97	4/97	NA	Buried		
	11/10/97	11/97	NA	Buried		
	4/28/98	4/98	NA	Buried		
MW-10	2/14/95	2/95	NE	73.32	304.72	
MP Elev.	5/23/95	5/95	NE	59.45	318.59	
378.04	9/5/95	9/95	NE	74.01	304.03	
Well Dept	1/3/96	1/96	NE	71.03	307.01	
111	3/18/96	3/96	NE	64.82	313.22	
	10/3/96	10/96	NE	76.76	301.28	
	10/21/96	10/96	NE	78.52	299.52	
	4/29/97	4/97	NA	Buried		
	11/10/97	11/97	NA	Buried		
	4/28/98	4/98	NA	Buried		

TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Well Number	Date	Product Thickness (ft)	Depth to Water (ft)	Elevation (ft, MSL)	Trend	
MW-14	2/14/95	2/95	NE 75.48	304.61		
MP Elev.	5/23/95	5/95	NE 62.36	317.73		
380.09	9/5/95	9/95	NE 76.22	303.87		
Well Dept	1/3/96	1/96	NE 72.97	307.12		
114.5	3/18/96	3/96	NE 66.71	313.38		
	10/3/96	10/96	NE 79.10	300.99		
	10/21/96	10/96	NE 81.63	298.46		
	4/29/97	4/97	NE 76.51	303.58		
	11/10/97	11/97	NE 80.21	299.88		
	4/28/98	4/98	NE 64.63	315.46		
MW-15	2/14/95	2/95	NE 73.83	304.29		
MP Elev.	5/23/95	5/95	NE 61.77	316.35		
378.12	9/5/95	9/95	NE 74.55	303.57		
Well Dept	1/3/96	1/96	NE 71.35	306.77		
117	3/18/96	3/96	NE 64.61	313.51		
	10/3/96	10/96	NE 78.18	299.94		
	10/21/96	10/96	NE 80.37	297.75		
	4/29/97	4/97	NE 75.48	302.64		
	11/10/97	11/97	NE 79.31	298.81		
	4/28/98	4/98	NE 62.72	315.40		

TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Well Number	Date	Product Thickness (ft)	Depth to Water (ft)	Elevation (ft, MSL)	Trend	
MW-16	2/14/95	2/95	NE	73.83	305.82	
MP Elev.	5/23/95	5/95	NE	61.16	318.49	
379.65	9/5/95	9/95	NE	75.71	303.94	
Well Dept	1/3/96	1/96	NE	72.42	307.23	
110	3/18/96	3/96	NE	66.06	313.59	
	10/3/96	10/96	NA	Buried		
	10/21/96	10/96	NA	Buried		
	4/29/97	4/97	NE	75.88	303.77	
	11/10/97	11/97	NE	79.49	300.16	
	4/28/98	4/98	NE	63.95	315.70	
STAFF	2/14/95	2/95	NE	Above Staff Gage		
GAGE	5/23/95	5/95	NE	Above Staff Gage		
MP Elev.	9/5/95	9/95	NM	Not Measured		
300.00	1/3/96	1/96	NM	Not Measured		
	3/18/96	3/96	NE	Above Staff Gage		
	10/3/96	10/96	NM	Not Measured		
	10/21/96	10/96	NM	Not Measured		
	4/29/97	4/97	NM	Not Measured		
	11/10/97	11/97	NM	Not Measured		
	4/28/98	4/98	NM	Not Measured		

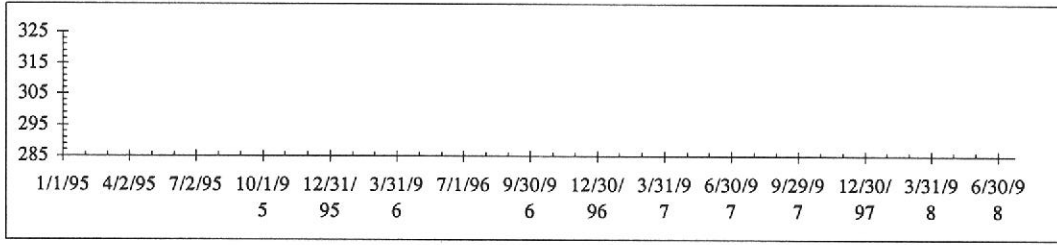
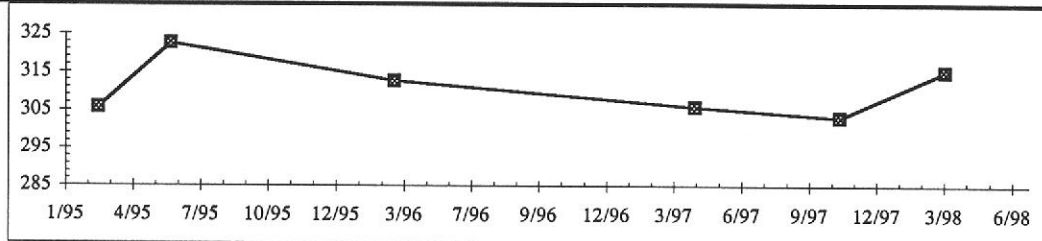


TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Well Number	Date	Product Thickness (ft)	Depth to Water (ft)	Elevation (ft, MSL)	Trend
CJMW-1	2/14/95	2/95	NE	77.23	305.52
MP Elev.	5/23/95	5/95	NE	60.31	322.44
382.75	9/5/95	9/95	NM	Not Measured	
Well Dept	1/3/96	1/96	NM	Not Measured	
NA	3/18/96	3/96	NE	70.10	312.65
	10/3/96	10/96	NM	Not Measured	
	10/21/96	10/96	NM	Not Measured	
	4/29/97	4/97	NE	76.95	305.80
	11/10/97	11/97	NE	79.69	303.06
	4/28/98	4/98	NM	67.55	315.20



NOTES: MP Elev. Measuring Point Elevation refers to Top of Casing, Mean Sea Level (USGS Datum)
 Depth to Water in feet below Top of Casing
 NA Not Applicable
 NE Not Encountered
 NM Not measured, reading not recorded

TABLE 4
SUMMARY OF ANALYTICAL RESULTS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON CALIFORNIA

Well Number	Sample Date	Sample Number	TPH as Diesel ¹ (mg/L)	TPH as Motor Oil ¹ (mg/L)	Total Oil & Grease ² (mg/L)	Total Hydrocarbons ³ (mg/L)	PAHs (µg/L)	PCBs ⁴ (µg/L)	
MW-1	May-95	2975	0.73	0.2	1	0.6	NA	0.1	
	Sep-95	83445	4.4	3.8	19	13	NA	<0.5	
	Jan-96	3168	9.2	7	2	2	NA	0.6	
	Mar-96	3128	0.17	<0.2	3.1	2.2	NA	<0.1	
	Oct-96	KMW-1	19	12	NA	NA	<100	0.6	
	Apr-97	MW-1	2.7	3.1	NA	NA	NA	0.2	
	Nov-97	MW-1	20	11	NA	NA	NA	0.2	
	Apr-98	MW-1	0.73	0.43	NA	NA	NA	<0.001	
MW-2	May-95	2973	0.75	<0.2	<0.5	<0.5	NA	0.4	
	(duplicate)	2980	0.68	<0.2	<0.5	<0.5	NA	<0.1	
	Sep-95	83446	2.4	1	16	14	NA	<0.5	
	Jan-96	Not sampled, free product encountered in well. See field notes.							
	Mar-96	3125	4.5	3.4	6.7	5.4	NA	0.1	
	(duplicate)	3126	2.1	1.3	5.6	4.3	NA	0.1	
	Oct-96	KMW-2	49	30	NA	NA	<100	1.2	
	Apr-97	MW-2	5.8	3.3	NA	NA	NA	0.2	
	Nov-97	MW-2	3.4	2.3	NA	NA	NA	<0.1	
	(duplicate)	MW-12	2.9	1.7	NA	NA	NA	<0.1	
	Apr-98	MW-12	6.4	3.5	NA	NA	NA	<0.001	
(duplicate)	MW-22	2.5	1.3	NA	NA	NA	<0.001		
MW-3	May-95	2974	2.5	0.8	3	2	NA	0.1	
	Sep-95	NT	NT	NT	NT	NT	NT	NT	
	Jan-96	Not sampled, free product encountered in well. See field notes.							
	Mar-96	3127	0.71	0.7	1.5	1.3	NA	0.2	
	Oct-96	Not sampled, well dry. See field notes.							
	Apr-97	Not sampled, well dry. See field notes.							
	Nov-97	Not sampled, well dry. See field notes.							
	Apr-98	MW-3	2.3	1.6	NA	NA	NA	<0.001	

TABLE 4
SUMMARY OF ANALYTICAL RESULTS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON CALIFORNIA

Well Number	Sample Date	Sample Number	TPH as Diesel ¹ (mg/L)	TPH as Motor Oil ¹ (mg/L)	Total Oil & Grease ² (mg/L)	Total Hydrocarbons ³ (mg/L)	PAHs (µg/L)	PCBs ⁴ (µg/L)
MW-4	May-95	2964	<0.05	<0.5	<0.5	<0.5	NA	<0.1
	Sep-95	83456	<0.05	<0.2	<0.5	<0.5	NA	<0.5
	Jan-96	3175	<0.05	<0.2	0.5	<0.5	NA	<0.1
	Mar-96	3133	<0.05	0.7	0.9	<0.5	NA	<0.1
	Oct-96	Not sampled. On annual sampling frequency.						
	Apr-97	Not sampled. Well not accessible at time of sampling.						
	Nov-97	Not sampled. On annual sampling frequency.						
Apr-98	MW-4	<0.05	<0.1	NA	NA	NA	NA	
MW-5	May-95	2963	<0.05	<0.5	<0.5	<0.5	NA	<0.1
	Sep-95	83457	<0.05	<0.2	<0.5	<0.5	NA	<0.5
	Jan-96	3174	<0.05	<0.2	<0.5	<0.5	NA	<0.1
	Mar-96	3133	<0.05	<0.2	<0.5	<0.5	NA	<0.1
	Oct-96	Not sampled. On annual sampling frequency.						
	Apr-97	MW-5	<0.05	<0.2	NA	NA	NA	NA
	Nov-97	Not sampled. On annual sampling frequency.						
Apr-98	MW-5	0.055	<0.1					
MW-6	May-95	2965	<0.05	<0.5	<0.5	<0.5	NA	<0.1
	Sep-95	83455	<0.05	<0.2	<0.5	<0.5	NA	<0.5
	Jan-96	3173	<0.05	<0.2	<0.5	<0.5	NA	<0.1
	Mar-96	3138	<0.05	<0.2	<0.5	<0.5	NA	<0.1
	Oct-96	Not sampled. On annual sampling frequency.						
	Apr-97	MW-6	0.1	<0.2	NA	NA	NA	NA
	Nov-97	Not sampled. On annual sampling frequency.						
Apr-98	MW-6	<0.05	<0.1					

TABLE 4
SUMMARY OF ANALYTICAL RESULTS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON CALIFORNIA

Well Number	Sample Date	Sample Number	TPH as Diesel ¹ (mg/L)	TPH as Motor Oil ¹ (mg/L)	Total Oil & Grease ² (mg/L)	Total Hydrocarbons ³ (mg/L)	PAHs (µg/L)	PCBs ⁴ (µg/L)
MW-7	May-95	2967	<0.05	<0.05	<0.5	<0.5	NA	<0.1
	Sep-95	83454	0.2	0.4	<0.5	<0.5	NA	<0.5
	Jan-96	3172	<0.05	<0.2	<0.5	<0.5	NA	<0.1
	Mar-96	3137	<0.05	<0.2	<0.5	<0.5	NA	<0.1
	Oct-96	Not sampled. On annual sampling frequency.						
	Apr-97	MW-7	<0.05	<0.2	NA	NA	NA	NA
	Nov-97	Not sampled. On annual sampling frequency.						
	Apr-98	MW-7	<0.05	<0.1				
MW-8	May 1995	2970	0.3	<0.5	<0.5	<0.5	NA	<0.1
	(duplicate)	652381	0.4	<0.5	<0.5	<0.5	NA	<0.1
	Sept. 1995	83448	0.3	<0.2	<0.5	<0.5	NA	<0.5
	(duplicate)	83447	0.3	<0.2	<0.5	<0.5	NA	<0.5
	Jan. 1996	3167	0.9	1	<0.5	<0.5	NA	<0.1
	(duplicate)	3166	0.65	0.4	1	<0.5	NA	<0.1
	Mar. 1996	3132	1.3	0.9	1.5	0.5	NA	<0.1
	(duplicate)	3131	1.2	0.7	0.8	<0.5	NA	<0.1
	Oct-96	Not sampled. Well not accessible at time of sampling.						
	Apr-97	MW-8	0.41	<0.2	NA	NA	NA	<0.1
	(duplicate)	MW-18	0.35	<0.2	NA	NA	NA	<0.1
Nov-97	MW-8	0.98	1.5	NA	NA	NA	<0.1	
Apr-98	MW-8	0.14	0.33	NA	NA	NA	<0.001	
MW-9	May-95	NT	NT	NT	NT	NT	NT	NT
	Sep-95	NT	NT	NT	NT	NT	NT	NT
	Jan-96	NT	NT	NT	NT	NT	NT	NT
	Mar-96	NT	NT	NT	NT	NT	NT	NT
	Oct-96	Not sampled. Inaccessible indefinitely.						
	Apr-98	Not sampled. Inaccessible indefinitely.						

TABLE 4
SUMMARY OF ANALYTICAL RESULTS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON CALIFORNIA

Well Number	Sample Date	Sample Number	TPH as Diesel ¹ (mg/L)	TPH as Motor Oil ¹ (mg/L)	Total Oil & Grease ² (mg/L)	Total Hydrocarbons ³ (mg/L)	PAHs (µg/L)	PCBs ⁴ (µg/L)	
MW-10	May-95	2972	2.4	0.5	2	0.9	NA	<0.1	
	Sep-95	83452	<0.05	1	1	<0.5	NA	<0.5	
	Jan-96	3164	0.1	0.2	2	0.9	NA	<0.1	
	Mar-96	3129	1.9	0.8	1.4	0.7	NA	<0.1	
	Oct-96	KMW-10	0.08	<0.2	NA	NA	<10	<0.1	
	Apr-97	Not sampled. Well not accessible at time of sampling.							
	Nov-97	Not sampled. Well not accessible at time of sampling.							
Apr-98	Not sampled. Well not accessible at time of sampling.								
MW-14	May-95	2968	<0.05	<0.5	<0.5	<0.5	NA	<0.1	
	Sep-95	83449	<0.05	<0.2	1	<0.5	NA	<0.5	
	Jan-96	3171	<0.05	<0.2	<0.5	<0.5	NA	<0.1	
	Mar-96	3136	<0.05	<0.2	<0.5	<0.5	NA	<0.1	
	Oct-96	Not sampled. On annual sampling frequency.							
	Apr-97	MW-14	<0.05	<0.2	NA	NA	NA	NA	
	Nov-97	Not sampled. On annual sampling frequency.							
Apr-98	MW-14	0.062	<0.1						
MW-15	May-95	2971	0.1	<0.5	<0.5	<0.5	NA	<0.1	
	Sep-95	83451	0.3	0.4	2	<0.5	NA	<0.5	
	Jan-96	3165	0.1	0.3	<0.5	<0.5	NA	<0.1	
	Mar-96	3134	0.14	ND	<0.5	<0.5	NA	<0.1	
	Oct-96	KMW-15	0.11	<0.2	NA	NA	<10	NA	
	(duplicate)	KMW-51	0.1	<0.2	NA	NA	<10	NA	
	Apr-97	MW-15	<0.05	<0.2	NA	NA	NA	NA	
	Nov-97	MW-15	<0.05	<0.2	NA	NA	NA	NA	
Apr-98	MW-15	<0.05	<0.1						
MW-16	May-95	2969	<0.05	<0.5	<0.5	<0.5	NA	<0.1	
	Sep-95	83450	0.06	<0.2	<0.5	<0.5	NA	<0.5	
	Jan-96	3170	<0.05	0.3	<0.5	<0.5	NA	<0.1	
	Mar-96	3135	<0.05	0.9	0.7	<0.5	NA	<0.1	
	Oct-96	Not sampled. On annual sampling frequency.							
	Apr-97	MW-16	<0.05	0.4	NA	NA	NA	NA	
	Nov-97	Not sampled. On annual sampling frequency.							
Apr-98	MW-16	0.13	<0.1						

TABLE 4
SUMMARY OF ANALYTICAL RESULTS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON CALIFORNIA

Well Number	Sample Date	Sample Number	TPH as Diesel ¹ (mg/L)	TPH as Motor Oil ¹ (mg/L)	Total Oil & Grease ² (mg/L)	Total Hydrocarbons ³ (mg/L)	PAHs (µg/L)	PCBs ⁴ (µg/L)
14A2 ⁵	May-95	2966	<0.05	<0.5	<0.5	<0.5	NA	<0.1
	Sep-95	83453	<0.05	<0.2	<0.5	<0.5	NA	<0.5
	Jan-96	3169	<0.05	<0.2	<0.5	<0.5	NA	<0.1
	Mar-96	3130	<0.05	<0.2	<0.5	<0.5	NA	<0.1
	Oct-96	Not sampled. On annual sampling frequency.						
	Apr-97	14A2	<0.05	<0.2	NA	NA	NA	NA
	Nov-97	Not sampled. On annual sampling frequency.						
	Apr-98	14A2	<0.05	<0.1				
Drinking Water Standard ⁶			—	—	—	—		0.5

NOTES FOR TABLE 4

- ¹ Sample analysis via SM 3510/8015M GCFID.
 - ² Sample analysis via SM 5520C.
 - ³ Sample analysis via SM 5520F.
 - ⁴ Polychlorinated Biphenyl compounds. Sample analysis via EPA Test Method 8080.
 - ⁵ Jamieson Well sampled via a sampling port.
 - ⁶ California Department of Health Services Drinking Water Standards, Primary Maximum Contaminant Levels (MCL); secondary MCLs listed in parentheses. Source: Water Quality Goals, California Regional Water Quality Control Board, Central Valley Region, July 1995
- TPH Total Petroleum Hydrocarbons.
<0.1 Not Detected at or above the indicated laboratory reporting limit.
NT Not Tested (ie., well not sampled)
NA Sample not analyzed for that constituent
PCBs Polychlorinated Biphenyls. Only Arochlor 1260 was detected.
PAHs Polynuclear Aromatic Hydrocarbons by EPA 8270

APPENDIX A

APPENDIX A SITE INVESTIGATION AND REMEDIATION HISTORY

Industrial Asphalt is an asphalt manufacturing facility that has occupied the subject site since 1963. Industrial Asphalt maintained six underground storage tanks (USTs) for storage of asphalt, and two USTs storing diesel fuel at the site. Diesel product purchased in 1983 and 1984 was used as a burner fuel in the asphalt batch plant. In 1985, a leaking fuel pipe serving the diesel USTs was identified and repaired. Upon removal of two diesel tanks in February 1987, diesel product was observed in the bottom of the excavation. This product was sampled and analyzed for total petroleum hydrocarbons quantified as diesel (TPH-d) and polychlorinated biphenyls (PCBs). The product was found to contain 340,000 milligrams per kilogram (mg/kg) of TPH-d, and 12 mg/kg of PCBs (Arochlor 1260). At that time, approximately 5,000 gallons of a mixture of diesel and water was pumped from the excavation and transported off-site for Class I disposal. In addition, two asphalt tanks were excavated and removed.

Remedial Investigation Activities

In March 1987, Kleinfelder drilled seven soil borings around the UST area. Based on soil sample analytical results from the seven borings, three monitoring wells (MW-1, MW-2, and MW-3) were installed in June 1987. Free product was observed in monitoring wells MW-1 and MW-2 shortly after installation. Free product was not observed in monitoring well MW-3. A sample of free product was collected from monitoring well MW-2 in August 1987, analyzed and found to contain 18 mg/kg of PCBs.

In September 1987, the remaining four asphalt USTs were removed, and contaminated soil and backfill material were excavated. Excavated soils were sampled and found to contain from 1,500 to 150,000 mg/kg of TPH-d. Closure samples representative of remaining soils in the excavation were collected (five sidewall samples and seven samples from the excavation floor) were analyzed for TPH-d, with reported concentrations ranging from non-detect to 26 mg/kg.

Soil gas surveys were conducted at the site in October 1987 and June 1988 to aid in plume definition. Information from the first survey was used to identify the locations of five additional groundwater monitoring wells at the site (MW-4 through MW-8). These wells were installed in March 1988. Soil gas samples in the second survey were analyzed for carbon dioxide; methane; benzene (B); toluene (T); xylenes (X); and total hydrocarbons (C4 to C9 carbon range). Carbon dioxide concentrations in soil gas samples ranged from 56,000 micrograms per liter (ug/L) to 210,000 ug/L. These concentrations, significantly higher than ambient air, suggest that unassisted biological activity was occurring.

In July 1989, two groundwater monitoring wells (MW-9 and MW-10) and one observation well (MW-11) were installed, and a staff gauge was installed in the gravel pit north of the site.

In November 1989, the Alameda County Department of Environmental Health (ACDEH) issued a letter to Industrial Asphalt requiring additional work at the site. In response to the ACDEH letter, Kleinfelder developed and submitted a Remedial Investigation/Remedial Action (RI/RA) Workplan to the ACDEH in January 1990. As part of this work, fourteen soil borings (SB-1 through SB-10 and MW-13 through 16) were installed in three separate field events at the site. One of the fourteen borings (MW-13) was completed as an extraction well and

later designated as extraction well EW-11. Three borings (MW-14 through MW-16) were completed as monitoring wells. Monitoring well MW-11 also was abandoned as part of these field activities.

At boring SB-1 adjacent to the previous UST excavation, free product was encountered during drilling at a depth of 15 feet. In July 1990, approximately 1,000 cubic yards of soil were excavated in the vicinity of SB-1. Impacted soils were recycled onsite in the asphalt plants.

During the 1990 RI work, a soil sample collected from boring SB-4 at 61 feet below grade (which had contained 340 mg/kg of TPH-d and 0.11 mg/kg of PCBs) was analyzed for polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270. No PAHs were detected in the sample.

The remedial investigation report summarizing the above work was submitted to ACDEH in December 1990. The RI Report also contained results of aquifer testing performed at the site; a well canvas identifying the location, use, screen interval, and distance of wells from the Industrial Asphalt site; and a baseline health risk assessment.

In January 1991 another 1,000 cubic yards of impacted soil were excavated from an area west of the July 1990 excavation. (This excavation was a follow-up activity from the July 1990 excavation, at which time some impacted soil was not accessible.) Soil was recycled in the asphalt batch process on-site; the excavation was backfilled with clean fill and finished at the surface with asphalt concrete.

In February 1991, ACDEH stipulated that groundwater cleanup should achieve "MCLs (maximum contaminant levels for drinking water) and below levels that could result in a one-in-a-million cancer risk." A feasibility study (FS) for soil and groundwater remediation was submitted to the ACDEH in August 1991. The selected remedy involved (1) extraction wells to pump groundwater; (2) Granular activated carbon to treat extracted groundwater; (3) Discharging treated groundwater to the surface water impoundment north of the facility; and (4) Recycling spent carbon through the onsite asphalt batch manufacturing process.

In May 1992, ten new groundwater extraction wells were installed (EW-1 through EW-10) at the site in support of groundwater remediation. Well and boring locations are shown on Plate 2.

Groundwater Monitoring Program History

Following installation of the first three monitoring wells in June 1987, a monthly groundwater monitoring program was instituted at the site. Depth-to-water, free product thicknesses (as appropriate), groundwater sampling and analysis (for TPH-d and PCBs) were conducted.

Analyses for BTEX (aromatic volatile organic compounds or VOCs) were requested by ACDEH in 1989. Kleinfelder included BTEX analyses in the July/August 1989 groundwater analyses. No BTEX constituents were detected in any groundwater samples, thus BTEX analyses were discontinued. Beginning in July 1990, the groundwater monitoring frequency was reduced to every two months.

Beginning in 1991, the groundwater monitoring frequency was reduced to occur quarterly. At that time, quarterly groundwater samples were analyzed for TPH-d, TPH-mo (motor oil), Oil and Grease (O&G), Total Recoverable Petroleum Hydrocarbons (TH), and PCBs.

Beginning with the October 1996 sampling event, the revised groundwater monitoring program depicted in Table 1 was instituted. Selected monitoring wells at the site are on a semi-annual monitoring frequency, and the majority of monitoring wells are on an annual frequency. The groundwater monitoring program now involves analysis for TPH-d and TPH-mo in all groundwater samples, and PCBs in selected monitoring well samples.

The RWQCB, in their June 26, 1996 letter authorizing the revised monitoring program, stated that, "Polynuclear Aromatic Hydrocarbons (PAHs) have not been included in the proposed groundwater monitoring program. Either provide a rationale for not doing so or include PAH analysis in the monitoring program." Kleinfelder included PAH analyses in the October 1996 monitoring event, to address this RWQCB request.

Groundwater Remediation System History

A groundwater remediation system was constructed by Pacific Mechanical Corporation (the low bidder in a competitive bidding process) in 1994. The system consisted of a total of eleven groundwater extraction wells pumping to an oil-water separator, a bag filter, ultraviolet sterilizer, and activated carbon. Please refer to Plate 3 for a layout of the former groundwater remediation system at the site. Treated water was discharged to Industrial Asphalt's recharge pond north of the facility (pond R4) under Industrial Asphalt's Waste Discharge Requirements (WDR) Order Number 93-037, issued by the RWQCB on April 26, 1993.

Kleinfelder started the groundwater remediation system on July 13, 1994. Within three months, extensive biofouling was observed in the oil-water separator, bag filters, and carbon vessels that cause excessive pressure drop and limited treatment system efficiency. Kleinfelder requested in a letter dated November 16, 1994 to introduce chlorine in tablet form into the oil-water separator to prevent the biofouling. The RWQCB authorized chlorine addition in January 1995. The system operated for approximately two years, with limited effectiveness. In the first six months of operation, approximately 16 pounds of hydrocarbons were extracted. In the proceeding eighteen months, only about 5 pounds of hydrocarbons were extracted. Please refer to Plate 4 for a graphical depiction of pounds removed and gallons extracted since start-up.

Kleinfelder submitted a letter report to the RWQCB dated May 21, 1996, requesting authorization to shut down the groundwater remediation system at the site. In that report, we also requested authorization to install oxygen releasing socks (after system shutdown) to enhance passive bioremediation processes in groundwater at the site. The RWQCB approved of the system shutdown and passive bioremediation enhancement in a letter dated June 26, 1996. Following receipt of authorization, Industrial Asphalt turned off the groundwater remediation system on July 19, 1996.

In the 24 months of operation, the groundwater remediation system extracted a total of 7,107,800 gallons of groundwater. This water was treated and discharged in 100% compliance with the WDR issued for the site.

IMPLEMENTATION OF PASSIVE BIOREMEDIATION

Hydrocarbon degrading bacteria are commonly present in soils and groundwater at virtually all hydrocarbon-impacted sites. Kleinfelder believes that natural biological processes are active in groundwater and capillary fringe soils (near the soil/water interface) at the Industrial Asphalt site. This opinion is based on the following observations:

- In the soil gas survey conducted in June 1988 carbon dioxide, the primary bi-product in bacterial degradation of petroleum hydrocarbons, was detected at concentrations significantly higher than ambient conditions; and
- Biofouling was observed in the oil-water separator, bag filters, and carbon vessels shortly after start-up of the groundwater remediation system.

Based on these observations, and on hydrocarbon mass removal rates observed from the groundwater remediation system, Kleinfelder recommended a passive bioremediation approach for the site. Kleinfelder and Industrial Asphalt representatives met with Mr. Sum Arigala of the RWQCB on June 25, 1996 to discuss implementation of the passive bioremediation approach and changes to the site's groundwater monitoring program. In that meeting, Industrial Asphalt agreed to add extraction well EW-8 to the list of passive remediation wells, and to add monitoring wells MW-10 and MW-15 to the list of monitoring wells sampled twice per year (instead of annually). These additions were documented in a letter from the RWQCB to Industrial Asphalt dated June 26, 1996.

In September 1996, groundwater extraction pumps and piping were removed from the well vaults at the passive remediation wells (wells EW-2, EW-3, EW-4, EW-5, EW-8, EW-10, and EW-11) in preparation for sock installation. On September 26 and 27, 15 foot lengths of 4-inch diameter socks containing Oxygen Release Compound (ORC®) were installed in each of the seven passive remediation wells.

ORC® socks were installed according to manufacturer instructions. Socks are suspended in each well with manufacturer-provided nylon ropes, tied to a 1-inch schedule 40 galvanized steel bar on the top of the casing of each extraction well. PVC slip caps were slotted to allow them to slip over the steel suspension bar, and installed over each well casing.

Approximately one week and four weeks following installation of the ORC® socks (October 3 and 21, 1996), dissolved oxygen (DO) levels were measured in groundwater in surrounding monitoring wells at 5, 15, and 25 feet below static water level (SWL).

DO results for both events are presented in Table 2. DO levels on October 3, 1996 ranged from 1.20 to 7.45 mg/L; DO levels on October 21, 1996 ranged from 1.63 to 7.80 mg/L. A DO concentration of 2.0 mg/L generally represents the amount of oxygen necessary to initiate and/or maintain aerobic bioremediation of soluble hydrocarbons in groundwater. DO readings exceeding 2.0 mg/L were observed in all wells tested, except for wells MW-1 and MW-2.

DO levels were also recorded on April 29, 1997 and as part of each subsequent semi-annual monitoring event. DO readings in the April 1997 event ranged from 0.10 to 5.30 mg/L.

APPENDIX B

KA KLEINFELDER

WELL NO. MW-1

WELL DEVELOPMENT & SAMPLING LOG

Date: 4-30-98

Weather: Warm, Hazy

Sheet 1 of 1

Project: Industrial Asphalt

Submitted By: S. Quayle / K. Powers

Date: 5-1-98

Project No.: 10-1682-09/801

Reviewed By:

Date:

Purpose of Log Development Sampling

Equipment & Decontamination	Purging Equipment	Bailer	<input checked="" type="checkbox"/> Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:		
	Sampling Equipment	Bailer	<input checked="" type="checkbox"/> Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:		
	Test Equipment	Water Level		pH		Conductivity		Turbidity	
	Meter No.	12185		90575		90293		NA	
	Calibration Date/Time	NA		4-30-98/0922		4-30-98/0920			
	Decontamination Methods	Wash		Rinse I		Rinse II		Rinse III	
	TSP	DI	Steam	DI	Steam	DI	Steam	DI	Steam
	Alconox	Tap	Hot	Tap	Hot	Tap	Hot	Tap	Hot
	Other:	Other	Cool	Other	Cool	Other	Cool	Other	Cool
	Vol. (gal):	NA							
Source:									
Decon. Notes:									

Well Security: good fair poor Well Integrity: good fair poor Locked: yes no

Development / Purge Record	Purge Volume (CV)	T.D.	-	DTW	x	Factor	x	1 C.V.	=	4.2 gal	
	Well Diam.: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4"	87.4 ft.	-	63.56 ft.	x	2 = 0.175	x	3	=	12.6 gal	
	Free Product?: Odor:	no <input checked="" type="checkbox"/> yes <input type="checkbox"/>	Floating Product:		none	<input checked="" type="checkbox"/> sheer	<input type="checkbox"/> spots	<input type="checkbox"/> film			feet thick
	Time (24-hr)	10:50	11:00	11:16	11:30						Replicate Goals
	Gallons Purged	0	4.2	8.4	12.6						(dev. only)
	Surged (minutes)	↑	NA								±0.10
	pH	S	6.70	6.74	6.74		stable				±1°C
	Temperature (°C)	T	19.1	19.2	19.3						±10%
	Cond. (µmhos/cm)	A	720	720	720						±10%
	Salinity (%)	R	0.4	0.4	0.4						<50 NTUs
Turbidity (NTU's)	T									Colorless	
Color	↓	slightly cloudy								±0.01'	
Depth to Water											
Reference Point:	<input checked="" type="checkbox"/> TOC		Other:								

Sample Log	Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
	MW-1	11:35	2	1L	Amber	—	—	TPH-d/10	AEN
		1	1L	Amber	—	—	PCBs		

Other Observations:

Final Check: VOAs free of bubbles? yes / no / NA

Well Locked? yes / no / NA

WELL DEVELOPMENT & SAMPLING LOG

WELL NO. MW-2

Date: 4-30-98 Weather: Warm, Hazy Sheet 1 of 1
 Project: Industrial Asphalt Submitted By: S. Quayle, K. Powers Date: 5-1-98
 Project No.: 10-168Z-09/801 Reviewed By: _____ Date: _____

Purpose of Log Development Sampling

Equipment & Decontamination	Purging Equipment	Bailer	Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:
	Sampling Equipment	Bailer	Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:
	Test Equipment	Water Level		pH		Conductivity	Turbidity
	Meter No.	12185		90575		09293	NA
	Calibration Date/Time	NA		4-30-98/0922		4-30-98/0920	
	Decontamination Methods	Wash		Rinse I		Rinse II	Rinse III
	TSP	DI Tap	Steam Hot	DI Tap	Steam Hot	DI Tap	Steam Hot
	Alconox	Other	Cool	Other	Cool	Other	Cool
	Other:						
	Vol. (gal):	3-4		3-4		3-4	1-2
Source:	Alambra						
Decon. Notes:	Pump hose is cleaned as it is removed						

Well Security: good (fair) poor Well Integrity: good (fair) poor Locked: (yes) no

Development / Purge Record	Purge Volume (CV)	T.D.	-	DTW	x	Factor	x	1 C.V.	=	17 gal
	Well Diam.: □ 2" □ 4"	90 ft.	-	64.13 ft.	x	2=0.175 4=0.653	x	3CV	=	41 gal
	Free Product?: Odor:	no (yes)	Floating Product:		none	(green)	film			feet thick
	Time (24-hr)	1730	1734	1737	1741	1756				Replicate Goals
	Gallons Purged	0	17	34	51					(dev. only)
	Surged (minutes)	↑	NA							
	pH	S	6.77	6.77	6.77					±0.10
	Temperature (°C)	T	19.5	19	19.5					±1°C
	Cond. (µmhos/cm)	A	800	820	810					±10%
	Salinity (%)	R	0.8	0.8	0.8					±10%
Turbidity (NTU's)	T								<50 NTUs	
Color	↓	Clear	Clear	Clear					Colorless	
Depth to Water	64.13				64.25'				±0.01'	
Reference Point:	TOC		Other:							

Sample Log	Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
	MW-2	1800	2	1L	Amber	—	—	TPH-d/MO	A
			1	1L	Amber	—	—	PCBs	E
	Duplicate	1800	(Later time for Lab duplicate)						N
	MW-22	1815	2	1L	Amber	—	—	TPH-d/mo	
			1	1L	"	—	—	PCBs	

Other Observations: _____

Final Check: VOAs free of bubbles? yes / no / NA Well Locked? yes / no / NA

WELL DEVELOPMENT & SAMPLING LOG **WELL NO. MW-3**
 Date: 4-30-98 Weather: Warm, Hazy Sheet 1 of 1
 Project: Industrial Asphalt Submitted By: S. Quayle, K. Powers Date: 5-1-98
 Project No.: 10-1682-09/801 Reviewed By: _____ Date: _____

Purpose of Log Development Sampling

Equipment & Decontamination	Purging Equipment	Bailer <u>3</u>	Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:	
	Sampling Equipment	Bailer	Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:	
	Test Equipment	Water Level		pH		Conductivity	Turbidity	
	Meter No.	12185		90575		09293	NA	
	Calibration Date/Time	NA		4-30-98/0922		4-30-98/0920		
	Decontamination Methods	Wash		Rinse I		Rinse II		Rinse III
		DI Tap Other	Steam Hot Cool	DI Tap Other	Steam Hot Cool	DI Tap Other	Steam Hot Cool	DI Tap Other
	TSP Alconox							
	Other:							
	Vol. (gal):	3-4		3-4		3-4		1-2
Source:	Alambra							
Decon. Notes:	Pump hose is cleaned as it is removed							

Well Security: good (fair) poor Well Integrity: good (fair) poor Locked: (yes) no

Development / Purge Record	Purge Volume (CV)	T.D.	-	DTW	x	Factor	x	1 C.V.	=	8 gal
	Well Diam.: □ 2" □ 4"	75.4 ft.	-	63.30 ft.	x	$\frac{2-4125}{4-0663}$	x	3 CV	=	24 gal
	Free Product?: Odor:	no (yes) H ₂ S	Floating Product:		none spots	sheen	film			feet thick
	Time (24-hr)	15:15	15:23	15:42	15:59					Replicate Goals
	Gallons Purged	0	8	16	24					(dev. only)
	Surged (minutes)	↑	NA							
	pH	S	6.80	6.96	6.95					±0.10
	Temperature (°C)	T	19	19	19					±1°C
	Cond. (µmhos/cm)	A	720	699	710					±10%
	Salinity (‰)	R	0.9	0.8	0.8					±10%
Turbidity (NTU's)	T								<50 NTUs	
Color	↓	silty gray → → →								Colorless
Depth to Water		63.30								±0.01'
Reference Point:	TOC		Other:							

Sample Log	Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
	16:05			2	1L	Amber	—	—	TPH-d/MO
MW-3	16:05	1	1L	Amber	—	—	PCBS	E	
									N

Other Observations: Pump on @ 15:59

Final Check: VOAs free of bubbles? yes / no / (NA) Well Locked? (yes) / no / NA

WELL DEVELOPMENT & SAMPLING LOG **WELL NO.** MW-4
 Date: 4-30-98 Weather: Warm, Hazy Sheet 1 of 1
 Project: Industrial Asphalt Submitted By: S. Quayle / K. Powers Date: 5-1-98
 Project No.: 10-1682-09/801 Reviewed By: Date:
 Purpose of Log Development Sampling

Equipment & Decontamination	Purging Equipment	Bailer	Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:	
	Sampling Equipment	Bailer	Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:	
	Test Equipment	Water Level		pH		Conductivity		Turbidity
	Meter No.	12185		90575		90293		NA
	Calibration Date/Time	NA		4-30-98/0922		4-30-98/0920		
	Decontamination Methods	Wash		Rinse I		Rinse II		Rinse III
	TSP	DI Tap Other	Steam Hot Cool	DI Tap Other	Steam Hot Cool	DI Tap Other	Steam Hot Cool	DI Tap Other
	Alconox							
	Other:							
	Vol. (gal):	3-4		3-4		3-4		1-2
Source:	Alambra							
Decon. Notes:	Pump hose is cleaned as it is removed							

Well Security: good (fair) poor Well Integrity: good (fair) poor Locked: (yes) no

Development / Purge Record	Purge Volume (CV)	T.D.	-	DTW	x	Factor	x	I.C.V.	=	22 gal
	Well Diam.: □ 2" □ 4"	95 ft.	-	61.07 ft.	x	r=0.175 k=0.663	x	3 CV	=	66 gal
	Free Product?: Odor:	(no) yes		Floating Product:	(none)	sheen		film		feet thick
	Time (24-hr)	1419	1424	1428	1432	1443				Replicate Goals
	Gallons Purged	0	22	44	66					(dev. only)
	Surged (minutes)	↑	NA							
	pH	S	7.13	7.09	7.09					±0.10
	Temperature (°C)	T	20	19	19					±1°C
	Cond. (µmhos/cm)	A	700	700	700					±10%
	Salinity (‰)	R	0.7	0.7	0.7					±10%
Turbidity (NTU's)	T								<50 NTUs	
Color	↓	clear	clear	clear					Colorless	
Depth to Water		61.07						60.94	±0.01'	
Reference Point:	TOC		Other:							

Sample Log	Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
		MW-4	1445	2	1L	Amber	—	—	TPH-d/MO

Other Observations: Pump on @ 1419, Pump off @ 1432

Final Check: VOAs free of bubbles? yes / no (NA) Well Locked? (yes) / no / NA

WELL DEVELOPMENT & SAMPLING LOG

WELL NO. MW-5

Date: 4-28-98 Weather: Warm, Hazy
 Project: Industrial Asphalt Submitted By: K. Powers / S. Quayle
 Project No.: 10-168Z-09/801 Reviewed By: _____
 Sheet 1 of 1 Date: 5-1-98
 Date: _____

Purpose of Log Development Sampling

Equipment & Decontamination	Purging Equipment	Bailer	Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:	
	Sampling Equipment	Bailer	Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:	
	Test Equipment	Water Level		pH		Conductivity		Turbidity
	Meter No.	12185		90575		90293		NA
	Calibration Date/Time	NA		4-28-98 / 1616		4-28-98 / 1612		
	Decontamination Methods	Wash		Rinse I		Rinse II		Rinse III
		DI Tap Other	Steam Hot Cool	DI Tap Other	Steam Hot Cool	DI Tap Other	Steam Hot Cool	DI Tap Other
	TSP Alconox							
	Other:							
	Vol. (gal):	3-4		3-4		3-4		1-2
Source:	Alambra							
Decon. Notes:	Pump hose is cleaned as it is removed							

Development / Purge Record	Well Security:	good	(fair)	poor	Well Integrity:	good	(fair)	poor	Locked:	(yes)	no
	Purge Volume (CV)	T.D.	-	DTW	x	Factor	x	1 C.V	=	29	gal
	Well Diam.: <input type="checkbox"/> 2" <input type="checkbox"/> 4"	110.4 ft.	-	67.15 ft.	x	$\frac{2-0.125}{4-0.663}$	x	3 CV	=	87	gal
	Free Product?: Odor:	(no)	yes	Floating Product:	(none)	sheen	film				feet thick
	Time (24-hr)	1623 1631	1631	1638	1645	1700					Replicate Goals
	Gallons Purged	0	29	58	87						(dev. only)
	Surged (minutes)	↑	NA								
	pH	S	7.03	7.03	7.06						±0.10
	Temperature (°C)	T	17	16.5	16						±1°C
	Cond. (µmhos/cm)	A	530	530	530						±10%
Salinity (‰)	R	0	0	0						±10%	
Turbidity (NTU's)	T									<50 NTUs	
Color	↓	Clear	Clear	Clear						Colorless	
Depth to Water		67.15'			67.15'					±0.01'	
Reference Point:	(TOC) Other:										

Sample Log	Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
	MW-5	9:10	2	1L	Amber	—	—	TPH-d/MO	A E N

Other Observations: 1623 Pump on, 1645 pump off
 80% = 75.8'

Final Check: VOAs free of bubbles? yes / no / (NA) Well Locked? (yes) / no / NA

WELL DEVELOPMENT & SAMPLING LOG

WELL NO. MW-6

Date: 4-30-98 Weather: Warm, Hazy Sheet 1 of 1
 Project: Industrial Asphalt Submitted By: S. Quayle / K. Powers Date: 5-1-98
 Project No.: 10-168Z-09/801 Reviewed By: _____ Date: _____

Purpose of Log Development Sampling

Equipment & Decontamination	Purging Equipment	Bailer	Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:
	Sampling Equipment	Bailer	Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:
	Test Equipment	Water Level		pH		Conductivity	Turbidity
	Meter No.	12185		90575		90293	NA
	Calibration Date/Time	NA		4-30-98/0922		4-30-98/0920	
	Decontamination Methods	Wash		Rinse I		Rinse II	Rinse III
	TSP	DI Tap	Steam Hot	DI Tap	Steam Hot	DI Tap	Steam Hot
	Alconox	Other	Cool	Other	Cool	Other	Cool
	Other:						
	Vol. (gal):	3-4		3-4		3-4	1-2
Source:	Alambrá						
Decon. Notes:	Pump hose is cleaned as it is removed						

Well Security: good (fair) poor Well Integrity: good (fair) poor Locked: (yes) no

Development / Purge Record	Purge Volume (CV)	T.D.	-	DTW	x	Factor	x	1 C.V.	=	28 gal
	Well Diam.: □ 2" □ 4"	106 ft.	-	63.35 ft.	x	2=0.175 4=0.663	x	3 CV	=	84 gal
	Free Product?: Odor:	(no) yes	Floating Product:		(none)	sheen	film			feet thick
	Time (24-hr)	1033	1042	1047	1053	1119				Replicate Goals
	Gallons Purged	0	28	56	84					(dev. only)
	Surged (minutes)	↑	NA							±0.10
	pH	S	6.89	6.90	6.91					±1°C
	Temperature (°C)	T	20	19	19					±10%
	Cond. (µmhos/cm)	A	700	700	700					±10%
	Salinity (‰)	R	0.4	0.4	0.4					<50 NTUs
Turbidity (NTU's)	T								Colorless	
Color	↓	slightly cloudy	clear	clear					±0.01'	
Depth to Water		63.35'				63.25				
Reference Point:	(TOC)	Other:								

Sample Log	Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
	MW-6	1125	2	1L	Amber	—	—	TPH-d/MO	A
									E
									N

Other Observations: Pump on @ 1033, Pump off @ 1053

Final Check: VOAs free of bubbles? yes / no / NA Well Locked? (yes) / no / NA

KA KLEINFELDER

WELL DEVELOPMENT & SAMPLING LOG **WELL NO. MW-7**
 Date: 4-30-98 Weather: Warm, Hazy Sheet 1 of 1
 Project: Industrial Asphalt Submitted By: S. Quayle / K. Powers Date: 5-1-98
 Project No.: 10-1682-09/801 Reviewed By: _____ Date: _____
 Purpose of Log: Development Sampling

Equipment & Decontamination	Purging Equipment	Bailer	Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:	
	Sampling Equipment	Bailer	Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:	
	Test Equipment	Water Level		pH		Conductivity		Turbidity
	Meter No.	12185		90575		90293		NA
	Calibration Date/Time	NA		4.30.98/0922		4.30.98/0920		
	Decontamination Methods	Wash		Rinse I		Rinse II		Rinse III
	TSP	DI (Tap)	Steam Hot	DI (Tap)	Steam Hot	DI (Tap)	Steam Hot	DI (Tap)
	Alconox	Other	Cool	Other	Cool	Other	Cool	Other
	Other:							
	Vol. (gal):	3-4		3-4		3-4		1-2
Source:	Alambra							
Decon. Notes:	Pump hose is cleaned as it is removed							

Development / Purge Record	Well Security: good (fair) poor	Well Integrity: good (fair) poor	Locked: yes no				
	Purge Volume (CV)	T.D. -	DTW x	Factor x 1 C.V. =	30 gal		
	Well Diam.: \square 2" \square 4"	108 ft.	62.92 ft.	$r=0.175$ $r=0.663$ x 3 =	90 gal		
	Free Product?: Odor: (no) yes	Floating Product: (none)	sheen	film	feet thick		
	Time (24-hr)	0932	0944	0953	1001	1011	Replicate Goals
	Gallons Purged	0	30	60	90		(dev. only)
	Surged (minutes)	↑	NA				
	pH	S	6.98	6.97	6.98		±0.10
	Temperature (°C)	T	19	19	19		±1°C
	Cond. (µmhos/cm)	A	600	600	600	STABLE	±10%
Salinity (‰)	R	0.4	0.4	0.4		±10%	
Turbidity (NTU's)	T					<50 NTUs	
Color	↓	Clear	clear	clear		Colorless	
Depth to Water	62.92				62.89	±0.01'	
Reference Point:	(TOC)	Other:					

Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
MW-7	1015	2	1L	Amber	—	—	TPH-d/MO	A
								E
								N

Misc Other Observations: Pump on 0932, Pump off 1001
80% recharge = 72'
 Final Check: VOAs free of bubbles? yes / no (NA) Well Locked? (yes) / no / NA

WELL DEVELOPMENT & SAMPLING LOG

WELL NO. MW-8

Date: 4-30-98 Weather: Warm, Hazy Sheet 1 of 1
 Project: Industrial Asphalt Submitted By: S. Quayle, K. Powers Date: 5-1-98
 Project No.: 10-168Z-09/801 Reviewed By: _____ Date: _____

Purpose of Log Development Sampling

Equipment & Decontamination	Purging Equipment	Bailer	Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:
	Sampling Equipment	Bailer	Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:
	Test Equipment	Water Level		pH		Conductivity	Turbidity
	Meter No.	12185		90575		09293	NA
	Calibration Date/Time	NA		4-30-98/0922		4-30-98/0920	
	Decontamination Methods	Wash		Rinse I		Rinse II	Rinse III
	TSP	DI Tap	Steam Hot	DI Tap	Steam Hot	DI Tap	Steam Hot
	Alconox	Other	Cool	Other	Cool	Other	Cool
	Other:						
	Vol. (gal):	3-4		3-4		3-4	1-2
Source:	Alambra						
Decon. Notes:	Pump hose is cleaned as it is removed						

Well Security: good (fair) poor Well Integrity: good (fair) poor Locked: (yes) no

Development / Purge Record	Purge Volume (CV)	T.D.	-	DTW	x	Factor	x	1 C.V.	=	30 gal
	Well Diam.: □ 2" □ 4"	108 ft.	-	63.09 ft.	x	2.0175 r=0.663	x	3 CV	=	90 gal
	Free Product?: Odor:	no (yes)		Floating Product:	none	(sheen)		film		feet thick
	Time (24-hr)	1640	1646	1653	1700	1707				Replicate Goals
	Gallons Purged	0	30	60	90					(dev. only)
	Surged (minutes)	↑	NA							
	pH	S	6.85	6.90	6.91					±0.10
	Temperature (°C)	T	19	19	19					±1°C
	Cond. (µmhos/cm)	A	720	700	700					±10%
	Salinity (‰)	R	0.7	0.7	0.7					±10%
Turbidity (NTU's)	T								<50 NTUs	
Color	↓	slightly cloudy	clear	clear					Colorless	
Depth to Water	63.09				62.98				±0.01'	
Reference Point:	(TOC)	Other:								

Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
MW-8	1710	2	1L	Amber	—	—	TPH-d/MO	A
		1	1L	Amber	—	—	PCBs	E
								N

Other Observations: Pump on @ 1640, Pump off @ 1700

Final Check: VOAs free of bubbles? yes / no / (NA) Well Locked? (yes) / no / NA

WELL DEVELOPMENT & SAMPLING LOG

WELL NO. MW-14

Date: 4-30-98 Weather: Warm Hazy Sheet 1 of 1
 Project: Industrial Asphalt Submitted By: S. Quayle / K. Powers Date: 5-1-98
 Project No.: 10-168Z-09/801 Reviewed By: Date:

Purpose of Log Development Sampling

Equipment & Decontamination	Purging Equipment	Bailer	Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:	
	Sampling Equipment	Bailer	Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:	
	Test Equipment	Water Level		pH		Conductivity	Turbidity	
	Meter No.	17185		90575		90793	NA	
	Calibration Date/Time	NA		4-30-98/0922		4-30-98/0920		
	Decontamination Methods	Wash		Rinse I		Rinse II		Rinse III
		DI Tap Other	Steam Hot Cool	DI Tap Other	Steam Hot Cool	DI Tap Other	Steam Hot Cool	DI Tap Other
	Other:	TSP Alconox						
	Vol. (gal):	3-4		3-4		3-4		1-2
	Source:	Alambra						
Decon. Notes:	Pump hose is cleaned as it is removed							

Well Security: good (fair) poor Well Integrity: good (fair) poor Locked: (yes) no

Development / Purge Record	Purge Volume (CV)	T.D.	-	DTW	x	Factor	x	1 C.V.	=	33 gal
	Well Diam.: □ 2" □ 4"	114 ft.	-	64.63 ft.	x	$\frac{2-0.175}{4-0.663}$	x	3 CV	=	99 gal
	Free Product?: Odor:	(no) yes	Floating Product:		(none)	sheen	film			feet thick
	Time (24-hr)	1326	1334	1341	1348	1403				Replicate Goals
	Gallons Purged	0	33	66	99					(dev. only)
	Surged (minutes)	↑	NA							
	pH	S	7.30	7.25	7.26					±0.10
	Temperature (°C)	T	20.5	20	20					±1°C
	Cond. (µmhos/cm)	A	650	630	630		STABLE			±10%
	Salinity (‰)	R	0.2	0.2	0.2					±10%
Turbidity (NTU's)	T								<50 NTUs	
Color	↓	Cloudy	slightly cloudy	slightly cloudy					Colorless	
Depth to Water		64.63			64.51				±0.01'	
Reference Point:	(TOC)		Other:							

Sample Log	Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
	MW-14	1405	2	1L	Amber	—	—	TPH-d/MO	A E N

Other Observations: Pump on @ 1326; Pump off @ 1348

Final Check: VOAs free of bubbles? yes / no / (NA) Well Locked? (yes) / no / NA

WELL DEVELOPMENT & SAMPLING LOG

WELL NO. MW-15

Date: 4-30-98 Weather: Warm Hazy Sheet 1 of 1
 Project: Industrial Asphalt Submitted By: S. Quayle / K. Powers Date: 5-1-98
 Project No.: 10-1682-09/801 Reviewed By: Date:

Purpose of Log Development Sampling

Equipment & Decontamination	Purging Equipment	Baller	Disposable Baller	Suction Pump	Submersible Pump	Dedicated Pump	Other:	
	Sampling Equipment	Baller	Disposable Baller	Suction Pump	Submersible Pump	Dedicated Pump	Other:	
	Test Equipment	Water Level		pH		Conductivity		Turbidity
	Meter No.	12185		90575		90293		NA
	Calibration Date/Time	NA		4-30-98/0922		4-30-98/0920		
	Decontamination Methods	Wash		Rinse I		Rinse II		Rinse III
		DI Tap Other	Steam Hot Cool	DI Tap Other	Steam Hot Cool	DI Tap Other	Steam Hot Cool	DI Tap Other
	TSP Alconox							
	Other:							
	Vol. (gal):	3-4		3-4		3-4		1-2
Source:	Alambra							
Decon. Notes:	Pump hose is cleaned as it is removed							

Well Security:	good	(fair)	poor	Well Integrity:	good	(fair)	poor	Locked:	yes	no
Purge Volume (CV)	T.D.	-	DTW	x	Factor	x	1 C.V	=	36	gal
Well Diam.: □ 2" □ 4"	117 ft.	-	62.72 ft.	x	2=0.175 4=0.663	x	3 CV	=	108	gal
Free Product?: Odor:	no	yes	Floating Product:	none	sheen	film				feet thick
Time (24-hr)	1158	1205	1213	1220	1235					Replicate Goals
Gallons Purged	0	36	72	108						(dev. only)
Surged (minutes)	↑	NA								
pH	S	7.13	7.13	7.12						±0.10
Temperature (°C)	T	20	20	19						±1°C
Cond. (µmhos/cm)	A	650	650	625						±10%
Salinity (‰)	R	0.4	0.4	0.4						±10%
Turbidity (NTU's)	T									<50 NTUs
Color	↓	Clear	Clear	Clear						Colorless
Depth to Water		62.72			62.69					±0.01'
Reference Point:	(TOC)		Other:							

Sample Log	Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
		MW-15	1240.	2	1L	Amber	—	—	TPH-d/MO

Other Observations: Pump on 1158, Pump off @ 1220.

Final Check: VOAs free of bubbles? yes / no / (NA) Well Locked? yes / no / NA

WELL DEVELOPMENT & SAMPLING LOG

WELL NO. MW16

Date: 4-30-98 Weather: Warm, Hazy Sheet 1 of 1
 Project: Industrial Asphalt Submitted By: S. Quyle / K. Powers Date: 5-1-98
 Project No.: 10-168Z-09/801 Reviewed By: _____ Date: _____

Purpose of Log Development Sampling

Equipment & Decontamination	Purging Equipment	Bailer	Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:	
	Sampling Equipment	Bailer	Disposable Bailer	Suction Pump	Submersible Pump	Dedicated Pump	Other:	
	Test Equipment	Water Level		pH		Conductivity		Turbidity
	Meter No.	12185		90575		90293		NA
	Calibration Date/Time	NA		4-30-98 / 0922		4-30-98 / 0920		
	Decontamination Methods	Wash		Rinse I		Rinse II		Rinse III
	TSP	DI Tap	Steam Hot	DI Tap	Steam Hot	DI Tap	Steam Hot	DI Tap
	Alconox	Other	Cool	Other	Cool	Other	Cool	Other
	Other:							
	Vol. (gal):	3-4		3-4		3-4		1-2
Source:	Alambra							
Decon. Notes:	Pump hose is cleaned as it is removed							

Development / Purge Record	Well Security:	good	(fair)	poor	Well Integrity:	good	(fair)	poor	Locked:	yes	(no)
	Purge Volume (CV)	T.D.	-	DTW	x	Factor	x	1 C.V.	=	30 gal	
	Well Diam.: □ 2" □ 4"	109 ft.	-	63.95 ft.	x	2 = 0.175 4 = 0.663	x	3 CV.	=	90 gal	
	Free Product?: Odor:	(no) yes		Floating Product:	(none)	sheen		film		feet thick	
	Time (24-hr)	1504	1510	1516	1522	1548				Replicate Goals	
	Gallons Purged	0	30	60	90					(dev. only)	
	Surged (minutes)	↑	NA								
	pH	S	7.15	7.15	7.15					±0.10	
	Temperature (°C)	T	20	20	20.5					±1°C	
	Cond. (µmhos/cm)	A	690	690	690	STABLE				±10%	
Salinity (‰)	R	0.7	0.7	0.8					±10%		
Turbidity (NTU's)	T								<50 NTUs		
Color	↓	slightly cloudy	slightly cloudy	slightly cloudy					Colorless		
Depth to Water		63.95			63.82				±0.01'		
Reference Point:	(TOC)		Other:								

Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
MW-16	1550	2	1L	Amber	—	—	TPH-d/MO	A E N

Other Observations: Pump on @ 1504, Pump off @ 1548

Final Check: VOAs free of bubbles? yes / no (NA) Well Locked? yes (no) NA

KA KLEINFELDER

RECORD OF WATER LEVEL MEASUREMENTS

Date: 4-28-98 Weather: Warm, Hazy, 80° Sheet 1 of 1
 Project: Industrial Asphalt Submitted By: K. Powers / S. Quayle Date: 5-1-98
 Project No.: 10-1682-09/801 Reviewed By: _____ Date: _____
 Instrument Number: 12185

T.D.

87.4

90

75.4

95

110.4

106

108

108

114

117

109

Well Number	Time (opened/measured) (24-hr)	Sensitivity Setting (est. %)	Measuring Point (M.P.)	Measurement			Replicate Measurements (if requested)			Notes	(locked?)
				1	2	3	1	2	3		
MW-1	1123 / 1539		TOC	63.56'						- TOC damaged ~ 1" off	
MW-2	1030 / 1527			64.31'							
MW-3	1105 / 1501			63.30'							
MW-4	1044 / 1431			61.07'							
MW-5	1153 / 1224			67.15'							Y
MW-6	1133 / 1337			63.35'							
MW-7	1144 / 1323			62.92'							
MW-8	1039 / 1514			63.09'							
MW-14	1030 / 1416			64.63'						- water in christy box	
MW-15	1032 / 1350			62.72'						- water in christy box	
MW-16	1102 / 1447			62.95'							
MW-1 SR	1146 / 1150		▽	67.55'							N

M.P.: TOC, GS, Cover ring, Other:

All Wells Locked -- YES / NO

RECORD OF WATER LEVEL MEASUREMENTS

Date: 4-28-98 Weather: Warm, Hazy Sheet 1 of 1
 Project: Industrial Asphalt Submitted By: S. Quayle / K. Powers Date: 5-1-98
 Project No.: 10-1682-09/801 Reviewed By: _____ Date: _____

Instrument Number: _____

T.D.
7.4
9.0
75.4
95
10.4
106
108
108
114
117
109

Well Number	Time (24-hr)	Sensitivity Setting (est. %)	Measuring Point (M.P.)	Measurement	Replicate Measurements (if requested)			Depth below Notes			Inched?
					1	2	3	5'	15'	25'	
MW-1	1542			68.56	78.56	88.56	88.0	0.75/18.3	0.15/18.1	0.45/18.0	✓
MW-2	1530			69.31	79.31	89.31		0.70/18.7	0.3/18.5	0.15/18.1	✓
MW-3	15:10			68.30	74.0			6.25/17.8	0.7/17.7		✓
MW-4	1433			66.07	76.07	86.07		7.8/18.0	8.0/17.9	7.8/17.9	
MW-5	1310			72.15	82.15	92.15		4.0/15.30	4.1/14.9	4.4/14.9	
MW-6	1340			68.35	78.35	88.35		2.2/17.9	2.3/17.8	2.3/17.7	
MW-7	13:30			67.92	77.92	87.92		3.1/17.4	3.5/17.3	3.5/17.2	
MW-8	1517			68.09	78.09	88.09		0.30/18.2	0.25/18.1	0.15/18.0	✓ 1
MW-14	1418			59.63	79.63	89.63		3.6/18.9	1.85/18.5	1.9/18.2	
MW-15	1352			67.72	77.72	87.72		1.0/17.8	0.35/17.7	0.25/17.5	
MW-16	1450			68.95	78.95	88.95		2.5/17.8	0.5/17.7	2.25/17.7	

M.P.: TOC, GS, Cover ring, Other: _____ All Wells Locked -- YES / NO

APPENDIX C

ONSITE
ENVIRONMENTAL
LABORATORIES, INC.

May 11, 1998

Mr. Steve Walker
Kleinfelder
7133 Koll Center Parkway, Suite 100
Pleasanton, CA 94566

Project Name: Industrial Asphalt

Attached are the laboratory analytical reports for the samples collected on April 28 & 30, 1998 and received by Onsite Environmental Laboratories on May 1, 1998. Also enclosed is a copy of the completed chain-of-custody records. All unused samples will be discarded after June 1, 1998 unless instructed otherwise.

If you have any questions regarding these reports, please contact us at (510) 490-8571.

Sincerely,



Peter Balas
Vice President
Onsite Environmental Services

LABORATORY ANALYTICAL REPORT
EPA Method 8015(m) Extractables

ONSITE
 ENVIRONMENTAL
 LABORATORIES, INC.

Date sampled : 4/28,30/98
 Date received : 5/1/98
 Date reported : 5/8/98
 Report # : 1E045.RPT
 Lab. ID # : 1E045

Project Mgr : Steve Walker
 Client : Kleinfelder
 Project : Industrial Asphalt
 Units : ug/l
 Matrix : Water

Field ID Number		MW-5	MW-7	MW-6	MW-1	MW-15	14A2	MW-14
Lab ID Number		1E045-01	1E045-02	1E045-03	1E045-04	1E045-05	1E045-06	1E045-07
Date Analyzed		5/5/1998	5/5/98	5/5/98	5/7/98	5/7/98	5/7/98	5/7/98
Analyte	RL							
TPH as Diesel	50	55	ND	ND	730	ND	ND	62
TPH as Motor Oil	100	ND	ND	ND	430	ND	ND	ND
Surrogate % Recovery	65-135%	72%	70%	72%	76%	70%	67%	74%
Dilution Factor		1	1	1	1	1	1	1

Notes :

ND - Analytes not detected at, or above the stated detection limit
 PQL - Practical Quantitation Limit - Multiply RL by the DF to obtain the PQL for a specific sample
 M - Matrix effect confirmed
 RL - Reporting limit
 ug/l - Micrograms per liter (PPB)

LABORATORY ANALYTICAL REPORT
EPA Method 8015(m) Extractables



Date sampled : 4/28,30/98
 Date received : 5/1/98
 Date reported : 5/8/98
 Report # : 1E045.RPT
 Lab. ID # : 1E045

Project Mgr : Steve Walker
 Client : Kleinfelder
 Project : Industrial Asphalt
 Units : ug/l
 Matrix : Water

Field ID Number		MW-4	MW-16	MW-3	MW-8	MW-2	MW-22	
Lab ID Number		1E045-08	1E045-09	1E045-10	1E045-11	1E045-12	1E045-13	
Date Analyzed		5/7/98	5/7/98	5/7/98	5/7/98	5/7/98	5/7/98	
Analyte	RL							
TPH as Diesel	50	ND	130	2300	140	6400	2500	
TPH as Motor oil	100	ND	ND	1600	330	3500	1300	
Surrogate % Recovery	65-135%	65%	74%	75%	69%	88%	68%	
Dilution Factor		1	1	1	1	1	1	

Notes :

ND - Analytes not detected at, or above the stated detection limit
 PQL - Practical Quantitation Limit - Multiply RL by the DF to obtain the PQL for a specific sample
 M - Matrix effect confirmed
 RL - Reporting limit
 ug/l - Micrograms per liter (PPB)

**LABORATORY QA / QC REPORT
EPA Method 8015(m) Extractables**



Date sampled : 4/28,30/98
 Date received : 5/1/98
 Date analyzed : 5/5/98
 Date reported : 5/8/98
 Report # : 980505DW.QAC
 Lab. ID # : 1E044-01

Project Mgr : Steve Walker
 Client : Kleinfelder
 Project : Industrial Asphalt
 Units : ug/l
 Matrix : Water

Field ID Number Lab ID Number		Method Blank	Spike Amount	LCS % Rec.	MS % Rec.	MSD % Rec.	RPD
Analyte	RL						
TPH as Diesel	50	ND	500	80%	86%	84%	2%
TPH as Motor oil	100	ND	-	-	-	-	-
Surrogate % Recovery	65-135%	67%		76%	83%	73%	
Dilution Factor		1		1	1	1	

Notes :
 ND - Analytes not detected at, or above the stated detection limit
 PQL - Practical Quantitation Limit - Multiply RL by the DF to obtain the PQL for a specific sample
 M - Matrix effect confirmed
 RL - Reporting limit
 ug/l - Micrograms per liter (PPB)

LABORATORY ANALYTICAL REPORT
EPA Method 8015(m) Extractables



Date sampled : 5/1/98
 Date received : 5/1/98
 Date reported : 5/7/1998 - 5/8/1998
 Report # : 98028a.rpt
 Lab. ID # : 98028

Project Mgr : Steve Walker
 Client : Kleinfelder
 Project : Industrial Asphalt
 Units : ug/l
 Matrix : Water

Lab ID Number		1	2	3	4	5		
Field ID Number		MW-1	MW-3	MW-8	MW-2	MW-22		
Analyte	RL							
Aroclor 1016	1	ND	ND	ND	ND	ND		
Aroclor 1221	1	ND	ND	ND	ND	ND		
Aroclor 1232	1	ND	ND	ND	ND	ND		
Aroclor 1242	1	ND	ND	ND	ND	ND		
Aroclor 1248	1	ND	ND	ND	ND	ND		
Aroclor 1254	1	ND	ND	ND	ND	ND		
Aroclor 1260	1	ND	ND	ND	ND	ND		
Surrogate % Recovery		101%	22%	100%	61%	21%		
Dilution Factor		1	1	1	1	1		

Notes :

ND - Analytes not detected at, or above the stated detection limit
 PQL - Practical Quantitation Limit - Multiply RL by the DF to obtain the PQL for a specific sample
 RL - Reporting limit
 ug/l - Micrograms per liter (PPB)

LABORATORY QC REPORT
EPA Method 8080 (PCB)

Date extracted : 5/7/98
 Date analyzed : 5/7/1998 - 5/8/1998
 Report # : 98028c.qac

Project Mgr : Steve Walker
 Client : Kleinfelder
 Project : Industrial Asphalt
 Units : ug/L
 Matrix : water

		Method Blank	Spike Conc.	LCS % Rec.			
ANALYTE	RL						
Aroclor 1016	1	ND	2.5	154%			
Aroclor 1221	1	ND	-	-			
Aroclor 1232	1	ND	-	-			
Aroclor 1242	1	ND	-	-			
Aroclor 1248	1	ND	-	-			
Aroclor 1254	1	ND	-	-			
Aroclor 1260	1	ND	2.5	120%			

Notes : ND - Analytes not detected at, or above the stated detection limit
 RL - Reporting limit

PROJECT NO. 10-1682-09/801 PROJECT NAME Industrial Asphalt

L.P. NO. (P.O. NO.) SAMPLER'S (Signature/Number) *Step B Cash #3287*

NO. OF CONTAINERS TYPE OF CONTAINERS
 ANALYSIS: TPH-TO 8015 PCBs 8080

RECEIVING LAB: ~~AEN~~ SBO
 on-site

INSTRUCTIONS/REMARKS
 Standard 7 day T.A.T

8028

DATE MM/DD/YY	SAMPLE I.D. TIME HH-MM-SS	SAMPLE I.D.	MATRIX	NO. OF CONTAINERS	TYPE OF CONTAINERS	ANALYSIS															
4-28-98	1710	MW-5	H ₂ O	2	Amber	X															
4-30-98	1015	MW-7	H ₂ O	2	Amber	X															
	1125	MW-6	H ₂ O	2	Amber	X															
	1135	MW-1	H ₂ O	3	Amber	X	X														
	1240	MW-15	H ₂ O	2	Amber	X															
	1340	14A2	H ₂ O	2	Amber	X															
	1405	MW-14	H ₂ O	2	Amber	X															
	1445	MW-4	H ₂ O	2	Amber	X															
	1550	MW-16	H ₂ O	2	Amber	X															
	1605	MW-3	H ₂ O	3	Amber	X	X														
	1710	MW-8	H ₂ O	3	Amber	X	X														
	1800	MW-2	H ₂ O	3	Amber	X	X														
	1815	MW-22	H ₂ O	3	Amber	X	X														

Relinquished by: (Signature) *Step B Cash* Date/Time 5-1-98 10:54 Received by: (Signature) *Deanna*

Relinquished by: (Signature) *Dean Peter* Date/Time 5/1/98 11:30 Received by: (Signature) *Minnie*

Relinquished by: (Signature) *me* Date/Time 5/1/98 12:10 Received for Laboratory by: (Signature)

Instructions/Remarks:
 Standard 7 day T.A.T.

Send Results To:
 KLEINFELDER
 7133 KOLL CENTER PARKWAY
 SUITE 100
 PLEASANTON, CA 94566
 (510) 484-1700
 Attn: Steve Walker
 FAX # (510) 484-5838