KLEINFELDER
An employee owned company

January 13, 1998
File No. 10-1682-09/704

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

SUBJECT: Semi-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 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 storage of asphalt, and two USTs 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.

Thirteen monitoring wells and eleven groundwater extraction wells are present 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. In that two year 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

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active groundwater remediation system and requesting approval to install oxygen releasing socks in extraction wells (after system shutdown) to enhance passive bioremediation processes. These oxygen releasing socks were installed in September 1996. Following installation of the oxygen releasing socks, dissolved oxygen 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 GROUNDWATER MONITORING RESULTS

In June 1996, a semi-annual (twice yearly) groundwater monitoring program was authorized for the site 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 polychlorinated biphenyls (PCBs). Monitoring wells MW-1 through MW-3, MW-8, MW-10, and MW-15 are scheduled to be sampled semi-annually, and the remaining monitoring wells are on an annual sampling frequency.

Semi-annual groundwater monitoring was performed on November 10-11, 1997 in accordance with the revised groundwater monitoring program approved by the RWQCB (summarized in Table 1).

Dissolved Oxygen and Water Level Monitoring Data

Dissolved oxygen (DO) measurements were recorded at 5, 15, and 25 feet below static water in all accessible monitoring wells on November 10, 1997. Groundwater surface elevations were measured at that time. DO measurements are summarized in Table 2, and water levels are presented in Table 3. Water levels in the eleven groundwater extraction wells were not measured. Overall groundwater surface elevations in monitoring wells declined approximately 4 feet compared with April 1997 data, and were consistent with groundwater surface elevations measured in October 1996.

On November 10, 1997, the groundwater flow direction beneath the west side of the site was to the north-northeast with an average gradient of about 0.007 feet per foot (ft/ft); groundwater flow direction on the east side of the site was to the east-northeast with an average gradient of about 0.02 ft/ft as shown on Plate 5.

Groundwater Monitoring Analytical Results - November 1997

The November 1997 groundwater monitoring event represented the third monitoring event under the revised monitoring program (Table 1). Under this program, groundwater samples are collected from monitoring wells MW-1, MW-2, MW-3, MW-8, MW-10, and MW-15 twice per year (in Fall and Spring); and all accessible monitoring wells are sampled annually (in March/April). All samples are analyzed for TPH-d and TPH-mo.

Samples from monitoring wells MW-1, MW-2, MW-3, and MW-8 are also analyzed for PCBs. Dissolved oxygen concentrations are measured in all accessible monitoring wells in each monitoring event.

Groundwater monitoring wells MW-2, MW-8, and MW-15 were purged with a submersible pump, and sampled with disposable bailers on November 11, 1997. Monitoring well MW-1 was purged and sampled with a disposable bailer. Please refer to Appendix B for purge logs. Monitoring well MW-3 was dry, therefore it was not sampled. Monitoring well MW-10 was not accessible at the time of sampling, due to physical site constraints.

Groundwater samples collected from the site were analyzed by American Environmental Network (AEN) laboratories, a State-certified analytical laboratory. The samples were analyzed for TPH-d and TPH-mo using a modified EPA Test Method 8015 (extraction), and for PCBs (except samples from well MW-15) using EPA Test Method 8080. Analytical data are summarized on Table 4. Complete analytical laboratory reports for the November 1997 sampling event along with chain of custody records are included in Appendix C.

A sheen of immeasurable thickness was observed in purged water and samples collected from monitoring wells MW-1 and MW-2. 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.

Detectable concentrations of PCBs (Aroclor 1260) were found in samples from monitoring well MW-1 (0.2 µg/L); PCBs were not detected in samples collected from monitoring wells MW-2 or MW-8 during the November 1997 monitoring event.

Petroleum hydrocarbons were not detected in samples from monitoring well MW-15 this event. Note that only those wells expected to contain elevated hydrocarbon concentrations were selected for monitoring on a semi-annual basis (i.e., twice yearly).

Duplicate samples were collected from well MW-2 in the November 1997 event, and labeled as sample number MW-2 and MW-12. Analytical results for these samples appeared to be in agreement with each other indicating acceptable levels of field and laboratory precision.

SUMMARY OF GROUNDWATER MONITORING DATA

A review of the data from the November 1997 sampling events and comparison with historical monitoring results at the Industrial Asphalt site indicates the following:

- The groundwater surface elevations beneath the site declined an average of about 4 feet since April 1997, and were consistent with October 1996 measurements. The groundwater flow direction on the west side of the site was to the north-

northeast with a gradient of about 0.007 ft/ft; on the eastern portion of the site, groundwater flows to the east-northeast with a gradient of about 0.02 ft/ft.

- Concentrations of diesel and oil range petroleum hydrocarbons above 1.0 mg/l continue to persist in samples from monitoring wells MW-1 and MW-2. A sheen was reported in each of these source area wells; elevated TPH-d and TPH-mo concentrations continue to be reported in samples from these wells.

- PCBs were detected in samples from well MW-1 at a concentrations of 0.2 µg/L for the November 1997 sampling. This PCB concentration is consistent with recent results. PCB concentrations continue to correlate well with the diesel and oil detections in groundwater samples.

- TPH-d and TPH-mo were not detected in samples from monitoring well MW-15 in the November 1997 sampling event. This marks the second consecutive sampling event with non-detectable results.

- DO measurements increased or remained the same in all wells measured this event compared with April 1997 measurements. Dissolved oxygen concentrations above 2.0 mg/L were recorded in all wells except source area wells MW-1 and MW-2.

RECOMMENDATIONS

Based on the above, Kleinfelder recommends that two more monitoring events be conducted, in the spring and fall of 1998. If concentrations of TPH-d, TPH-mo, and PCBs decline or remain within the same order of magnitude, then Kleinfelder will recommend 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 the Client 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.

We trust that the content of this correspondence adequately addresses the needs of the RWQCB. If you have any questions or comments concerning this request, please do not hesitate to call us at 510-484-1700.

Sincerely,

KLEINFELDER, INC.

Daniel S. Carroll, P.E.
Project Manager

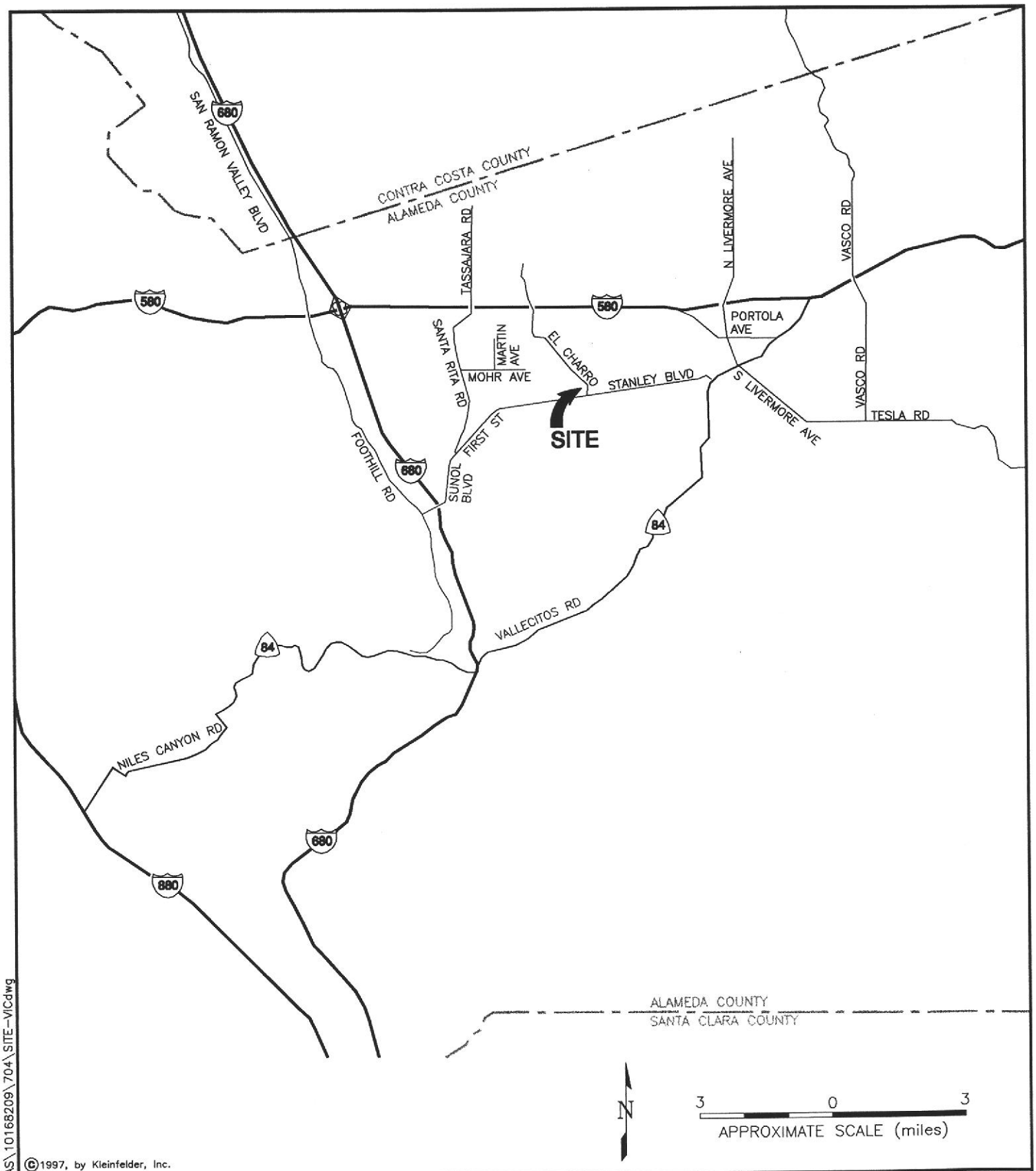
Paul A. Baginski, P.E.
Regional Environmental Manager

DSC: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



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DRAFTED BY: L. Sue	DATE: 11-14-97
CHECKED BY: D. Carroll	DATE: 11-17-97

SITE VICINITY MAP

INDUSTRIAL ASPHALT
52 EL CHARRO ROAD
PLEASANTON, CALIFORNIA

PROJECT NO. 10-168209-704

PLATE 1

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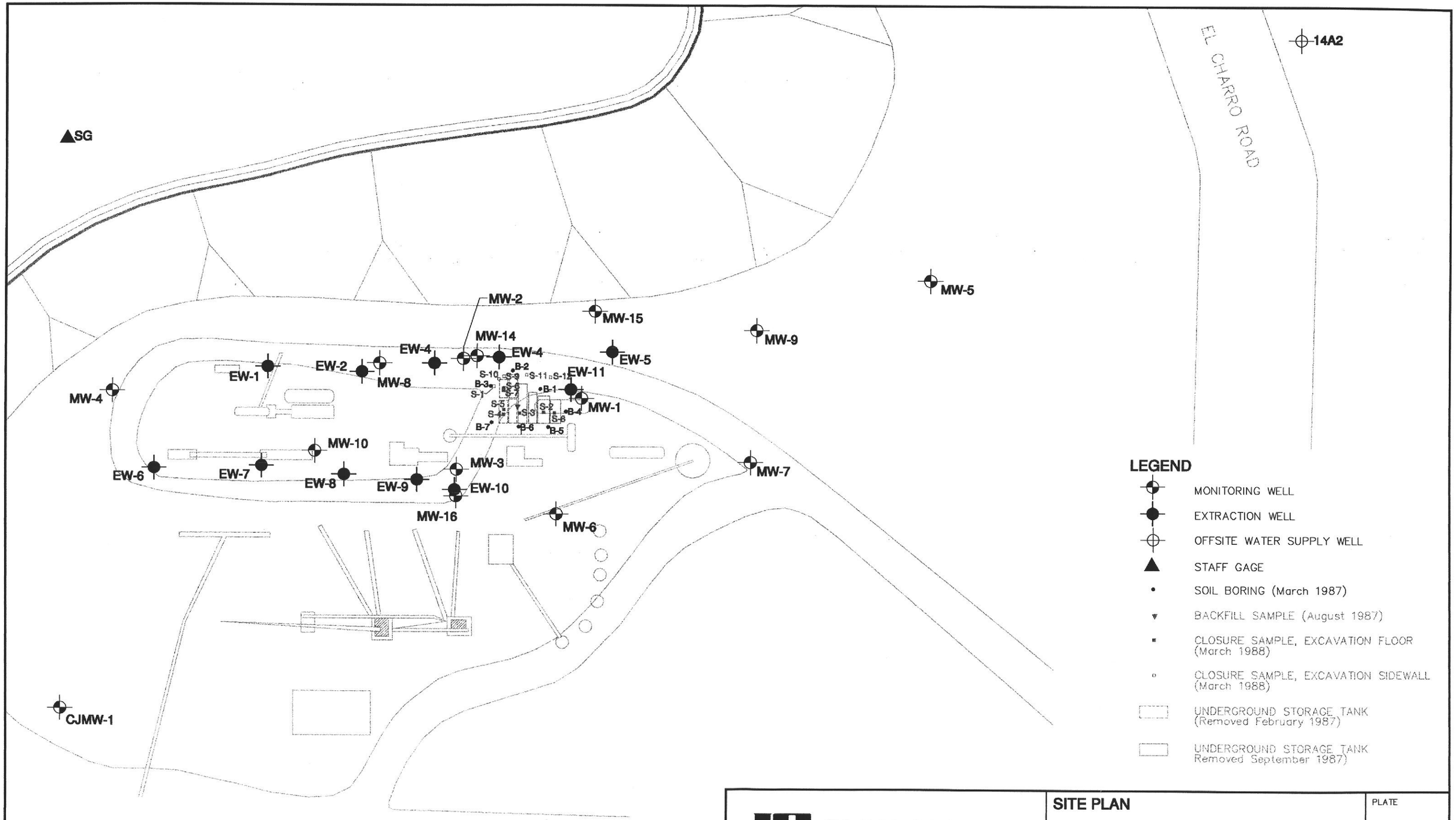

BASE MAP SOURCE:
Wells surveyed by Associated Professions, Inc.
Site details from 1987 photo (No. HAP-753), Pacific Aerial Surveys.

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)

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DRAFTED BY: L. Sue	DATE: 11-14-97
CHECKED BY: D. Carroll	DATE: 11-26-97

SITE PLAN

INDUSTRIAL ASPHALT
52 EL CHARRO ROAD
PLEASANTON, CALIFORNIA

PROJECT NO. 10-168209-704

PLATE 2

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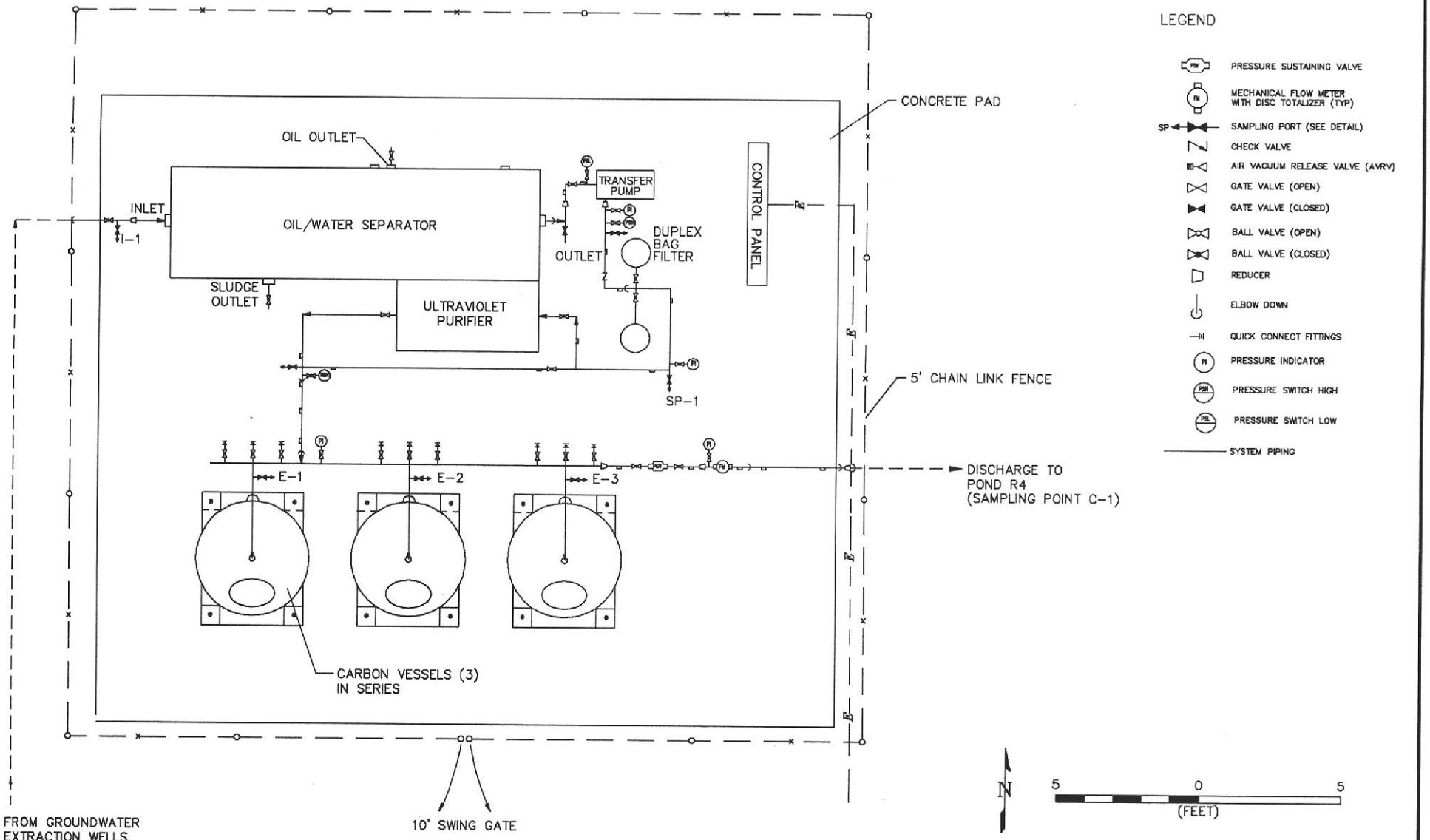

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DRAFTED BY: L. Sue	DATE: 11-14-97
CHECKED BY: D. Carroll	DATE: 11-17-97

FORMER GROUNDWATER TREATMENT SYSTEM LAYOUT

INDUSTRIAL ASPHALT
52 EL CHARRO ROAD
PLEASANTON, CALIFORNIA

PROJECT NO. 10-168209-704

PLATE 3

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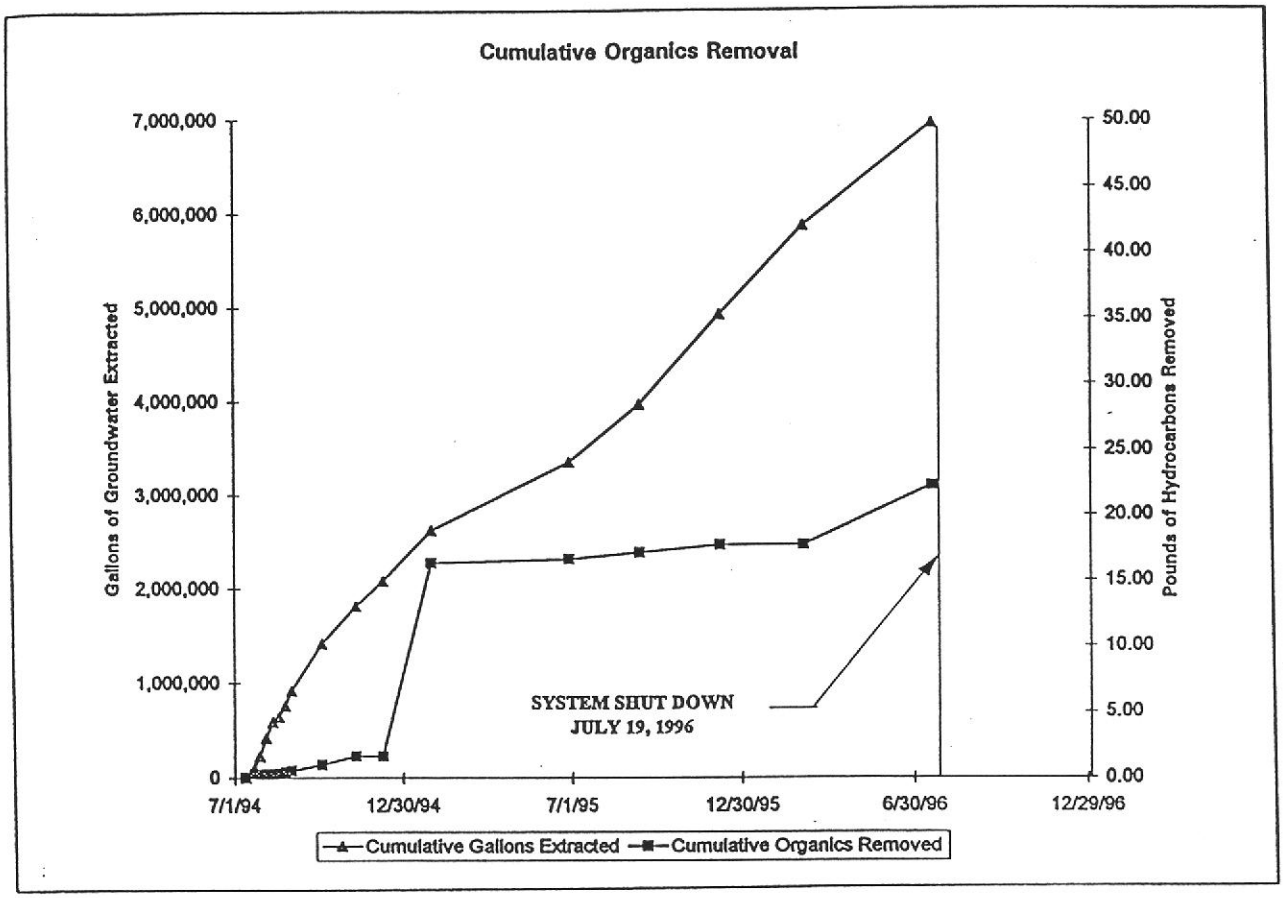

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CUMULATIVE ORGANICS REMOVED

INDUSTRIAL ASPHALT
52 EL CHARRO ROAD
PLEASANTON, CALIFORNIA

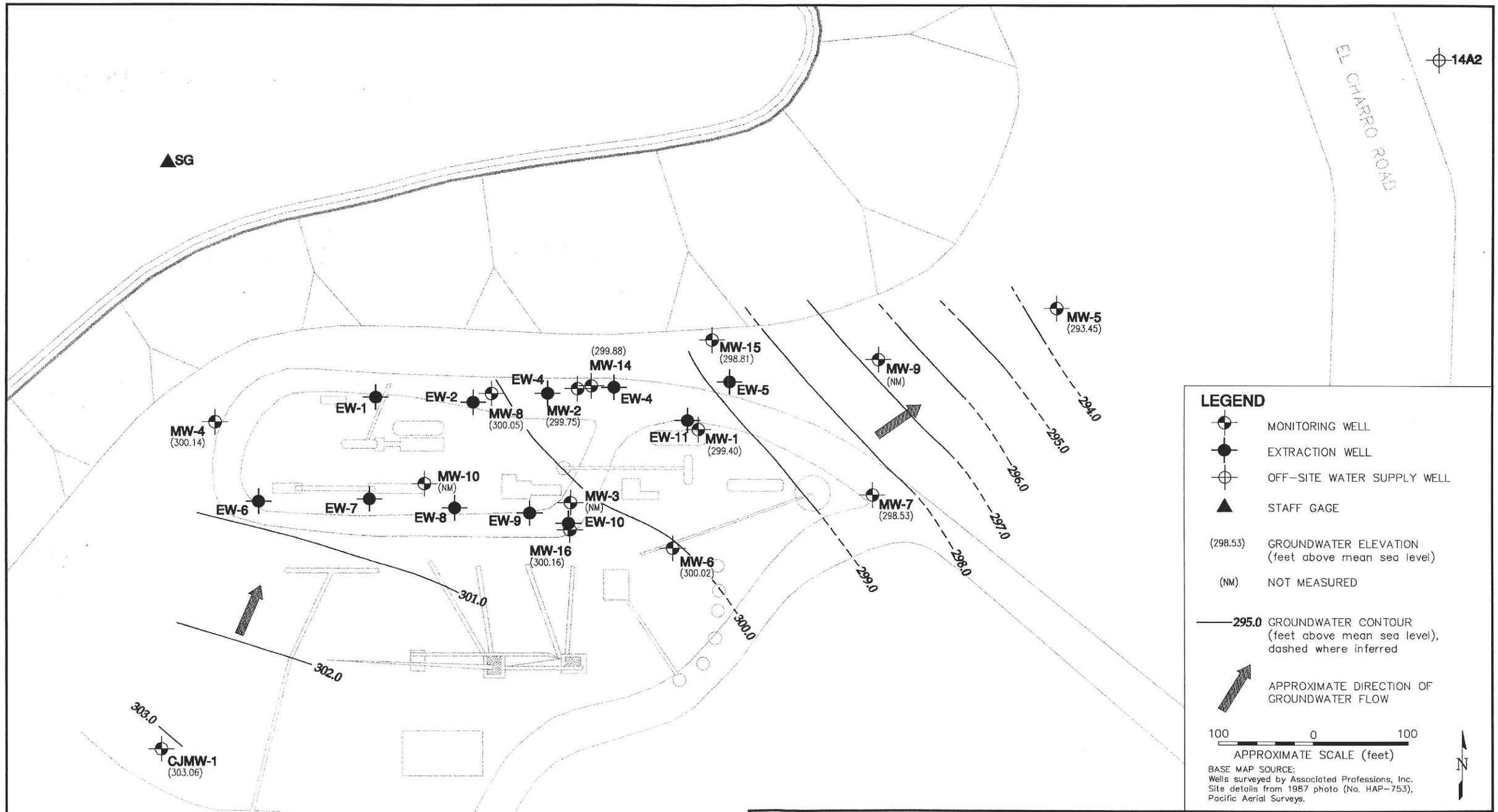
PLATE 4

DRAFTED BY: S.T. Davis DATE: 7-15-96

CHECKED BY: D. Carroll DATE: 7-15-96

PROJECT NO. 10-168209-603

CAD FILE:



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DRAFTED BY: L. Sue	DATE: 11-14-97
CHECKED BY: D. Carroll	DATE: 11-17-97

GROUNDWATER SURFACE CONTOURS: NOVEMBER 10, 1997

INDUSTRIAL ASPHALT
PLEASANTON, CALIFORNIA

PROJECT NO. 10-168209-704

PLATE 5

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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
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
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
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
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
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
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
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
MW-9	10/3/96	Not Accessible		
	10/21/96	Not Accessible		
	4/29/97	Not Accessible		
	11/10/97	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		
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
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
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
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

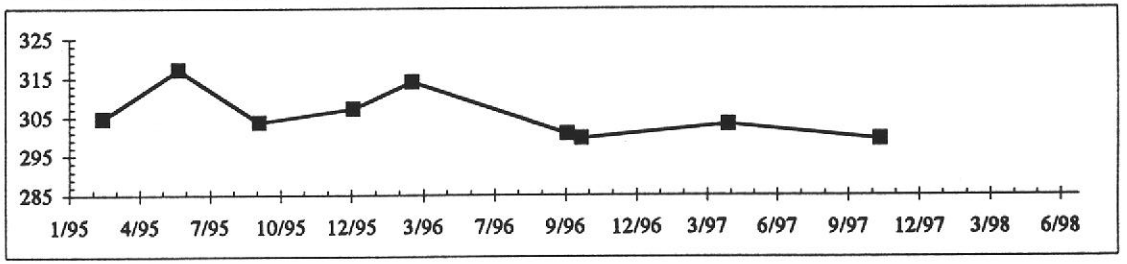
Notes:

1. Dissolved oxygen (DO) readings measured in-situ using a YS1 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)
MW-1	2/14/95	SHEEN	74.77	304.64
MP Elev.	5/23/95	SHEEN	62.24	317.17
379.41	9/5/95	SHEEN	75.73	303.68
Well Dept	1/3/96	SHEEN	72.43	306.98
88	3/18/96	SHEEN	65.44	313.97
	10/3/96	SHEEN	78.79	300.62
	10/21/96	NE	79.92	299.49
	4/29/97	SHEEN	76.23	303.18
	11/10/97	SHEEN	80.01	299.40
MW-2	2/14/95	SHEEN	75.16	304.64
MP Elev.	5/23/95	SHEEN	62.15	317.65
379.80	9/5/95	SHEEN	75.99	303.81
Well Dept	1/3/96	SHEEN	72.76	307.04
90	3/18/96	SHEEN	66.40	313.40
	10/3/96	SHEEN	78.91	300.89
	10/21/96	NE	80.04	299.76
	4/29/97	SHEEN	76.36	303.44
	11/10/97	SHEEN	80.05	299.75

Trend



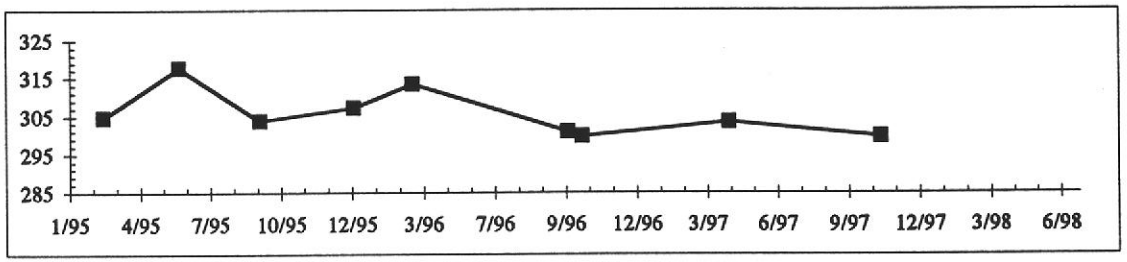
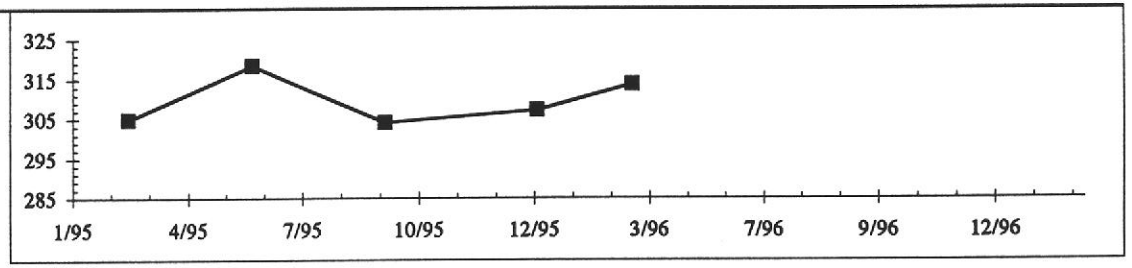


TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

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



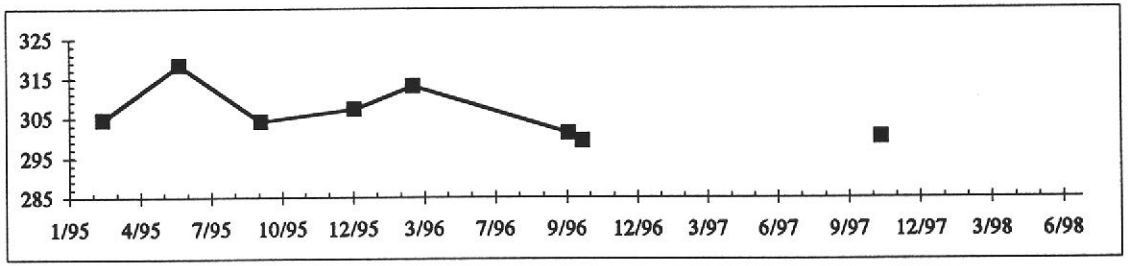
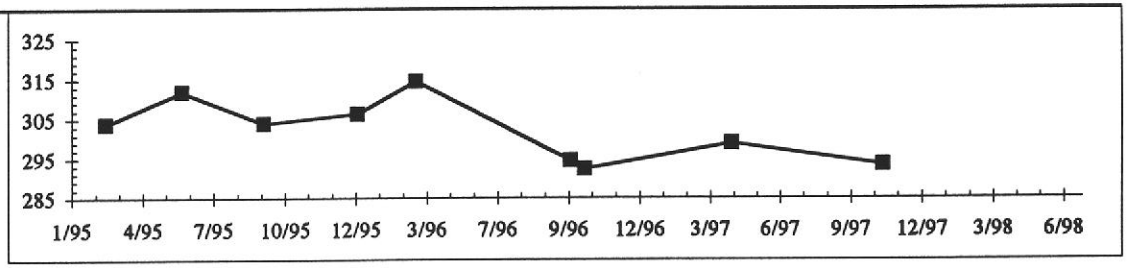


TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

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



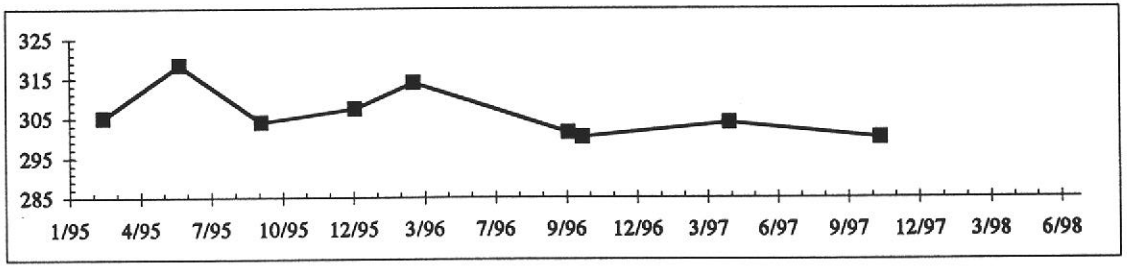
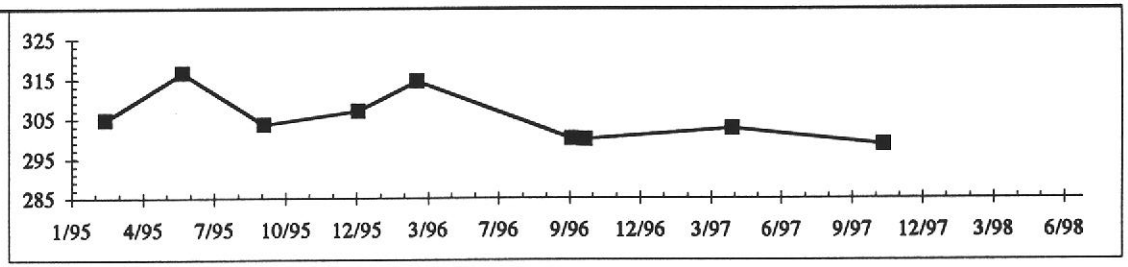


TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Well Number	Date	Product Thickness (ft)	Depth to Water (ft)	Elevation (ft, MSL)	Trend
MW-7	2/14/95	NE	74.20	304.74	
MP Elev.	5/23/95	NE	62.41	316.53	
378.94	9/5/95	NE	75.48	303.46	
Well Dept	1/3/96	NE	71.99	306.95	
109	3/18/96	NE	64.43	314.51	
	10/3/96	NE	78.91	300.03	
	10/21/96	NE	79.13	299.81	
	4/29/97	NE	76.38	302.56	
	11/10/97	NE	80.41	298.53	
MW-8	2/14/95	ODOR	73.87	304.69	
MP Elev.	5/23/95	ODOR	60.48	318.08	
378.56	9/5/95	ODOR	74.59	303.97	
Well Dept	1/3/96	NE	71.39	307.17	
109	3/18/96	NE	65.25	313.31	
	10/3/96	NA	Buried		
	10/21/96	NA	Buried		
	4/29/97	NE	74.89	303.67	
	11/10/97	NE	78.51	300.05	



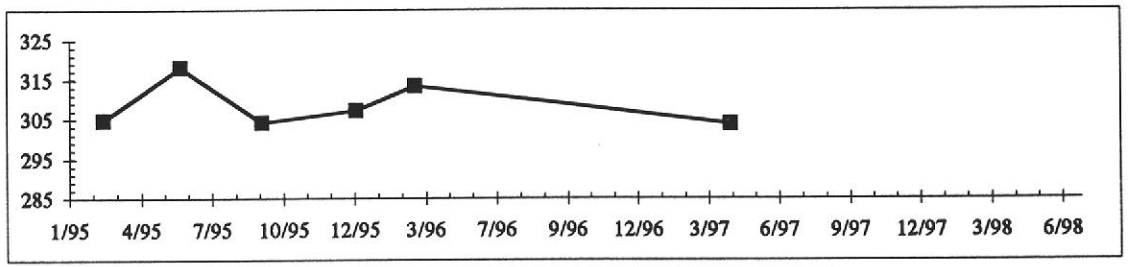
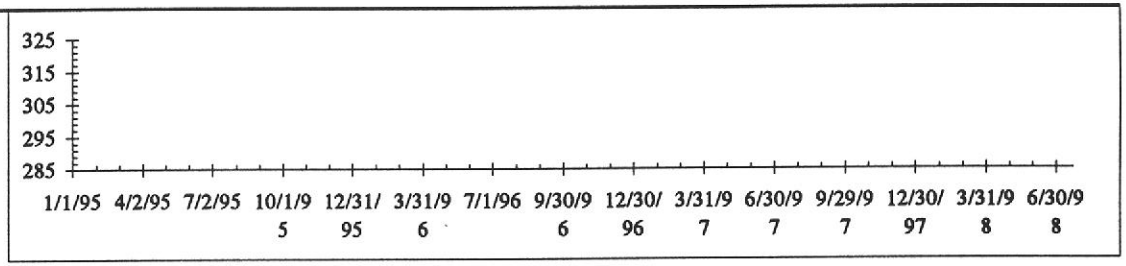


TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

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



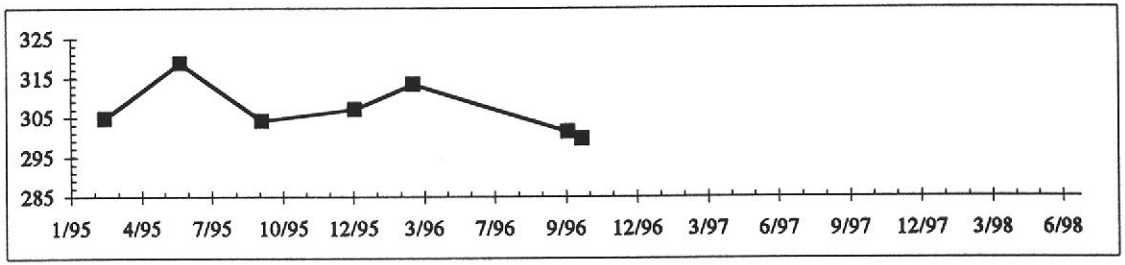
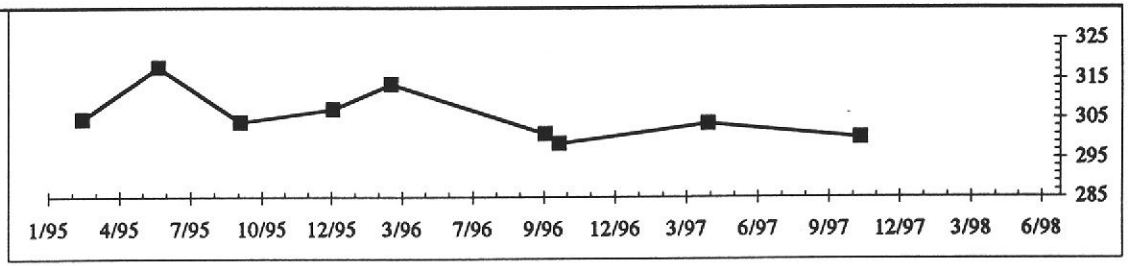


TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

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



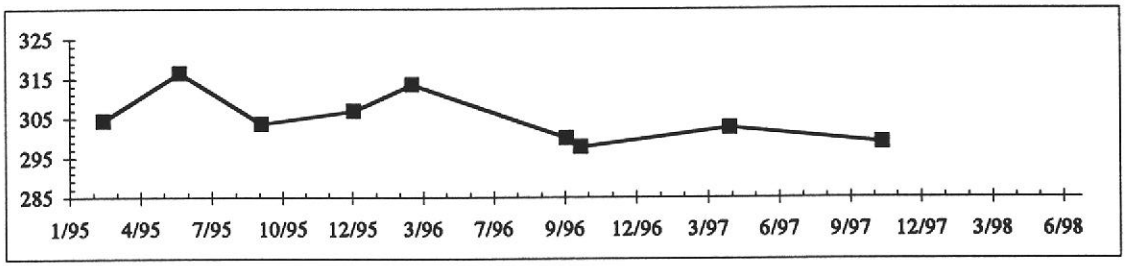
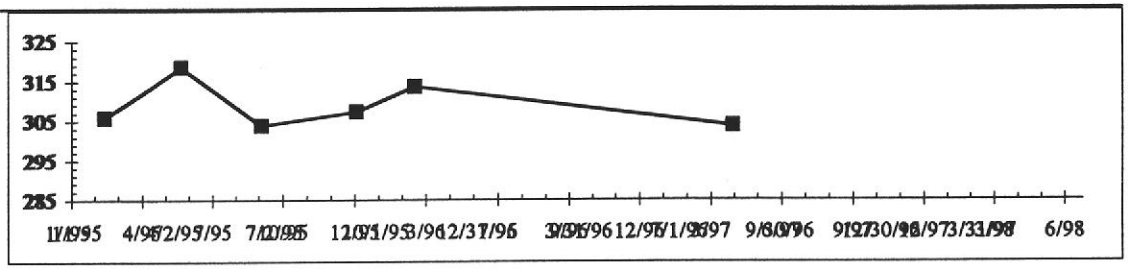


TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

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

Trend



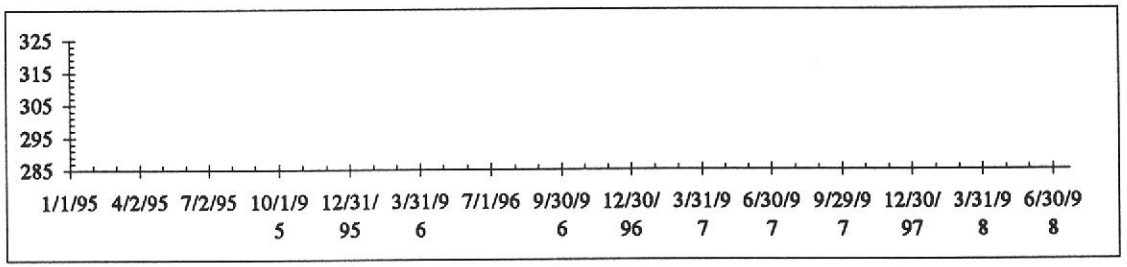
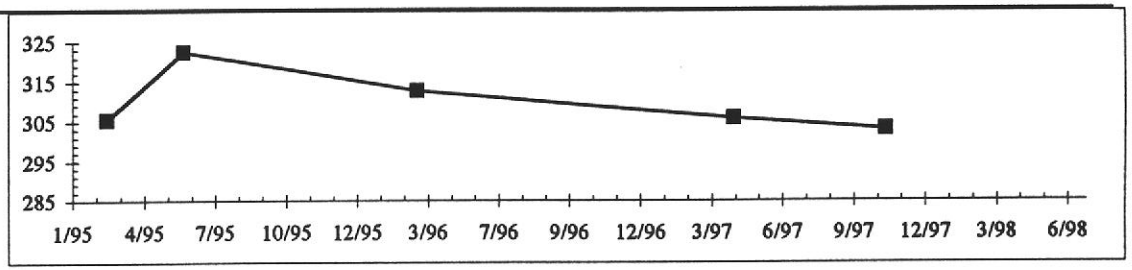


TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

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

Trend



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, LAST FOUR QUARTERS
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
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
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.						

TABLE 4
SUMMARY OF ANALYTICAL RESULTS, LAST FOUR QUARTERS
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.						
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.						
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.						

TABLE 4
SUMMARY OF ANALYTICAL RESULTS, LAST FOUR QUARTERS
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.						
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
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.						

TABLE 4
SUMMARY OF ANALYTICAL RESULTS, LAST FOUR QUARTERS
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.						
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.						
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
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.						

TABLE 4
SUMMARY OF ANALYTICAL RESULTS, LAST FOUR QUARTERS
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.						
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 DEVELOPMENT & SAMPLING LOG

WELL NO. MW-1

Sheet 1 of 1

Date: 11-11-97 Weather: CLOUDY

Project: Industrial Asphalt Submitted By: R. SILVA Date: 11-11-97

Project No.: 10-1682-09/703 Reviewed By: D Carroll Date: 11/14/97

Purpose of Log ☐ Development ☒ Sampling

Equipment & Decontamination

Purging Equipment	Bailer	Disposable Bailer	Suction Pump	Submers-able Pump	Dedicated Pump / Other:
Sampling Equipment	Bailer	Disposable Bailer	Suction Pump	Submers-able Pump	Dedicated Pump / Other:

Test Equipment	Water Level	pH	Conductivity	Turbidity
Meter No.		90292	2154	
Calibration Date/Time	NA	11-11-97	11-11-97	

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; Steam / Hot / Cool
TSP / Alconox / Other: LIQUINOX				
Vol. (gal):	3-4	3-4	3-4	1-2
Source:	Warehouse			Alambra
Decon. Notes:	~~Pump hose is cleaned as~~ DSC			

Development / Purge Record

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

Purge Volume (CV): T.D. − DTW × Factor × 1 C.V = 3 gal

Well Diam.: ☒ 2" ☐ 4" — 67.4 ft. − 60.01 ft. × (2"=0.175, 4"=0.663) × 1.2 = 6 gal

Free Product?: Odor: no (yes) — Floating Product: none (sheen) — film _____ feet thick

Time (24-hr)	1446	1454	1504	1510	1517				Replicate Goals
Gallons Purged	0	2	4	5	6				(dev. only)
Surged (minutes)	↑								±0.10
pH	S	7.40	7.29	7.28	7.27				±1°C
Temperature (°C)	T	17.6	17.6	17.9	17.9				±10%
Cond. (µmhos/cm)	A	620	650	650	660				±10%
Salinity (‰)	R	0.2	0.2	0.3	0.2				<50 NTUs
Turbidity (NTU's)	T								Colorless
Color	↓	CLOUDY	CLOUDY	TURBID	TURBID				±0.01'
Depth to Water									

Reference Point: TOC Other:

Sample Log

Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
MW-1	1530	2	1L	Amber	—	—	TPHd/mo	A
		1	1L	AMBER	—	—	PCBs	E
								N

Misc

Other Observations: _____

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

KA KLEINFELDER

WELL DEVELOPMENT & SAMPLING LOG

WELL NO. MW-2

Sheet 1 of 1

Date: 11-11-97 Weather: Cloudy

Project: Industrial Asphalt Submitted By: R. Silva Date: 11-11-97

Project No.: 10-1682-09/703 Reviewed By: D. Carroll Date: 11/14/97

Purpose of Log ☐ Development ☒ Sampling

Equipment & Decontamination

Purging Equipment	Bailer	Disposable Bailer	Suction Pump	(Submersable Pump)	Dedicated Pump	Other:
Sampling Equipment	Bailer	(Disposable Bailer)	Suction Pump	Submersable Pump	Dedicated Pump	Other:

Test Equipment	Water Level	pH	Conductivity	Turbidity
Meter No.		90292	7154	
Calibration Date/Time	NA	11-11-97	11-11-97	

Decontamination Methods	Wash	Rinse I	Rinse II	Rinse III
	DI (Tap) Steam Hot (Cool) Other	DI (Tap) Steam Hot (Cool) Other	DI (Tap) Steam Hot (Cool) Other	(DI) Tap Steam Hot (Cool) Other
TSP / Alconox / Other: Liquinox				
Vol. (gal):	3-4	3-4	3-4	1-2
Source:	Warehouse			→ 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. 90 ft. − DTW 80.05 ft. × Factor (2"=0.175, 4"=0.663) × 1 C.V 7 = 3 gal = 21 gal

Well Diam.: ☐ 2" ☒ 4"

Free Product?: Odor: no (yes) Floating Product: none (sheen) film ____ feet thick

								Replicate Goals
Time (24-hr)	1315	1317	1319	1321	1325			
Gallons Purged	0	5	10	15	21			(dev. only)
Surged (minutes)	↑							
pH	S	7.70	7.49	7.36	7.33			±0.10
Temperature (°C)	T	16.6	16.9	17.1	17.2			±1°C
Cond. (µmhos/cm)	A	610	600	620	630			±10%
Salinity (‰)	R	0.1	0.2	0.2	0.3			±10%
Turbidity (NTU's)	T							<50 NTUs
Color	↓	TURBID	CLOUDY	CLOUDY	CLOUDY			Colorless
Depth to Water								±0.01'

Reference Point: TOC Other:

Sample Log

Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
MW-2	1355	2	1L	Amber	—	—	TPHd/mo	A
		1	1L	Amber	—	—	PCBs	E
								N

Misc

Other Observations: ____

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

KA KLEINFELDER

WELL DEVELOPMENT & SAMPLING LOG

WELL NO. MW-8

Date: 11-11-97 Weather: PARTLY CLOUDY, SLIGHT BREEZE, ~70°F Sheet 1 of 1

Project: Industrial Asphalt Submitted By: R. SILVA Date: 11-11-97

Project No.: 10-1682-09/703 Reviewed By: D. Carroll Date: 11/14/97

Purpose of Log ☐ Development ☒ Sampling

Equipment & Decontamination

Purging Equipment	Bailer	Disposable Bailer	Suction Pump	(Submersable Pump)	Dedicated Pump	Other:
Sampling Equipment	Bailer	(Disposable Bailer)	Suction Pump	Submersable Pump	Dedicated Pump	Other:

Test Equipment	Water Level	pH	Conductivity	Turbidity
Meter No.		90292	2154	
Calibration Date/Time	NA	11-11-97	11-11-97	

Decontamination Methods	Wash	Rinse I	Rinse II	Rinse III
	DI (Tap) Steam Hot (Cool) Other	DI (Tap) Steam Hot (Cool) Other	DI (Tap) Steam Hot (Cool) Other	(DI) Tap Steam Hot (Cool) Other
TSP / Alconox / Other: Liquinox				
Vol. (gal):	3-4	3-4	3-4	1-2
Source:	Warehouse			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) × Factor × 1 C.V

Well Diam.: ☐ 2" ☒ 4" (108 ft. − 78.51 ft.) × (2"=0.175, 4"=0.663) × 19.76 = 60 gal

Free Product?: Odor: (no) yes Floating Product: (none) sheen film _____ feet thick

								Replicate Goals
Time (24-hr)	1005	1009	1013	1017	1021			
Gallons Purged	0	15	30	45	60			(dev. only)
Surged (minutes)	↑	4	8	12	16			
pH	S	7.09	7.08	7.11	7.14			±0.10
Temperature (°C)	T	17.0	17.3	17.5	17.6			±1°C
Cond. (µmhos/cm)	A	485	600	620	630			±10%
Salinity (‰)	R	0.2	0.2	0.3	0.4			±10%
Turbidity (NTU's)	T							<50 NTUs
Color	↓	BROWNISH	TURBID	CLOUDY	CLEAR			Colorless
Depth to Water								±0.01'

Reference Point: (TOC) Other:

Sample Log

Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
MW-8	1050	2	1L	Amber	—	—	TPHd/mo	A
MW-8	1052	1	1L	Amber	—	—	PCBs	E
								N

Misc

Other Observations: _____

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

KA KLEINFELDER

WELL DEVELOPMENT & SAMPLING LOG

WELL NO. MW-15

Date: 11-11-97 Weather: PARTLY CLOUDY, COOL, ~70°F Sheet 1 of 1

Project: Industrial Asphalt Submitted By: R. SILVA Date: 11-11-97

Project No.: 10-1682-09/703 Reviewed By: D. Carroll Date: 11/14/97

Purpose of Log ☐ Development ☒ Sampling

Equipment & Decontamination

Purging Equipment	Bailer	Disposable Bailer	Suction Pump	(Submersable Pump)	Dedicated Pump	Other:
Sampling Equipment	Bailer	(Disposable Bailer)	Suction Pump	Submersable Pump	Dedicated Pump	Other:

Test Equipment	Water Level	pH	Conductivity	Turbidity
Meter No.		90292	2154	
Calibration Date/Time	NA	11-11-97	11-11-97	

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 / Steam Hot (Cool)
TSP / Alconox / Other: LIQUINOX				
Vol. (gal):	3-4	3-4	3-4	1-2
Source:	Warehouse			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. 117 ft. − DTW 79.31 ft.) × Factor (2"=0.175, 4"=0.663) × 1 C.V = 3 gal

Well Diam.: ☐ 2" ☒ 4" | × 25 = 75 gal

Free Product?: Odor: (no) yes | Floating Product: (none) sheen film ____ feet thick

Time (24-hr)	1135	1139	1143	1147	1151	1155		Replicate Goals
Gallons Purged	0	15	30	45	60	75		(dev. only)
Surged (minutes)	↑							±0.10
pH	S	7.73	7.69	7.64	7.61	7.59		±1°C
Temperature (°C)	T	16.9	17.0	17.2	17.1	17.2		±10%
Cond. (µmhos/cm)	A	610	620	620	620	620		±10%
Salinity (‰)	R	0.2	0.3	0.3	0.2	0.2		<50 NTUs
Turbidity (NTU's)	T							Colorless
Color	↓	CLOUDY	CLEAR	CLEAR	CLEAR	CLEAR		±0.01'
Depth to Water								

Reference Point: (TOC) Other:

Sample Log

Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
MW-15	1225	2	1L	Amber	—	—	TPHd/mo	A
								E
								N

Misc

Other Observations: ____

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

KA KLEINFELDER

RECORD OF WATER LEVEL MEASUREMENTS

Date: 11-10-97 Weather: PC ≈65°F Sheet 1 of 1

Project: Industrial Asphalt Submitted By: KBR Date: 11/12/97

Project No.: 10-1682-09/703 Reviewed By: Date:

Instrument Number:

ID	Well Number	Time (opened/measured) (24-hr)	Sensitivity Setting (est. %)	Measuring Point (M.P.)	Measurement 1	Replicate Measurements (if requested) 2	3	Notes	(locked?)
87.4	MW-1	11:49/16:11	90%	TOC	80.01				N
90	MW-2	10:38/1625			80.05				Y
75.4	MW-3	11:34			Dry				Y
95	MW-4	11:18/15:12			76.12				N
110.4	MW-5	12:10/1258			89.10				Y
106	MW-6	11:55 15:00			79.13				Y
108	MW-7	12:00/14 46			80.41				Y
108	MW-8	1:42/1529			78.51				
	MW-9	Buried.							
110	MW-10	Buried.							
	MW-11	Abandoned							
	MW-12	Does not exist							
	MW-13	Does not exist							[illegible]
14	MW-14	10:39/15:37			80.21				Y
117	MW-15	10:44/14:19			79.31				Y
109	MW-16	11:34/15:01			79.49			Water [illegible] may have got in	
	14 AZ								~~Y~~ N
	JMW 1				79.69				N

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

KA KLEINFELDER DO Readings (mg/L)

RECORD OF WATER LEVEL MEASUREMENTS

Date: 11-10-97 Weather: PC / Rain Sheet 1 of 1
Project: Industrial Asphalt Submitted By: KBR Date: 11-12-97
Project No.: 10-1682-09/703 Reviewed By: Date:
Instrument Number:

ID	Well Number	Time (opened/measured) (24-hr)	Sensitivity Setting (est. %)	Measuring Point (M.P.)	Measurement 1	Replicate Measurements (if requested) 2	3	Notes: Depth DO SWL 5'	15'	25'	(locked?)
87.4	MW-1				85			17.8 1.0			
90	MW-2				85			17.0 °C 1.2			
75.4	MW-3										
95	MW-4				81	91		17.1 °C 5.0	4.4		
110.4	MW-5				94'	104'		16.5 °C 2.1 mg/L	2.2		
106	MW-6				84	94	104	17.0 3.0	2.6	0.8	
108	MW-7	14			85	95	105	16.8 °C 2.0	1.5	1.3	
108	MW-8				83	93	103	17.1 2.2	1.4	0.7	
	MW-9	Buried									
110	MW-10										
	MW-11	Abandoned									
	MW-12	Does not exist									
	MW-13	Does not exist									
114	MW-14	15			84'	94'	104'	17 °C 4.0 mg/L	17.1 3.2	17.0 0.5	
117	MW-15	14			85	95	105	17.2 4.0	3.3	2.8	
109	MW-16				84	94	104	17.2 6.4	5.2	4.9	
	14 A2										
	JMW 1										

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

APPENDIX C

American Environmental Network

Certificate of Analysis

DOHS Certification: 1172 | AIHA Accreditation: 11134

KLEINFELDER, INC.
7133 KOLL CENTER PARKWAY,
SUITE 100
PLEASANTON, CA 94566

ATTN: DAN CARROLL
CLIENT PROJ. ID: 10-1682-09/703
CLIENT PROJ. NAME: INDUST.ASPHALT
C.O.C. NUMBER: 2866

REPORT DATE: 11/25/97

DATE(S) SAMPLED: 11/11/97

DATE RECEIVED: 11/12/97

AEN WORK ORDER: 9711156

PROJECT SUMMARY:

On November 12, 1997, this laboratory received 5 water sample(s).

Client requested sample(s) be analyzed for chemical parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.

William Svoboda, for
Larry Klein
Laboratory Director

RECEIVED
1 1997
KLEINFELDER
PLEASANTON, CA

KLEINFELDER, INC.

SAMPLE ID: MW-8
AEN LAB NO: 9711156-01
AEN WORK ORDER: 9711156
CLIENT PROJ. ID: 10-1682-09/703

DATE SAMPLED: 11/11/97
DATE RECEIVED: 11/12/97
REPORT DATE: 11/25/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Extraction for TPH	EPA 3510	-		Extrn Date	11/18/97
TPH as Diesel	GC-FID	0.98 *	0.05	mg/L	11/19/97
TPH as Oil	GC-FID	1.5 *	0.2	mg/L	11/19/97
#Extraction for PCBs	EPA 3510	-		Extrn Date	11/13/97
Polychlorinated Biphenyls	EPA 8080				
Aroclor 1016	12674-11-2	ND	0.1	ug/L	11/15/97
Aroclor 1221	11104-28-2	ND	0.1	ug/L	11/15/97
Aroclor 1232	11141-16-5	ND	0.1	ug/L	11/15/97
Aroclor 1242	53469-21-9	ND	0.1	ug/L	11/15/97
Aroclor 1248	12672-29-6	ND	0.1	ug/L	11/15/97
Aroclor 1254	11097-69-1	ND	0.1	ug/L	11/15/97
Aroclor 1260	11096-82-5	ND	0.1	ug/L	11/15/97

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

KLEINFELDER, INC.

SAMPLE ID: MW-15
AEN LAB NO: 9711156-02
AEN WORK ORDER: 9711156
CLIENT PROJ. ID: 10-1682-09/703

DATE SAMPLED: 11/11/97
DATE RECEIVED: 11/12/97
REPORT DATE: 11/25/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Extraction for TPH	EPA 3510	-		Extrn Date	11/18/97
TPH as Diesel	GC-FID	ND	0.05	mg/L	11/19/97
TPH as Oil	GC-FID	ND	0.2	mg/L	11/19/97

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

KLEINFELDER, INC.

SAMPLE ID: MW-2
AEN LAB NO: 9711156-03
AEN WORK ORDER: 9711156
CLIENT PROJ. ID: 10-1682-09/703

DATE SAMPLED: 11/11/97
DATE RECEIVED: 11/12/97
REPORT DATE: 11/25/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Extraction for TPH	EPA 3510	-		Extrn Date	11/18/97
TPH as Diesel	GC-FID	3.4 *	0.05	mg/L	11/19/97
TPH as Oil	GC-FID	2.3 *	0.2	mg/L	11/19/97
#Extraction for PCBs	EPA 3510	-		Extrn Date	11/13/97
Polychlorinated Biphenyls	EPA 8080				
Aroclor 1016	12674-11-2	ND	0.1	ug/L	11/15/97
Aroclor 1221	11104-28-2	ND	0.1	ug/L	11/15/97
Aroclor 1232	11141-16-5	ND	0.1	ug/L	11/15/97
Aroclor 1242	53469-21-9	ND	0.1	ug/L	11/15/97
Aroclor 1248	12672-29-6	ND	0.1	ug/L	11/15/97
Aroclor 1254	11097-69-1	ND	0.1	ug/L	11/15/97
Aroclor 1260	11096-82-5	ND	0.1	ug/L	11/15/97

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

KLEINFELDER, INC.

SAMPLE ID: MW-12
AEN LAB NO: 9711156-04
AEN WORK ORDER: 9711156
CLIENT PROJ. ID: 10-1682-09/703

DATE SAMPLED: 11/11/97
DATE RECEIVED: 11/12/97
REPORT DATE: 11/25/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Extraction for TPH	EPA 3510	-		Extrn Date	11/19/97
TPH as Diesel	GC-FID	2.9 *	0.05	mg/L	11/20/97
TPH as Oil	GC-FID	1.7 *	0.2	mg/L	11/20/97
#Extraction for PCBs	EPA 3510	-		Extrn Date	11/13/97
Polychlorinated Biphenyls	EPA 8080				
Aroclor 1016	12674-11-2	ND	0.1	ug/L	11/15/97
Aroclor 1221	11104-28-2	ND	0.1	ug/L	11/15/97
Aroclor 1232	11141-16-5	ND	0.1	ug/L	11/15/97
Aroclor 1242	53469-21-9	ND	0.1	ug/L	11/15/97
Aroclor 1248	12672-29-6	ND	0.1	ug/L	11/15/97
Aroclor 1254	11097-69-1	ND	0.1	ug/L	11/15/97
Aroclor 1260	11096-82-5	ND	0.1	ug/L	11/15/97

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

KLEINFELDER, INC.

SAMPLE ID: MW-1
AEN LAB NO: 9711156-05
AEN WORK ORDER: 9711156
CLIENT PROJ. ID: 10-1682-09/703

DATE SAMPLED: 11/11/97
DATE RECEIVED: 11/12/97
REPORT DATE: 11/25/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Extraction for TPH	EPA 3510	-		Extrn Date	11/19/97
TPH as Diesel	GC-FID	20 *	0.2	mg/L	11/20/97
TPH as Oil	GC-FID	11 *	1	mg/L	11/20/97
#Extraction for PCBs	EPA 3510	-		Extrn Date	11/13/97
Polychlorinated Biphenyls	EPA 8080				
Aroclor 1016	12674-11-2	ND	0.1	ug/L	11/15/97
Aroclor 1221	11104-28-2	ND	0.1	ug/L	11/15/97
Aroclor 1232	11141-16-5	ND	0.1	ug/L	11/15/97
Aroclor 1242	53469-21-9	ND	0.1	ug/L	11/15/97
Aroclor 1248	12672-29-6	ND	0.1	ug/L	11/15/97
Aroclor 1254	11097-69-1	ND	0.1	ug/L	11/15/97
Aroclor 1260	11096-82-5	0.2 *	0.1	ug/L	11/15/97

Reporting limits for PCBs elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9711156
CLIENT PROJECT ID: 10-1682-09/703

Quality Control and Project Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spikes(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analyses.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behaviour, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrument performance.

D: Surrogates diluted out.

I: Interference.

!: Indicates result outside of established laboratory QC limits.

ANALYSIS: Polychlorinated Biphenyls

MATRIX: Water

METHOD BLANK SAMPLES

SAMPLE TYPE: Blank-Method/Media blank
INSTRUMENT: HP GC FOR PCB's
UNITS: ug/L
METHOD: EPA 8080

LAB ID: BLNK-1113-1
PREPARED: 11/13/97
ANALYZED: 11/14/97

INSTR RUN: GC BBW\971114000000/1/
BATCH ID: PCBW111397-1
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
DCB	(surr)	49.8			100	49.8	11	126		
TCMX	(surr)	67.8			100	67.8	30	131		
Aroclor 1260		ND		0.5						
Aroclor 1016		ND		0.5						
Aroclor 1221		ND		0.5						
Aroclor 1232		ND		0.5						
Aroclor 1242		ND		0.5						
Aroclor 1248		ND		0.5						
Aroclor 1254		ND		0.5						

LABORATORY CONTROL SAMPLES

SAMPLE TYPE: Laboratory Control Spike
INSTRUMENT: HP GC FOR PCB's
UNITS: ug/L
METHOD: EPA 8080

LAB ID: LCDW-1113-1
PREPARED: 11/13/97
ANALYZED: 11/14/97

INSTR RUN: GC BBW\971114000000/3/1
BATCH ID: PCBW111397-1
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
DCB	(surr)	61.7	49.8		100	61.7	11	126		
TCMX	(surr)	83.8	67.8		100	83.8	30	131		
Aroclor 1260		3.79	ND	0.5	4.00	94.8	53	133		
Aroclor 1016		3.35	ND	0.5	4.00	83.8	53	133		

SAMPLE TYPE: Laboratory Control Spike
INSTRUMENT: HP GC FOR PCB's
UNITS: ug/L
METHOD: EPA 8080

LAB ID: LCSW-1113-1
PREPARED: 11/13/97
ANALYZED: 11/14/97

INSTR RUN: GC BBW\971114000000/2/1
BATCH ID: PCBW111397-1
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
DCB	(surr)	55.2	49.8		100	55.2	11	126		
TCMX	(surr)	60.1	67.8		100	60.1	30	131		
Aroclor 1260		3.64	ND	0.5	4.00	91.0	53	133		
Aroclor 1016		3.32	ND	0.5	4.00	83.0	53	133		

LABORATORY CONTROL DUPLICATES

SAMPLE TYPE: Laboratory Control Sample Duplicate
INSTRUMENT: HP GC FOR PCB's
UNITS: ug/L
METHOD: EPA 8080

LAB ID: LCRW-1113-1
PREPARED: 11/13/97
ANALYZED: 11/14/97

INSTR RUN: GC BBW\971114000000/4/2
BATCH ID: PCBW111397-1
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
DCB	(surr)	61.7	55.2		100	61.7	11	126		
TCMX	(surr)	83.8	60.1		100	83.8	30	131		
Aroclor 1260		3.79	3.64	0.5	4.00				4.04	16
Aroclor 1016		3.35	3.32	0.5	4.00				0.900	16
Aroclor 1221		ND	ND	0.5					0	
Aroclor 1232		ND	ND	0.5					0	
Aroclor 1242		ND	ND	0.5					0	
Aroclor 1248		ND	ND	0.5					0	
Aroclor 1254		ND	ND	0.5					0	

ANALYSIS: Polychlorinated Biphenyls

MATRIX: Water

SAMPLE SURROGATES

SAMPLE TYPE: Sample-Client
INSTRUMENT: HP GC FOR PCB's
UNITS: ug/L
METHOD: EPA 8080

LAB ID: 9711156-01C
PREPARED: 11/13/97
ANALYZED: 11/15/97

INSTR RUN: GC BBW\971114000000/5/
BATCH ID: PCBW111397-1
DILUTION: 0.200000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
DCB	(surr)	52.3			100	52.3	11	126		
TCMX	(surr)	69.9			100	69.9	30	131		

SAMPLE TYPE: Sample-Client
INSTRUMENT: HP GC FOR PCB's
UNITS: ug/L
METHOD: EPA 8080

LAB ID: 9711156-03C
PREPARED: 11/13/97
ANALYZED: 11/15/97

INSTR RUN: GC BBW\971114000000/6/
BATCH ID: PCBW111397-1
DILUTION: 0.200000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
DCB	(surr)	76.4			100	76.4	11	126		
TCMX	(surr)	64.4			100	64.4	30	131		

SAMPLE TYPE: Sample-Client
INSTRUMENT: HP GC FOR PCB's
UNITS: ug/L
METHOD: EPA 8080

LAB ID: 9711156-04C
PREPARED: 11/13/97
ANALYZED: 11/15/97

INSTR RUN: GC BBW\971114000000/7/
BATCH ID: PCBW111397-1
DILUTION: 0.200000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
DCB	(surr)	79.7			100	79.7	11	126		
TCMX	(surr)	62.1			100	62.1	30	131		

SAMPLE TYPE: Sample-Client
INSTRUMENT: HP GC FOR PCB's
UNITS: ug/L
METHOD: EPA 8080

LAB ID: 9711156-05C
PREPARED: 11/13/97
ANALYZED: 11/15/97

INSTR RUN: GC BBW\971114000000/8/
BATCH ID: PCBW111397-1
DILUTION: 0.200000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
DCB	(surr)	77.8			100	77.8	11	126		
TCMX	(surr)	61.3			100	61.3	30	131		

ANALYSIS: TPH as Diesel

MATRIX: Water

METHOD BLANK SAMPLES

SAMPLE TYPE: Blank-Method/Media blank
INSTRUMENT: HP 5890
UNITS: mg/L
METHOD: GC-FID

LAB ID: BLNK-1118-1
PREPARED: 11/18/97
ANALYZED: 11/18/97

INSTR RUN: GC C\971118000000/1/
BATCH ID: DSCW111897-1
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
Diesel		ND		0.05						
Motor Oil		ND		0.2						
n-Pentacosane	(surr)	97.1			100	97.1	65	125		

SAMPLE TYPE: Blank-Method/Media blank
INSTRUMENT: HP 5890
UNITS: mg/L
METHOD: GC-FID

LAB ID: BLNK-1119-1
PREPARED: 11/19/97
ANALYZED: 11/20/97

INSTR RUN: GC C\971119000000/1/
BATCH ID: DSCW111997-1
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
Diesel		ND		0.05						
Motor Oil		ND		0.2						
n-Pentacosane	(surr)	86.3			100	86.3	65	125		

LABORATORY CONTROL SAMPLES

SAMPLE TYPE: Laboratory Control Spike
INSTRUMENT: HP 5890
UNITS: mg/L
METHOD: GC-FID

LAB ID: LCDW-1118-1
PREPARED: 11/18/97
ANALYZED: 11/18/97

INSTR RUN: GC C\971118000000/3/1
BATCH ID: DSCW111897-1
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
Diesel		1.86	ND	0.05	2.00	93.0	60	110		
n-Pentacosane	(surr)	100.3	97.1		100	100	65	125		

SAMPLE TYPE: Laboratory Control Spike
INSTRUMENT: HP 5890
UNITS: mg/L
METHOD: GC-FID

LAB ID: LCSW-1118-1
PREPARED: 11/18/97
ANALYZED: 11/18/97

INSTR RUN: GC C\971118000000/2/1
BATCH ID: DSCW111897-1
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
Diesel		1.91	ND	0.05	2.00	95.5	60	110		
n-Pentacosane	(surr)	101.0	97.1		100	101	65	125		

SAMPLE TYPE: Laboratory Control Spike
INSTRUMENT: HP 5890
UNITS: mg/L
METHOD: GC-FID

LAB ID: LCDW-1119-1
PREPARED: 11/19/97
ANALYZED: 11/20/97

INSTR RUN: GC C\971119000000/3/1
BATCH ID: DSCW111997-1
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
Diesel		1.78	ND	0.05	2.00	89.0	60	110		
n-Pentacosane	(surr)	74.9	86.3		100	74.9	65	125		

SAMPLE TYPE: Laboratory Control Spike
INSTRUMENT: HP 5890
UNITS: mg/L
METHOD: GC-FID

LAB ID: LCSW-1119-1
PREPARED: 11/19/97
ANALYZED: 11/20/97

INSTR RUN: GC C\971119000000/2/1
BATCH ID: DSCW111997-1
DILUTION: 1.000000

ANALYTE		RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
Diesel		1.79	ND	0.05	2.00	89.5	60	110		
n-Pentacosane	(surr)	76.8	86.3		100	76.8	65	125		

ANALYSIS: TPH as Diesel

MATRIX: Water

LABORATORY CONTROL DUPLICATES

SAMPLE TYPE: Laboratory Control Sample Duplicate
INSTRUMENT: HP 5890
UNITS: mg/L
METHOD: GC-FID

LAB ID: LCRW-1118-1
PREPARED: 11/18/97
ANALYZED: 11/18/97

INSTR RUN: GC C\971118000000/4/2
BATCH ID: DSLW111897-1
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
Diesel	1.86	1.91	0.05	2030				2.65	15
Motor Oil	ND	ND	0.2	200				0	
n-Pentacosane (surr)	100.3	101.0			0.6955	65	125		

SAMPLE TYPE: Laboratory Control Sample Duplicate
INSTRUMENT: HP 5890
UNITS: mg/L
METHOD: GC-FID

LAB ID: LCRW-1119-1
PREPARED: 11/19/97
ANALYZED: 11/20/97

INSTR RUN: GC C\971119000000/4/2
BATCH ID: DSLW111997-1
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
Diesel	1.78	1.79	0.05	2030				0.560	15
Motor Oil	ND	ND	0.2	200				0	
n-Pentacosane (surr)	74.9	76.8			2.50	65	125		

SAMPLE SURROGATES

SAMPLE TYPE: Sample-Client
INSTRUMENT: HP 5890
UNITS: mg/L
METHOD: GC-FID

LAB ID: 9711156-01A
PREPARED: 11/18/97
ANALYZED: 11/19/97

INSTR RUN: GC C\971118000000/19/
BATCH ID: DSLW111897-1
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
n-Pentacosane (surr)	100.9			100	101	65	125		

SAMPLE TYPE: Sample-Client
INSTRUMENT: HP 5890
UNITS: mg/L
METHOD: GC-FID

LAB ID: 9711156-02A
PREPARED: 11/18/97
ANALYZED: 11/19/97

INSTR RUN: GC C\971118000000/20/
BATCH ID: DSLW111897-1
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
n-Pentacosane (surr)	67.3			100	67.3	65	125		

SAMPLE TYPE: Sample-Client
INSTRUMENT: HP 5890
UNITS: mg/L
METHOD: GC-FID

LAB ID: 9711156-03A
PREPARED: 11/18/97
ANALYZED: 11/19/97

INSTR RUN: GC C\971118000000/21/
BATCH ID: DSLW111897-1
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
n-Pentacosane (surr)	110.7			100	111	65	125		

SAMPLE TYPE: Sample-Client
INSTRUMENT: HP 5890
UNITS: mg/L
METHOD: GC-FID

LAB ID: 9711156-04A
PREPARED: 11/19/97
ANALYZED: 11/20/97

INSTR RUN: GC C\971119000000/5/
BATCH ID: DSLW111997-1
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
n-Pentacosane (surr)	114.7			100	115	65	125		

SAMPLE TYPE: Sample-Client
INSTRUMENT: HP 5890
UNITS: mg/L
METHOD: GC-FID

LAB ID: 9711156-05A
PREPARED: 11/19/97
ANALYZED: 11/20/97

INSTR RUN: GC C\971119000000/6/
BATCH ID: DSLW111997-1
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%) LOW	REC LIMITS (%) HIGH	RPD (%)	RPD LIMIT (%)
n-Pentacosane (surr)	105.5			100	106	65	125		

---------- End of Quality Control Report ----------

RISE (5)

KLEINFELDER

PROJECT NO.	PROJECT NAME
10-1682-09/703	INDUSTRIAL ASPHALT

L.P. NO. (P.O. NO.)	SAMPLERS: (Signature/Number)
	Richard Silva #3389

RECEIVING LAB: AEM 9711156

	DATE MM/DD/YY	SAMPLE I.D. TIME HH-MM-SS	SAMPLE I.D.	MATRIX	NO. OF CON-TAINERS	TYPE OF CON-TAINERS	ANALYSIS: TPH-D, MD (8015)	ANALYSIS: PCBs (8080)	INSTRUCTIONS/REMARKS
1	11-11-97	1050	MW-8	H_2O	3	AMBER	X	X	01A-C
2		1225	MW-15	H_2O	2	AMBER	X		02AB
3		1355	MW-2	H_2O	3	AMBER	X	X	03A-C
4	↓	1400	MW-12	H_2O	3	AMBER	X	X	04A-C
5	11-11-97	1530	MW-1	H_2O	3	AMBER	X	X	05A-C
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Richard Silva	11/12/97 1150	Michael E. McMullen
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Michael E. McMullen	11/12 1220	
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature) 11/12/97 1220
		Anna Gillespie

Instructions/Remarks:

Send Results To:

KLEINFELDER
7133 KOLL CENTER PARKWAY
SUITE 100
PLEASANTON, CA 94566
(510) 484-1700

Attn DAN CARROLL

M-60 White – Sampler Canary – Return Copy To Shipper Pink – Lab Copy

CHAIN OF CUSTODY

No. 2866